

# LYSAGHT'S REFEREE

A HANDBOOK OF  
USEFUL INFORMATION

CENTENARY AND  
20TH EDITION



*With the Compliments of*  
JOHN LYSAGHT (AUSTRALIA) PTY. LTD.

# LYSAGHT'S



## REFEREE

CENTENARY EDITION

(FIRST IMPRESSION — 1957)

JOHN LYSAGHT (AUSTRALIA) PTY. LTD.

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## FOREWORD

For many years Lysaght's Referee has enjoyed the reputation of being one of the handiest and most useful reference books available to the architect, builder, farmer, plumber, student, and country storekeeper.

It is with special pride that John Lysaght (Aust.) Pty. Ltd. presents this completely revised and up-to-date centenary edition.

Compiled by an expert staff and from recognised authoritative sources, the user will find it a mine of practical information, the greatest care having been taken throughout to ensure the accuracy of the data and tables supplied. At the same time, no responsibility can be accepted for any errors that may have escaped the attention of the editors, nor is any originality claimed for any information contained in its pages that may be readily obtainable elsewhere. The Company will be glad to receive suggestions for inclusion in later editions.

Each copy is, of course, issued entirely without cost and with the compliments of the Company.

JOHN LYSAGHT (AUSTRALIA) PTY. LTD.



## LYSAGHT'S — 1857-1957

A chronicle of events which mark the history of the Lysaght organisation is briefly summarised on this page. This diary traces the progress that has been made since galvanized sheets were first produced by the founder of this Company 100 years ago, and emphasises the continuous progress that John Lysaght's have made in the past century.

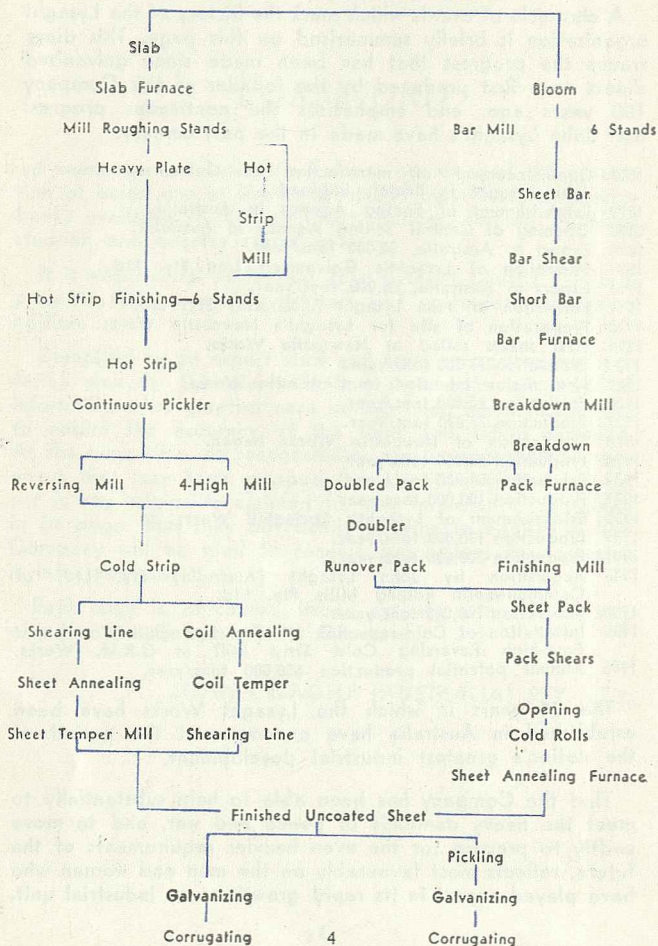
- 1857 Commencement of manufacture of Galvanized Iron by John Lysaght in Bristol, England.
- 1879 Establishment of Selling Agency in Australia.
- 1880 Opening of Central Selling Agency in Australia.
- 1895 Export to Australia, 30,000 tons/year.
- 1899 Formation of Lysaght's Galvanized Iron Pty. Ltd.
- 1913 Export to Australia, 85,000 tons/year.
- 1917 Formation of John Lysaght (Australia) Pty. Ltd.
- 1918 Preparation of site for Lysaght's Newcastle Works.
- 1921 First sheets rolled at Newcastle Works.
- 1923 Production 13,000 tons/year.
- 1924 First major extension to Newcastle Works.
- 1925 Production 20,000 tons/year.
- 1927 Production 27,000 tons/year.
- 1928 Duplication of Newcastle Works began.
- 1930 Production 36,000 tons/year.
- 1932 Production 58,000 tons/year.
- 1937 Production 100,000 tons/year.
- 1938 Establishment of Lysaght's Springhill Works.
- 1939 Production 130,000/tons/year.
- 1941 Production 200,000 tons/year.
- 1946 Acquisition by John Lysaght (Australia) Pty. Ltd. of Commonwealth Rolling Mills Pty. Ltd.
- 1950 Production 250,000 tons/year.
- 1955 Installation of Cold-reduction Units at Springhill Works, and Four-high Reversing Cold Strip Mill at C.R.M. Works.
- 1956 Annual potential production 650,000 tons/year.

The 34 years in which the Lysaght Works have been established in Australia have encompassed the period of the nation's greatest industrial development.

That the Company has been able to help substantially to meet the heavy demands of peace and war, and to move swiftly to prepare for the even heavier requirements of the future, reflects most favourably on the men and women who have played a part in its rapid growth as an industrial unit.



# PRODUCTION OF STEEL SHEET FLOW DIAGRAM



## GALVANIZED IRON

Ferrous metals, being susceptible to corrosion, must be protected from the action of air and water to prevent deterioration from rusting. The most satisfactory protective process is one of galvanizing, zinc affording valuable electro-chemical protection to steel.

The LIFE of a GALVANIZED SHEET  
is dependent

upon the WEIGHT and PERFECTION of its zinc coating.

Produced entirely from the highest quality Australian steel—now recognised as being the equal of the finest British steel—Lysaght Steel Sheets are galvanized with an evenly deposited coating of protective zinc, the quality of which has long been a feature of Lysaght Galvanized Iron, effectively safeguarding the sheet from the effects of corrosion.

One of the best-known and most widely recommended building sheets in the world to-day is Lysaght's Orb brand Corrugated Galvanized Iron. First introduced in England in 1857, and manufactured in Australia since 1921, Corrugated Galvanized Iron has proved itself unequalled for all types of roofing, walling and fencing projects, particularly where economy, ease of erection, great tensile strength, long life, and the ability to withstand the ravages of fire are important considerations. It has thus been used extensively in the construction of factories, storage bins, and silos, stables, dairies, as well as country homes.

Equally well and favourably known to the builder and plumber is Lysaght's Queen's Head brand Galvanized Iron, now universally accepted as being the finest flat galvanized steel sheet for working-up purposes available to the trade.

Lysaght sheets conform to the standards set down by the Standards Association of Australia.

## ZINCANNEAL

**GENERAL.**— Zincanneal quality sheets are an outstanding Lysaght development. By suitable high temperature treatment, zinc is combined with the steel base to form a zinc-iron alloy having remarkable properties as a coating. The resistance to atmospheric corrosion is particularly good, excellent service being obtained under severe conditions such as those met with in coastal locations.

Zincanneal is produced in both flat and corrugated forms.

**PAINTING.**— Painting can be carried out immediately on erection or fabrication without priming or fear of subsequent peeling. Zincanneal is uninjured by heat up to temperature of 600°F. It can be stove enamelled without damaging the protective surface in any way.

**ZINCANNEAL SOLDERING.**— Zincanneal is quite satisfactory for soldered joints, but it is generally found to require more care than ordinary galvanized sheets. The flux should be more active than that used with an ordinary galvanized sheet, and raw spirits, or 50% raw spirits and 50% killed spirits are recommended. Equally good results have been obtained with 60/40 and 50/50 solder. Experience has shown that the soldering iron should not be too hot.

**WELDING.**— Having a steel base, Zincanneal can be welded or brazed by any normal means. The heat generated by electric arc welding does not destroy the rust-resisting properties, and this material is quite suitable for spot welding. High pressure and high current should be employed, with a minimum time of application. Extensive weathering and corrosion tests have shown that in spite of the temperatures involved in the electric welding processes, considerable protection still remains at the weld.

**NOTE.**— Zincanneal coatings must NOT be confused with lead Terne coatings. Containers of Zincanneal are made to hold ice, water, and food, as in refrigerator cabinets and ice moulds, and the coatings are NOT injurious or poisonous in any way.



## BRANDS AND QUALITIES CORRUGATED SHEET

**RED ORB.**—This universally known sheet has a uniformly heavy zinc coating applied to an especially hard steel base. The extreme rigidity and stiffness specially recommend it for applications such as roofing, walling, or fixing where maximum strength is required. This quality is available in 26 and 24 gauges, and is not suitable for curving.



**BLUE ORB.**—Blue Orb sheets carry the same high-grade coatings as Red Orb, applied to a ductile steel base of the highest quality. It is particularly suitable for applications requiring curving.



**RED Z.A.** — This quality has the Zincanneal coating applied to an especially hard steel base, providing great rigidity and strength for structural applications such as roofing, walling, and fencing, where these properties are of major importance. Red Zincanneal is not suitable for curving.



**BLUE Z.A.**—This quality has the Zincanneal coating applied to a high quality ductile steel base, and may be curved with ease.



LYSAGHT



GUINEA  
AUSTRALIA

**GUINEA.**—A superior corrugated sheet, available in both 24 and 26 gauges, second only to "Orb" in quality and appearance, and recommended for use when price is a consideration.

**ZINCANNEAL SECONDS.**—Zincanneal Seconds may contain small uncoated areas, corners off, or broken sides. Defects may be included, such as rough and lumpy coatings, salt stains, bright patches, yellow stains, black stains, and tree marks. Such sheets carry the brand:—

Z.A.  
SECONDS

**MILL REJECTS.**—Complete sheets which are too badly damaged for grading into Seconds are packed together as Waste. Any one package of Waste consists of defective sheets of approximately the same gauge, size and coating, with all defects including large uncoated areas, corner and end faults, broken sides, and holes. Pinched, crinkled and cobbled sheets are also included.

### PACKING

All sheets are packed in crates or bundles weighing approximately 10 cwt. or one ton.

#### **GALVANIZED CORRUGATED:**

All Red Orb sheets are packed in one-ton bundles.

All 10/3" Blue Orb sheets are packed in one-ton crates, with the exception of 5' and 6' lengths, which are packed in half-ton crates.

All 8/3" Blue Orb sheets are packed in half-ton crates.

All Guinea material and Mill Rejects sheets are packed in bundles.

#### **ZINCANNEAL CORRUGATED:**

Prime sheets are packed in crates.

Seconds are packed in crates.

Waste is packed in bundles.

## CORRUGATED SHEETS

### Explanatory Notes on Brands and Sheet Marks

For the information of users, to facilitate identification and to provide means of determining the life of Australian-made sheets, Lysaght steel sheets carry certain identifying numbers and symbols.

**DATE OF MANUFACTURE.**—The year of manufacture has been incorporated in the Maltese Cross of the Orb brand, and at the base of the Guinea brand.



The day and number of the month of manufacture are stamped to the left and right of the Orb brand respectively.

Sheets are branded on one side only, with the exception of 24G Blue Orb (which is used mainly for tankmaking). On the reverse side to the normal brand is a Tect-A-Tank brand, incorporating the year of manufacture.



**INSPECTOR'S NUMBER.**—Between the brand and the end of the sheet is stamped the identification number of the inspector who passed the sheet.

**PLACE OF ORIGIN.**—Sheets manufactured at Port Kembla Works have the letter "K" incorporated in all brands.

**GAUGE NUMBER.**—Below the brand on all 22, 24, 26 gauge sheets are stamped the respective figures, 22G, 24G, 26G.

**ZINCANNEAL SHEETS.**—Zincanneal sheets, in addition to the inspector's number, carry a processing draft number, which incorporates the date of manufacture.

**PACKING.**—The packer's initials are stamped on the side of the crate, and a large packer's slip giving the packer's name and the date of packing is enclosed in all crates.



## CRATE AND BUNDLE MARKINGS

### Corrugated Sheet—Galvanized and Zincanneal

To facilitate identification, information is stencilled on crates and bundles, in black ink in general, but in red ink for Red qualities of sheet.

Clips are of the same material as contained in the crate or bundle. The initials of the packer are stencilled on the sides of all crates.

#### CORRUGATED GALVANIZED IRON:

**Red Orb.**— One clip is marked with the number and weight of sheets. The other clip on the same side of the bundle is marked R.O. and shows the gauge number (usually 26G).

**MILL REJECTS.**— One clip is marked MR and with the gauge. The other clip on the same side of the bundle is marked with the weight.

**Blue Orb.**— When in crates, the following symbols are stencilled on one end of the crate, with the number and weight of the sheets—



26G (1" corr.)

26G (3" corr.)

24G

22G

20G

the size, number and weight of sheets is marked on the other end of the crate.

**Guinea Blue.**— The following code of colour clips is used on one side of the bundle:—

|                       |              |
|-----------------------|--------------|
| 26G .....             | Plain Clips  |
| 24G .....             | Yellow Clips |
| 22G and heavier ..... | Blue Clips   |

On the other side of the bundle one clip is marked Guinea with the gauge. The other clip is marked with the number and weight of the sheets.

**MILL REJECTS.**— In Mill Reject quality, Blue and Red varieties may be mixed. The following code of colour clips is used on one side of the bundle:—

|                       |             |
|-----------------------|-------------|
| 26G .....             | Black Clips |
| 24G .....             | Black Clips |
| 22G and heavier ..... | Blue Clips  |

On the other side of the bundle one clip is marked MR with the gauge. The other clip is marked with the weight of sheets.

#### CORRUGATED ZINCANNEAL:

**Corrugated Firsts** are marked ZINCANNEAL, with the number and weight of sheets on one end of the crate. The other end is marked with the size, number and weight of sheets.

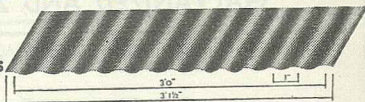
**Corrugated Seconds** are marked similarly to Firsts, except that the mark Zincanneal is followed by a 2.

**Corrugated Mill Rejects.**— One clip is marked ZINCANNEAL MR with the gauge. The other clip is marked with the weight of the bundle. For Red Mill Rejects, the clips on the opposite side are painted red.

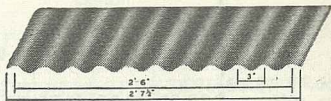
JOHN LYSAGHT (AUST.) PTY. LTD.

## STANDARD CORRUGATED SHEETS GALVANIZED AND ZINCANNEAL

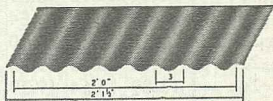
12-3" corrugations  
26G only 5-12ft. lengths



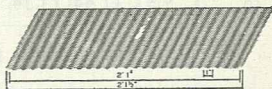
10-3" corrugations  
16G-26G 5-12ft. lengths



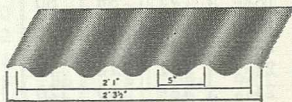
8-3" corrugations  
16G-26G 5-12ft. lengths



25-1" corrugations  
26G only 5-10ft. lengths



5-5" corrugations  
14G-20G 5-12ft. lengths



**CORRUGATIONS.**—Lysaght sheets are produced in corrugations of three different spacings.

3"—The standard 3-inch corrugation is the pitch in common usage. The depth of corrugation is approximately  $\frac{3}{4}$ " and sheets are produced in three widths: 12-3 inch and 10-3 inch corrugations, most popular for roofing and siding; and 8-3 inch corrugations, used largely in the Blue Orb quality for tank-making.

5"—The standard 5-inch corrugated pitch is produced in a width of 5-5 inch corrugations  $1\frac{1}{2}$ " deep. This corrugation is used for heavy gauge sheets. These are recommended for wide unsupported coverage tasks, such as awnings, where maximum strength of the sheet as a beam is desirable, or for domestic or industrial roofs.

1"—The standard 1-inch corrugation sheet, produced in 26G only, is 25 corrugations wide,  $\frac{1}{4}$ " deep. This sheet is most popular for linings, awnings, ceilings, showers, or sheds and country halls, and is gaining an increased popularity as division walls in large country stores.

# 8-3in. CORRUGATED STEEL SHEET

## GALVANIZED AND ZINCANNEAL

## APPROXIMATE WEIGHT PER SHEET—LBS.

| Gauge | Length |       |       |       |       |       |       |       |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|
|       | 5'     | 6'    | 7'    | 8'    | 9'    | 10'   | 11'   | 12'   |
| 16    | 32.52  | 38.95 | 45.39 | 51.83 | 58.26 | 64.70 | 71.14 | 77.57 |
| 18    | 26.18  | 31.36 | 36.54 | 41.73 | 46.91 | 52.09 | 57.27 | 62.45 |
| 20    | 21.21  | 25.41 | 29.60 | 33.80 | 38.00 | 42.20 | 46.40 | 50.59 |
| 22    | 17.18  | 20.58 | 23.98 | 27.38 | 30.78 | 34.18 | 37.58 | 40.98 |
| 24    | 13.89  | 16.64 | 19.39 | 22.14 | 24.89 | 27.64 | 30.39 | 33.14 |
| 26    | 9.53   | 11.44 | 13.34 | 15.25 | 17.15 | 19.06 | 20.97 | 22.88 |

## COUNT OF SHEETS PER NOMINAL TON

|    |     |     |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 16 | 72  | 58  | 50  | 44  | 40  | 36  | 32  | 30  |
| 18 | 86  | 72  | 62  | 54  | 48  | 44  | 40  | 36  |
| 20 | 106 | 90  | 76  | 68  | 60  | 54  | 50  | 46  |
| 22 | 132 | 110 | 96  | 84  | 74  | 66  | 60  | 56  |
| 24 | 168 | 140 | 120 | 104 | 94  | 84  | 76  | 70  |
| 26 | 240 | 200 | 170 | 150 | 132 | 120 | 108 | 100 |

COVERAGE.—Mean area of surface covered by 1 ton of sheet—1½ corrugations side lap, 6" end lap—sq. ft.

|    |      |      |      |      |      |      |      |      |
|----|------|------|------|------|------|------|------|------|
| 16 | 581  | 593  | 601  | 608  | 613  | 617  | 620  | 623  |
| 18 | 722  | 737  | 747  | 755  | 761  | 766  | 770  | 773  |
| 20 | 891  | 909  | 922  | 932  | 939  | 945  | 950  | 955  |
| 22 | 1100 | 1122 | 1138 | 1150 | 1160 | 1167 | 1173 | 1179 |
| 24 | 1361 | 1388 | 1408 | 1423 | 1434 | 1444 | 1451 | 1457 |
| 26 | 1983 | 2019 | 2046 | 2066 | 2082 | 2093 | 2103 | 2111 |

NOTE.—Following long-established British practice, 26-gauge Galvanized Iron, both corrugated and plain, manufactured in Australia, is lighter than true 26 gauge.



# 10-3in. CORRUGATED STEEL SHEET GALVANIZED AND ZINCANNEAL

## APPROXIMATE WEIGHT PER SHEET—LBS.

| Gauge | Length |       |       |       |       |       |       |       |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|
|       | 5'     | 6'    | 7'    | 8'    | 9'    | 10'   | 11'   | 12'   |
| 16    | 39.68  | 47.54 | 55.39 | 63.24 | 71.10 | 78.96 | 86.81 | 94.66 |
| 18    | 32.06  | 38.40 | 44.75 | 51.09 | 57.44 | 63.78 | 70.13 | 76.47 |
| 20    | 25.97  | 31.11 | 36.25 | 41.39 | 46.53 | 51.67 | 56.81 | 61.95 |
| 22    | 21.04  | 25.20 | 29.36 | 33.53 | 37.69 | 41.86 | 46.02 | 50.18 |
| 24    | 17.01  | 20.38 | 23.74 | 27.11 | 30.48 | 33.84 | 37.21 | 40.58 |
| 26    | 11.63  | 13.96 | 16.28 | 18.60 | 20.93 | 23.26 | 25.59 | 27.91 |

## COUNT OF SHEETS PER NOMINAL TON

|    |     |     |     |     |     |    |    |    |
|----|-----|-----|-----|-----|-----|----|----|----|
| 16 | 58  | 48  | 42  | 36  | 32  | 30 | 26 | 24 |
| 18 | 70  | 58  | 50  | 44  | 40  | 36 | 32 | 28 |
| 20 | 86  | 72  | 62  | 54  | 48  | 44 | 40 | 36 |
| 22 | 106 | 88  | 76  | 68  | 60  | 54 | 50 | 46 |
| 24 | 136 | 114 | 98  | 86  | 76  | 68 | 62 | 58 |
| 26 | 194 | 162 | 138 | 122 | 108 | 98 | 88 | 82 |

COVERAGE.—Mean area of surface covered by 1 ton of sheet— $1\frac{1}{2}$  corrugations side lap, 6" end lap—sq. ft.

|    |      |      |      |      |      |      |      |      |
|----|------|------|------|------|------|------|------|------|
| 16 | 603  | 615  | 624  | 631  | 636  | 641  | 643  | 646  |
| 18 | 747  | 762  | 773  | 781  | 787  | 792  | 797  | 801  |
| 20 | 922  | 941  | 954  | 964  | 972  | 978  | 983  | 988  |
| 22 | 1138 | 1161 | 1178 | 1190 | 1200 | 1207 | 1214 | 1219 |
| 24 | 1406 | 1436 | 1457 | 1472 | 1484 | 1493 | 1501 | 1508 |
| 26 | 2058 | 2096 | 2124 | 2145 | 2161 | 2173 | 2183 | 2192 |

NOTE.—Following long-established British practice, 26-gauge Galvanized Iron, both corrugated and plain, manufactured in Australia, is lighter than true 26 gauge.

## 5-5in. CORRUGATED STEEL SHEET GALVANIZED AND ZINCANNEAL

### APPROXIMATE WEIGHT PER SHEET—LBS.

| Gauge | Length |       |       |       |       |
|-------|--------|-------|-------|-------|-------|
|       | 6'     | 7'    | 8'    | 9'    | 10'   |
| 16    | 41.04  | 47.82 | 54.60 | 61.34 | 68.15 |
| 18    | 32.68  | 38.08 | 43.48 | 48.87 | 54.27 |
| 20    | 26.24  | 30.58 | 34.92 | 39.25 | 43.59 |

### COUNT OF SHEETS PER ONE-TON CRATE

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 16 | 55 | 47 | 42 | 37 | 33 |
| 18 | 69 | 59 | 52 | 46 | 42 |
| 20 | 86 | 74 | 65 | 58 | 52 |

COVERAGE.—Mean area of surface covered by 1 ton of sheet— $1\frac{1}{2}$  corrugations side lap, 6" end lap—sq. ft.

|    |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|
| 16 | 608 | 614 | 619 | 623 | 626 |
| 18 | 763 | 771 | 777 | 783 | 786 |
| 20 | 950 | 960 | 968 | 974 | 979 |

## 12-3in. CORRUGATED GALVANIZED SHEET

### APPROXIMATE WEIGHT PER SHEET—LBS.

| Gauge | Length |       |       |       |       |       |       |       |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|
|       | 5'     | 6'    | 7'    | 8'    | 9'    | 10'   | 11'   | 12'   |
| 26    | 13.96  | 16.76 | 19.55 | 22.34 | 25.13 | 27.94 | 30.73 | 33.50 |

### COUNT OF SHEETS PER ONE-TON CRATE

|    |     |     |     |     |    |    |    |    |
|----|-----|-----|-----|-----|----|----|----|----|
| 26 | 168 | 140 | 120 | 106 | 94 | 84 | 76 | 70 |
|----|-----|-----|-----|-----|----|----|----|----|

COVERAGE.—Mean area of surface covered by one ton of sheet— $1\frac{1}{2}$  corrugations side lap, 6" end lap—sq. ft.

|    |      |      |      |      |      |      |      |      |
|----|------|------|------|------|------|------|------|------|
| 26 | 2153 | 2178 | 2196 | 2211 | 2221 | 2229 | 2235 | 2242 |
|----|------|------|------|------|------|------|------|------|

## GALVANIZED FLAT SHEETS

**QUEEN'S HEAD.**— Prime sheets of Lysaght galvanized flat steel sheets are branded with the well-known Queen's Head brand. These quality flat sheets are the most uniform and reliable plain galvanized sheets on the market.

LYSAGHT



QUEEN'S HEAD

AUSTRALIA

LYSAGHT



AUSTRALIA

**FLEUR DE LIS.**— A superior galvanized flat sheet, for that class of work in which a cheaper sheet is asked for. It will be found equal to all such requirements.

**EXPLANATORY NOTES ON MARKINGS OF FLAT SHEETS.**— For the information of users, the year of manufacture is incorporated in the frame of the Queen's Head and Fleur de Lis brands, the figures being located at the base of the Queen's neck. Figures on either side of the brand show the day and month of manufacture. Sheets are branded on one side only, and sheets manufactured at Springhill Works have the letter "K" shown in all brands. Between the brand and the end of the sheet is stamped the identification number of the inspector who passed the sheet. The packer's initials are stamped on the side of the crate, and the packer's slip, giving the packer's name and date of packing, is enclosed in all crates. Should you find it necessary to make a complaint, please endeavour to quote packer's initials, inspector's number, year of manufacture, and any other details that might assist us to investigate and remedy your complaint.

**PACKING.**— Sheets are packed in crates or bundles as follows:—

Queen's Head: 18G and lighter—one-ton crates.

16G and heavier—one-ton bundles.

Fleur de Lis Flats: As for Q.H.

Mill Rejects Flats: As for Q.H.

Red Orb: All gauges—one-ton bundles.

Blue Orb: All gauges—one-ton crates.

Fleur de Lis and Mill Rejects—one-ton bundles.

Z.A. Corrugated: Firsts and Seconds—one-ton crates.

Mill Rejects—one-ton bundles.

Z.A. Panel and R.L.: All gauges—half-ton crates.

Seconds and Mill Rejects—one-ton crates.

Terne Plate: All gauges—one-ton crates.

Seconds and Mill Rejects—one-ton crates.



## ZINCANNEAL FLAT SHEET

**GENERAL.**— Prime Zincanneal flat sheets are produced in two qualities—Z.A. R.L. (Zincanneal Roller Levelled) and Z.A. Panel Quality.

**Z.A. R.L.**—This quality is especially suited to, and enjoys increasing popularity for flashings, gutters, downpipes, capping, vents, duct work, and formed work generally, where a perfectly flat sheet is not required.

LYSAGHT  
ZINCANNEAL  
AUSTRALIA  
R.L.

**Z.A. PANEL QUALITY.** —

These sheets are subjected to a final surface improvement process, and finished dead flat.

The surface provides an

ideal base for baked enamels and similar fine finishes.

LYSAGHT  
ZINCANNEAL  
AUSTRALIA  
PANEL QUALITY

**SECONDS.** — In the production of prime sheets certain sheets are rejected for imperfections of surface or dimensions into Seconds R.L., or Seconds Panel Quality.

Zincanneal Seconds may contain small uncoated areas, corners off, or broken sides. Extensive appearance defects may be included, such as rough and lumpy coatings, bright patches, yellow stains, black stains, and tree marks.

Z.A.  
SECONDS

R.L.

Z.A.  
SECONDS

PANEL QUALITY

**MILL REJECTS.**—Complete sheets which are too badly damaged for grading into Seconds are packed as Mill Rejects. Any one package of Mill Rejects consists of defective sheets of approximately the same gauge and size, with all defects, including large uncoated areas, corners off, and faults, broken sides, and holes. Pinched, crinkled and cobbled sheets are also included.

**PACKING.**— All grades are packed in crates, weighing approximately 1 ton.

# CRATE AND BUNDLE MARKINGS

## Flat Sheet—Galvanized and Zincanneal

### GALVANIZED

**QUEEN'S HEAD.**—When in bundles the number and weight of sheets is stencilled on a clip in the side of the bundle. All bundles of 16 gauge and heavier have blue clips. 14G and heavier are not branded, the tally being marked Q.H.N.B.

30

30G



28G



26G



24G



22G and heavier

**FLEUR DE LIS.**—When in crates, one end is marked Fleur de Lis, with the number and weight of sheets. The other end is marked with the size, number, and weight of sheets. The clips are painted red.

When in bundles, the markings are similar to those of Queen's Head bundles, the mark Q.H. being replaced by Fleur de Lis.

**MILL REJECTS.**—When in crates, one end is marked MR and the gauge. Both ends are marked with the weight of sheets. Clips are painted red. When in bundles the markings are similar to those of Queen's Head bundles, the mark Q.H. being replaced by MR, and the only dimension shown is the gauge.

**TIGHT-COATED FLATS.**—When in crates one end is marked T.C.N.B., with the number and weight of sheets. The other end is marked with the size, number and weight of sheets. When in bundles, the markings are similar to those of Queen's Head bundles, the mark Q.H. being replaced by T.C.N.B.

**SPECIAL SHEETS.**—Certain special sheets are produced by Lysaght's for restricted use. C30 C.A. is a special springy sheet. The sheets are not branded, but the crates are marked C30 C.A. N.B.

### ZINCANNEAL

**PANEL QUALITY.**—Crates of prime sheets are marked ZINCANNEAL PANEL, with the number and weight of sheets on one end of the crate. The other end is marked with size, number and weight of sheets.

**PANEL SECONDS AND MILL REJECTS** are marked similarly to Firsts, except that the mark ZINCANNEAL PANEL is followed by 2 or MR. The clips are painted red.

**R.L. FIRSTS, SECONDS, AND MILL REJECTS.**—As for Panel, except the mark R.L. replaces PANEL.

# FLAT SHEETS

## GALVANIZED AND ZINCANNEAL

|                |        | Approximate Weight<br>Per Sheet<br>in lbs. |       |       |        | Count of Sheets<br>Per Nominal<br>ton |     |     |     |
|----------------|--------|--------------------------------------------|-------|-------|--------|---------------------------------------|-----|-----|-----|
|                | Gauge  | Width                                      |       |       |        | Width                                 |     |     |     |
|                |        | 24"                                        | 30"   | 36"   | 48"    | 24"                                   | 30" | 36" | 48" |
|                |        |                                            |       |       |        |                                       |     |     |     |
| 6 FEET LENGTHS | 12     | 49.61                                      | 61.94 | 74.28 | 98.96  | 46                                    | 36  | 30  | 24  |
|                | 14     | 39.62                                      | 49.48 | 59.33 | 79.04  | 58                                    | 46  | 38  | 30  |
|                | 16     | 31.68                                      | 39.56 | 47.44 | 63.20  | 72                                    | 58  | 48  | 36  |
|                | 18     | 25.23                                      | 31.50 | 37.77 | 50.32  | 90                                    | 72  | 60  | 46  |
|                | 20     | 20.26                                      | 25.30 | 30.34 | 40.42  | 112                                   | 90  | 74  | 56  |
|                | 22     | 16.28                                      | 20.33 | 24.37 | 32.47  | 138                                   | 112 | 92  | 70  |
|                | 24     | 13.06                                      | 16.30 | 19.55 | 26.04  | 172                                   | 138 | 118 | 88  |
|                | 26     | 8.97                                       | 11.22 | 13.46 | 17.95  | 248                                   | 198 | 168 | 124 |
|                | 26Z.A. | 10.50                                      | 13.11 | 15.72 | 20.94  | 214                                   | 172 | 142 | 108 |
| 8 FEET LENGTHS | 12     | 66.00                                      | 82.41 | 98.83 | 131.66 | 34                                    | 28  | 24  | 18  |
|                | 14     | 52.72                                      | 65.83 | 78.94 | 105.16 | 44                                    | 34  | 30  | 22  |
|                | 16     | 42.15                                      | 52.63 | 63.12 | 84.08  | 54                                    | 44  | 36  | 28  |
|                | 18     | 33.56                                      | 41.91 | 50.26 | 66.95  | 68                                    | 54  | 46  | 34  |
|                | 20     | 26.96                                      | 33.66 | 40.37 | 53.78  | 84                                    | 68  | 56  | 42  |
|                | 22     | 21.66                                      | 27.04 | 32.43 | 43.20  | 104                                   | 84  | 70  | 52  |
|                | 24     | 17.37                                      | 21.69 | 26.01 | 34.65  | 130                                   | 106 | 88  | 66  |
|                | 26     | 11.97                                      | 14.96 | 17.95 | 23.93  | 184                                   | 148 | 126 | 92  |
|                | 26Z.A. | 13.97                                      | 17.44 | 20.92 | 27.87  | 160                                   | 128 | 108 | 80  |

**NOTE.** — Following long-established British practice, 26-gauge Galvanized Iron, both corrugated and plain, manufactured in Australia, is lighter than true 26g. and, as Zincanneal is now manufactured in 26 Birmingham gauge, both values are given in the above tables.



PRICE  
PER  
SHEET

8 x 3"

CORRUGATIONS

GALVANIZED &amp; ZINCANNEAL

APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON Gauge

| Price<br>per<br>ton | 106<br>Sheets<br>5ft. | 89<br>Sheets<br>6ft. | 76<br>Sheets<br>7ft. | 66<br>Sheets<br>8ft. | 59<br>Sheets<br>9ft. | 53<br>Sheets<br>10ft. | 48<br>Sheets<br>11ft. | 44<br>Sheets<br>12ft. |
|---------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| £78                 | 14/9½                 | 17/6½                | 20/7½                | 23/7½                | 26/5½                | 29/5½                 | 32/6                  | 35/5½                 |
| £79                 | 14/11½                | 17/9                 | 20/10½               | 23/11½               | 26/9½                | 29/10                 | 32/11                 | 35/11                 |
| £80                 | 15/2                  | 18/-                 | 21/2                 | 24/3                 | 27/1½                | 30/2½                 | 33/4                  | 36/4½                 |
| £81                 | 15/4                  | 18/2½                | 21/5                 | 24/6½                | 27/5½                | 30/7                  | 33/9                  | 36/10                 |
| £82                 | 15/6½                 | 18/5                 | 21/8                 | 24/10                | 27/9½                | 30/11½                | 34/2                  | 37/3½                 |
| £83                 | 15/8½                 | 18/8                 | 21/11                | 25/2                 | 28/2                 | 31/4                  | 34/7                  | 37/9                  |
| £84                 | 15/11                 | 18/10½               | 22/2½                | 25/5½                | 28/6                 | 31/8½                 | 35/-                  | 38/2                  |
| £85                 | 16/1                  | 19/1                 | 22/5½                | 25/9                 | 28/10                | 32/1                  | 35/5                  | 38/8                  |
| £86                 | 16/3½                 | 19/4                 | 22/7½                | 26/1                 | 29/2                 | 32/5½                 | 35/10                 | 39/1                  |
| £87                 | 16/5                  | 19/6½                | 22/11                | 26/4½                | 29/6                 | 32/10                 | 36/3                  | 39/7                  |
| £88                 | 16/7½                 | 19/9½                | 23/2                 | 26/8                 | 29/10                | 33/2½                 | 36/8                  | 40/-                  |
| £89                 | 16/9½                 | 20/-                 | 23/5                 | 27/-                 | 30/2                 | 33/7                  | 37/1                  | 40/5½                 |
| £90                 | 17/-                  | 20/3                 | 23/8                 | 27/3½                | 30/6                 | 33/11½                | 37/6                  | 40/11                 |
| £91                 | 17/2                  | 20/5½                | 23/11½               | 27/7                 | 30/10½               | 34/4                  | 37/11                 | 41/4½                 |
| £92                 | 17/4½                 | 20/8                 | 24/2½                | 27/10½               | 31/2½                | 34/9                  | 38/4                  | 41/10                 |
| £93                 | 17/6½                 | 20/11                | 24/6                 | 28/2                 | 31/6½                | 35/1                  | 38/9                  | 42/3½                 |
| £94                 | 17/9                  | 21/1½                | 24/9                 | 28/6                 | 31/10½               | 35/6                  | 39/2                  | 42/9                  |
| £95                 | 17/11                 | 21/4                 | 25/-                 | 28/9½                | 32/2½                | 35/10½                | 39/7                  | 43/2                  |
| £96                 | 18/1½                 | 21/7                 | 25/3                 | 29/1                 | 32/6½                | 36/3                  | 40/-                  | 43/8                  |

20

PRICE PER SHEET

| Price<br>per<br>ton | 130<br>Sheets<br>5ft. | 109<br>Sheets<br>6ft. | 93<br>Sheets<br>7ft. | 82<br>Sheets<br>8ft. | 73<br>Sheets<br>9ft. | 66<br>Sheets<br>10ft. | 60<br>Sheets<br>11ft. | 55<br>Sheets<br>12ft. |
|---------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| £80                 | 12/4                  | 14/8                  | 17/2½                | 19/6                 | 21/11                | 24/3                  | 26/8                  | 29/1                  |
| £81                 | 12/5½                 | 14/10½                | 17/5                 | 19/9                 | 22/2½                | 24/6½                 | 27/-                  | 29/5½                 |
| £82                 | 12/7½                 | 15/0½                 | 17/7½                | 20/-                 | 22/6                 | 24/10½                | 27/4                  | 29/10                 |
| £83                 | 12/9½                 | 15/3                  | 17/10                | 20/3                 | 22/9                 | 25/1                  | 27/8                  | 30/2                  |
| £84                 | 12/11                 | 15/5                  | 18/1                 | 20/6                 | 23/-                 | 25/5½                 | 28/-                  | 30/6½                 |
| £85                 | 13/1                  | 15/7½                 | 18/3½                | 20/9                 | 23/3½                | 25/9                  | 28/4                  | 30/11                 |
| £86                 | 13/3                  | 15/9½                 | 18/6                 | 21/-                 | 23/7                 | 26/1                  | 28/8                  | 31/3½                 |
| £87                 | 13/5                  | 15/11½                | 18/8½                | 21/3                 | 23/10                | 26/4½                 | 29/-                  | 31/8                  |
| £88                 | 13/6½                 | 16/2                  | 18/11                | 21/5½                | 24/1½                | 26/8                  | 29/4                  | 32/-                  |
| £89                 | 13/8½                 | 16/4                  | 19/2                 | 21/8½                | 24/5                 | 27/-                  | 29/8                  | 32/4½                 |
| £90                 | 13/10                 | 16/6                  | 19/4½                | 21/11½               | 24/8                 | 27/3½                 | 30/-                  | 32/9                  |
| £91                 | 14/-                  | 16/8½                 | 19/7                 | 22/2½                | 24/11½               | 27/7                  | 30/4                  | 33/1                  |
| £92                 | 14/2                  | 16/11                 | 19/9½                | 22/5½                | 25/2½                | 27/10½                | 30/8                  | 33/5½                 |
| £93                 | 14/4                  | 17/1                  | 20/-                 | 22/8½                | 25/6                 | 28/2                  | 31/-                  | 33/10                 |
| £94                 | 14/5½                 | 17/3                  | 20/3                 | 22/11½               | 25/9                 | 28/6                  | 31/4                  | 34/2                  |
| £95                 | 14/7½                 | 17/5                  | 20/5½                | 23/2                 | 26/0½                | 28/9½                 | 31/8                  | 34/6½                 |
| £96                 | 14/9½                 | 17/7½                 | 20/8                 | 23/5                 | 26/4                 | 29/1                  | 32/-                  | 34/11                 |
| £97                 | 14/11                 | 17/9½                 | 20/10½               | 23/8                 | 26/7                 | 29/5                  | 32/4                  | 35/3½                 |
| £98                 | 15/1                  | 18/-                  | 21/1                 | 23/11                | 26/10½               | 29/8½                 | 32/8                  | 35/7½                 |

Gauge

22

THIS TABLE IS NOT A PRICE LIST

PRICE  
PER  
SHEET

8 x 3"

CORRUGATIONS

GALVANIZED &amp; ZINCANNEAL

Gauge APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON

24

| Price<br>per<br>ton | 161<br>Sheets<br>5ft. | 135<br>Sheets<br>6ft. | 116<br>Sheets<br>7ft. | 101<br>Sheets<br>8ft. | 90<br>Sheets<br>9ft. | 81<br>Sheets<br>10ft. | 74<br>Sheets<br>11ft. | 68<br>Sheets<br>12ft. |
|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| £81                 | 10/1                  | 12/-                  | 14/-                  | 16/0½                 | 18/-                 | 20/-                  | 21/11                 | 23/10                 |
| £81/10/-            | 10/1½                 | 12/1                  | 14/1                  | 16/2                  | 18/1½                | 20/1½                 | 22/0½                 | 24/-                  |
| £82                 | 10/2                  | 12/2                  | 14/2                  | 16/3                  | 18/3                 | 20/3                  | 22/2                  | 24/1½                 |
| £82/10/-            | 10/3                  | 12/3                  | 14/3                  | 16/4                  | 18/4                 | 20/4½                 | 22/3½                 | 24/3                  |
| £83                 | 10/4                  | 12/3½                 | 14/4                  | 16/5½                 | 18/5½                | 20/6                  | 22/5½                 | 24/5                  |
| £83/10/-            | 10/4½                 | 12/4½                 | 14/5                  | 16/6½                 | 18/7                 | 20/7½                 | 22/7                  | 24/7                  |
| £84                 | 10/5                  | 12/5½                 | 14/6                  | 16/7½                 | 18/8                 | 20/9                  | 22/8½                 | 24/8½                 |
| £84/10/-            | 10/6                  | 12/6                  | 14/7                  | 16/9                  | 18/9½                | 20/10½                | 22/10                 | 24/10                 |
| £85                 | 10/7                  | 12/7                  | 14/8                  | 16/10                 | 18/11                | 21/-                  | 23/-                  | 25/-                  |
| £85/10/-            | 10/7½                 | 12/8                  | 14/9                  | 16/11                 | 19/-                 | 21/1½                 | 23/1½                 | 25/2                  |
| £86                 | 10/8                  | 12/9                  | 14/10                 | 17/0½                 | 19/1½                | 21/3                  | 23/3                  | 25/3½                 |
| £86/10/-            | 10/9                  | 12/10                 | 14/11                 | 17/1½                 | 19/3                 | 21/4½                 | 23/4½                 | 25/5½                 |
| £87                 | 10/10                 | 12/10½                | 15/-                  | 17/3                  | 19/4                 | 21/6                  | 23/6                  | 25/7                  |
| £87/10/-            | 10/10½                | 12/11½                | 15/1                  | 17/4                  | 19/5½                | 21/7½                 | 23/8                  | 25/9                  |
| £88                 | 10/11                 | 13/0½                 | 15/2                  | 17/5                  | 19/7                 | 21/9                  | 23/9½                 | 25/11                 |
| £88/10/-            | 11/-                  | 13/1½                 | 15/3                  | 17/6                  | 19/8                 | 21/10½                | 23/11                 | 26/0½                 |
| £89                 | 11/1                  | 13/2½                 | 15/4                  | 17/7½                 | 19/9½                | 22/-                  | 24/1                  | 26/2                  |
| £89/10/-            | 11/1½                 | 13/3½                 | 15/5                  | 17/9                  | 19/11                | 22/1½                 | 24/2½                 | 26/4                  |
| £90                 | 11/2                  | 13/4                  | 15/6                  | 17/10                 | 20/-                 | 22/3                  | 24/4                  | 26/6                  |
| £90/10/-            | 11/3                  | 13/5                  | 15/7                  | 17/11                 | 20/1½                | 22/4                  | 24/5½                 | 26/7½                 |
| £91                 | 11/4                  | 13/6                  | 15/8                  | 18/-                  | 20/3                 | 22/5½                 | 24/7                  | 26/9                  |
| £91/10/-            | 11/4½                 | 13/7                  | 15/9                  | 18/1½                 | 20/4                 | 22/7                  | 24/9                  | 26/11                 |
| £92                 | 11/5                  | 13/7½                 | 15/10                 | 18/2½                 | 20/5½                | 22/8½                 | 24/10½                | 27/1                  |
| £92/10/-            | 11/6                  | 13/8½                 | 15/11                 | 18/4                  | 20/7                 | 22/10                 | 25/-                  | 27/2½                 |
| £93                 | 11/7                  | 13/9½                 | 16/-                  | 18/5                  | 20/8                 | 22/11½                | 25/1½                 | 27/4                  |
| £93/10/-            | 11/7½                 | 13/10½                | 16/1                  | 18/6                  | 20/9½                | 23/1                  | 25/3½                 | 27/6                  |
| £94                 | 11/8½                 | 13/11                 | 16/2                  | 18/7½                 | 20/11                | 23/2½                 | 25/5                  | 27/8                  |
| £94/10/-            | 11/9                  | 14/-                  | 16/3                  | 18/8½                 | 21/-                 | 23/4                  | 25/6½                 | 27/9½                 |
| £95                 | 11/10                 | 14/1                  | 16/4                  | 18/10                 | 21/1½                | 23/5½                 | 25/8                  | 27/11½                |
| £95/10/-            | 11/10½                | 14/2                  | 16/5                  | 18/11                 | 21/3                 | 23/7                  | 25/10                 | 28/1                  |
| £96                 | 11/11                 | 14/3                  | 16/6                  | 19/-                  | 21/4                 | 23/8½                 | 25/11½                | 28/3                  |
| £96/10/-            | 12/-                  | 14/3½                 | 16/7½                 | 19/1½                 | 21/5½                | 23/10                 | 26/1                  | 28/5                  |
| £97                 | 12/1                  | 14/4½                 | 16/8½                 | 19/2½                 | 21/7                 | 23/11½                | 26/2½                 | 28/6½                 |
| £97/10/-            | 12/1½                 | 14/5½                 | 16/9½                 | 19/4                  | 21/8                 | 24/1                  | 26/4                  | 28/8                  |
| £98                 | 12/2                  | 14/6                  | 16/10½                | 19/5                  | 21/9½                | 24/2½                 | 26/6                  | 28/10                 |
| £98/10/-            | 12/3                  | 14/7                  | 16/11½                | 19/6                  | 21/11                | 24/4                  | 26/7½                 | 29/-                  |
| £99                 | 12/3½                 | 14/8                  | 17/0½                 | 19/7½                 | 22/-                 | 24/5½                 | 26/9                  | 29/1½                 |
| £99/10/-            | 12/4½                 | 14/9                  | 17/1½                 | 19/8½                 | 22/1½                | 24/7                  | 26/11                 | 29/3                  |
| £100                | 12/5                  | 14/10                 | 17/3                  | 19/10                 | 22/3                 | 24/8½                 | 27/0½                 | 29/5                  |
| £100/10/-           | 12/6                  | 14/11                 | 17/4                  | 19/11                 | 22/4                 | 24/10                 | 27/2                  | 29/7                  |
| £101                | 12/6½                 | 15/-                  | 17/5                  | 20/-                  | 22/5½                | 24/11½                | 27/3½                 | 29/8½                 |
| £101/10/-           | 12/7½                 | 15/0½                 | 17/6                  | 20/1                  | 22/7                 | 25/1                  | 27/5                  | 29/10                 |
| £102                | 12/8                  | 15/1½                 | 17/7                  | 20/2½                 | 22/8                 | 25/2½                 | 27/7                  | 30/-                  |
| £102/10/-           | 12/9                  | 15/2                  | 17/8                  | 20/3½                 | 22/9½                | 25/4                  | 27/8½                 | 30/2                  |
| £103                | 12/9½                 | 15/3                  | 17/9                  | 20/5                  | 22/11                | 25/5½                 | 27/10                 | 30/3½                 |

THIS TABLE IS NOT A PRICE LIST

PRICE  
PER  
SHEET

8 x 3"

CORRUGATIONS

GALVANIZED &amp; ZINCANNEAL

APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON Gauge

| Price<br>per<br>ton | 235<br>Sheets<br>5ft. | 196<br>Sheets<br>6ft. | 168<br>Sheets<br>7ft. | 147<br>Sheets<br>8ft. | 131<br>Sheets<br>9ft. | 118<br>Sheets<br>10ft. | 107<br>Sheets<br>11ft. | 98<br>Sheets<br>12ft. |
|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|-----------------------|
| £85                 | 7/3                   | 8/8                   | 10/1½                 | 11/7                  | 13/-                  | 14/5                   | 15/11                  | 17/4                  |
| £85/10/-            | 7/3½                  | 8/8½                  | 10/2                  | 11/7½                 | 13/1                  | 14/6                   | 16/-                   | 17/5½                 |
| £86                 | 7/4                   | 8/9                   | 10/3                  | 11/8½                 | 13/1½                 | 14/7                   | 16/1                   | 17/6½                 |
| £86/10/-            | 7/4½                  | 8/9½                  | 10/3½                 | 11/9                  | 13/2½                 | 14/8                   | 16/2                   | 17/8                  |
| £87                 | 7/5                   | 8/10½                 | 10/4½                 | 11/10                 | 13/3½                 | 14/9                   | 16/3                   | 17/9                  |
| £87/10/-            | 7/5½                  | 8/11                  | 10/5                  | 11/11                 | 13/4½                 | 14/10                  | 16/4½                  | 17/10½                |
| £88                 | 7/6                   | 8/11½                 | 10/6                  | 12/-                  | 13/5                  | 14/11                  | 16/5½                  | 17/11½                |
| £88/10/-            | 7/6½                  | 9/0½                  | 10/6½                 | 12/0½                 | 13/6                  | 15/-                   | 16/6½                  | 18/1                  |
| £89                 | 7/7                   | 9/1                   | 10/7                  | 12/1½                 | 13/7                  | 15/1                   | 16/7½                  | 18/2                  |
| £89/10/-            | 7/7½                  | 9/1½                  | 10/8                  | 12/2                  | 13/8                  | 15/2                   | 16/9                   | 18/3½                 |
| £90                 | 7/8                   | 9/2                   | 10/8½                 | 12/3                  | 13/9                  | 15/3                   | 16/10                  | 18/4½                 |
| £90/10/-            | 7/8½                  | 9/3                   | 10/9½                 | 12/4                  | 13/10                 | 15/4                   | 16/11                  | 18/6                  |
| £91                 | 7/9                   | 9/3½                  | 10/10                 | 12/4½                 | 13/11                 | 15/5                   | 17/-                   | 18/7                  |
| £91/10/-            | 7/9½                  | 9/4                   | 10/11                 | 12/5½                 | 14/-                  | 15/6                   | 17/1½                  | 18/8                  |
| £92                 | 7/10                  | 9/5                   | 10/11½                | 12/6                  | 14/0½                 | 15/7                   | 17/2½                  | 18/9½                 |
| £92/10/-            | 7/10½                 | 9/5½                  | 11/-                  | 12/7                  | 14/1½                 | 15/8                   | 17/3½                  | 18/10½                |
| £93                 | 7/11                  | 9/6                   | 11/1                  | 12/8                  | 14/2½                 | 15/9                   | 17/4½                  | 19/-                  |
| £93/10/-            | 7/11½                 | 9/6½                  | 11/1½                 | 12/9                  | 14/3½                 | 15/10                  | 17/5½                  | 19/1                  |
| £94                 | 8/-                   | 9/7                   | 11/2½                 | 12/9½                 | 14/4½                 | 15/11                  | 17/6½                  | 19/2½                 |
| £94/10/-            | 8/0½                  | 9/7½                  | 11/3                  | 12/10                 | 14/5                  | 16/-                   | 17/8                   | 19/3½                 |
| £95                 | 8/1                   | 9/8                   | 11/4                  | 12/11                 | 14/6                  | 16/1                   | 17/9                   | 19/5                  |
| £95/10/-            | 8/1½                  | 9/9                   | 11/4½                 | 13/-                  | 14/7                  | 16/2                   | 17/10                  | 19/6                  |
| £96                 | 8/2                   | 9/9½                  | 11/5                  | 13/1                  | 14/8                  | 16/3½                  | 17/11½                 | 19/7                  |
| £96/10/-            | 8/2½                  | 9/10                  | 11/6                  | 13/1½                 | 14/9                  | 16/4½                  | 18/0½                  | 19/8½                 |
| £97                 | 8/3                   | 9/11                  | 11/7                  | 13/2½                 | 14/10                 | 16/5½                  | 18/1½                  | 19/9½                 |
| £97/10/-            | 8/3½                  | 9/11½                 | 11/7½                 | 13/3½                 | 14/11                 | 16/6½                  | 18/3                   | 19/11                 |
| £98                 | 8/4                   | 10/-                  | 11/8                  | 13/4                  | 14/11½                | 16/7½                  | 18/4                   | 20/-                  |
| £98/10/-            | 8/4½                  | 10/0½                 | 11/9                  | 13/5                  | 15/0½                 | 16/8½                  | 18/5                   | 20/1                  |
| £99                 | 8/5                   | 10/1                  | 11/9½                 | 13/6                  | 15/1½                 | 16/9½                  | 18/6                   | 20/2½                 |
| £99/10/-            | 8/5½                  | 10/2                  | 11/10                 | 13/6½                 | 15/2½                 | 16/10½                 | 18/7                   | 20/4                  |
| £100                | 8/6                   | 10/2½                 | 11/11                 | 13/7½                 | 15/3                  | 16/11½                 | 18/8½                  | 20/5                  |
| £100/10/-           | 8/6½                  | 10/3                  | 12/-                  | 13/8                  | 15/4                  | 17/0½                  | 18/9½                  | 20/6                  |
| £101                | 8/7                   | 10/4                  | 12/0½                 | 13/9                  | 15/5                  | 17/1½                  | 18/10½                 | 20/7½                 |
| £101/10/-           | 8/7½                  | 10/4½                 | 12/1                  | 13/10                 | 15/6                  | 17/2½                  | 18/11½                 | 20/8½                 |
| £102                | 8/8                   | 10/5                  | 12/2                  | 13/10½                | 15/7                  | 17/3½                  | 19/1                   | 20/10                 |
| £102/10/-           | 8/8½                  | 10/5½                 | 12/2½                 | 13/11½                | 15/8                  | 17/4½                  | 19/2                   | 20/11                 |
| £103                | 8/9                   | 10/6                  | 12/3                  | 14/-                  | 15/9                  | 17/5½                  | 19/3                   | 21/-                  |
| £103/10/-           | 8/9½                  | 10/7                  | 12/4                  | 14/1                  | 15/10                 | 17/6½                  | 19/4                   | 21/1½                 |
| £104                | 8/10                  | 10/7½                 | 12/4½                 | 14/2                  | 15/10½                | 17/7½                  | 19/5½                  | 21/3                  |
| £104/10/-           | 8/10½                 | 10/8                  | 12/5½                 | 14/2½                 | 15/11½                | 17/8½                  | 19/6½                  | 21/4                  |
| £105                | 8/11                  | 10/8½                 | 12/6                  | 14/3½                 | 16/0½                 | 17/9½                  | 19/7½                  | 21/5                  |
| £105/10/-           | 8/11½                 | 10/9                  | 12/7                  | 14/4½                 | 16/1½                 | 17/10½                 | 19/8½                  | 21/6½                 |
| £106                | 9/-                   | 10/10                 | 12/7½                 | 14/5½                 | 16/2                  | 18/-                   | 19/10                  | 21/7½                 |
| £106/10/-           | 9/1                   | 10/10½                | 12/8                  | 14/6                  | 16/3                  | 18/1                   | 19/11                  | 21/8½                 |
| £107                | 9/1½                  | 10/11                 | 12/9                  | 14/7                  | 16/4                  | 18/2                   | 20/-                   | 21/10                 |

PRICE PER SHEET

26

THIS TABLE IS NOT A PRICE LIST



PRICE  
PER  
SHEET10 x 3" CORRUGATIONS  
GALVANIZED & ZINCANNEAL

Gauge APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON

| 20  | Price<br>per<br>ton | 86<br>Sheets<br>5ft. | 72<br>Sheets<br>6ft. | 62<br>Sheets<br>7ft. | 54<br>Sheets<br>8ft. | 48<br>Sheets<br>9ft. | 43<br>Sheets<br>10ft. | 39<br>Sheets<br>11ft. | 36<br>Sheets<br>12ft. |
|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| £78 |                     | 18/1                 | 21/8                 | 25/3                 | 28/10                | 32/6                 | 36/3½                 | 40/-                  | 43/2                  |
| £79 |                     | 18/4                 | 21/11½               | 25/7                 | 29/2½                | 32/11                | 36/9                  | 40/6                  | 43/8½                 |
| £80 |                     | 18/6½                | 22/3                 | 25/11                | 29/7                 | 33/4                 | 37/2½                 | 41/0½                 | 44/3                  |
| £81 |                     | 18/9½                | 22/6                 | 26/2½                | 29/11                | 33/9                 | 37/8                  | 41/6½                 | 44/9½                 |
| £82 |                     | 19/-                 | 22/9½                | 26/6½                | 30/3½                | 34/2                 | 38/2                  | 42/0½                 | 45/4                  |
| £83 |                     | 19/3                 | 23/0½                | 26/10½               | 30/8                 | 34/7                 | 38/7½                 | 42/7                  | 45/11                 |
| £84 |                     | 19/6                 | 23/4                 | 27/2½                | 31/0½                | 35/-                 | 39/1                  | 43/1                  | 46/5½                 |
| £85 |                     | 19/8½                | 23/7½                | 27/6                 | 31/5                 | 35/5                 | 39/6½                 | 43/7                  | 47/-                  |
| £86 |                     | 19/11½               | 23/10½               | 27/10                | 31/9½                | 35/10                | 40/-                  | 44/1½                 | 47/7                  |
| £87 |                     | 20/3                 | 24/2                 | 28/1                 | 32/3                 | 36/3                 | 40/6                  | 44/7½                 | 48/4                  |
| £88 |                     | 20/5½                | 24/5½                | 28/5                 | 32/7                 | 36/8                 | 40/11                 | 45/1½                 | 48/10½                |
| £89 |                     | 20/8½                | 24/9                 | 28/8½                | 32/11½               | 37/1                 | 41/5                  | 45/8                  | 49/5½                 |
| £90 |                     | 20/11                | 25/-                 | 29/0½                | 33/4                 | 37/6                 | 41/10½                | 46/2                  | 50/-                  |
| £91 |                     | 21/2                 | 25/3½                | 29/4½                | 33/8½                | 37/11                | 42/4                  | 46/8                  | 50/7                  |
| £92 |                     | 21/5                 | 25/7                 | 29/8                 | 34/1                 | 38/4                 | 42/9½                 | 47/2                  | 51/1½                 |
| £93 |                     | 21/7½                | 25/10                | 30/-                 | 34/5½                | 38/9                 | 43/3                  | 47/8½                 | 51/8                  |
| £94 |                     | 21/10½               | 26/1½                | 30/4                 | 34/10                | 39/2                 | 43/9                  | 48/3                  | 52/3                  |
| £95 |                     | 22/1                 | 26/5                 | 30/8                 | 35/2                 | 39/7                 | 44/2½                 | 48/9                  | 52/9½                 |
| £96 |                     | 22/4                 | 26/8                 | 31/-                 | 35/7                 | 40/-                 | 44/8                  | 49/3                  | 53/4                  |

Gauge

| 22  | Price<br>per<br>ton | 106<br>Sheets<br>5ft. | 89<br>Sheets<br>6ft. | 76<br>Sheets<br>7ft. | 67<br>Sheets<br>8ft. | 59<br>Sheets<br>9ft. | 54<br>Sheets<br>10ft. | 49<br>Sheets<br>11ft. | 45<br>Sheets<br>12ft. |
|-----|---------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| £80 |                     | 15/-                  | 18/-                 | 20/11½               | 23/11                | 27/1½                | 29/7½                 | 32/8                  | 35/7                  |
| £81 |                     | 15/2½                 | 18/2½                | 21/3                 | 24/2                 | 27/5½                | 30/-                  | 33/1                  | 36/-                  |
| £82 |                     | 15/5                  | 18/5                 | 21/6                 | 24/6                 | 27/9½                | 30/4½                 | 33/6                  | 36/5½                 |
| £83 |                     | 15/7                  | 18/8                 | 21/9                 | 24/9½                | 28/2                 | 30/9                  | 33/10½                | 36/11                 |
| £84 |                     | 15/9½                 | 18/10½               | 22/-                 | 25/1                 | 28/6                 | 31/1½                 | 34/3½                 | 37/4                  |
| £85 |                     | 15/11½                | 19/1                 | 22/3½                | 25/4½                | 28/10                | 31/6                  | 34/8½                 | 37/9½                 |
| £86 |                     | 16/2                  | 19/4                 | 22/6½                | 25/8                 | 29/2                 | 31/10                 | 35/1                  | 38/3                  |
| £87 |                     | 16/4                  | 19/7                 | 22/10                | 26/-                 | 29/6                 | 32/3                  | 35/6                  | 38/8                  |
| £88 |                     | 16/6                  | 19/9½                | 23/1                 | 26/3½                | 29/10                | 32/7                  | 35/11                 | 39/1½                 |
| £89 |                     | 16/8½                 | 20/-                 | 23/4                 | 26/7                 | 30/2                 | 32/11½                | 36/4                  | 39/7                  |
| £90 |                     | 16/11                 | 20/3                 | 23/7                 | 26/10½               | 30/6                 | 33/4                  | 36/9                  | 40/-                  |
| £91 |                     | 17/2                  | 20/5½                | 23/11½               | 27/2                 | 30/10                | 33/8½                 | 37/2                  | 40/5½                 |
| £92 |                     | 17/4½                 | 20/8                 | 24/2½                | 27/5½                | 31/2½                | 34/1                  | 37/7                  | 40/11                 |
| £93 |                     | 17/6½                 | 20/11                | 24/6                 | 27/9½                | 31/6½                | 34/5½                 | 37/11½                | 41/4                  |
| £94 |                     | 17/9                  | 21/1½                | 24/9                 | 28/1                 | 31/10½               | 34/10                 | 38/4½                 | 41/9½                 |
| £95 |                     | 17/11                 | 21/4                 | 25/-                 | 28/4½                | 32/2½                | 35/2                  | 38/9½                 | 42/3                  |
| £96 |                     | 18/1½                 | 21/7                 | 25/3                 | 28/8                 | 32/6½                | 35/7                  | 39/2½                 | 42/8                  |
| £97 |                     | 18/4                  | 21/9½                | 25/6½                | 28/11½               | 32/11                | 35/11                 | 39/7                  | 43/1½                 |
| £98 |                     | 18/6                  | 22/0½                | 25/9½                | 29/3                 | 33/3                 | 36/3½                 | 40/-                  | 43/7                  |

THIS TABLE IS NOT A PRICE LIST

PRICE  
PER  
SHEET

10 x 3"

CORRUGATIONS

GALVANIZED &amp; ZINCANNEAL

APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON Gauge

| Price<br>per<br>ton | 132<br>Sheets<br>5ft. | 110<br>Sheets<br>6ft. | 94<br>Sheets<br>7ft. | 83<br>Sheets<br>8ft. | 73<br>Sheets<br>9ft. | 66<br>Sheets<br>10ft. | 60<br>Sheets<br>11ft. | 55<br>Sheets<br>12ft. |
|---------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| £81                 | 12/3½                 | 14/9                  | 17/3                 | 19/6                 | 22/2½                | 24/6½                 | 27/-                  | 29/5½                 |
| £81/10/-            | 12/4                  | 14/10                 | 17/4                 | 19/7½                | 22/4                 | 24/8½                 | 27/2                  | 29/8                  |
| £82                 | 12/5                  | 14/11                 | 17/5½                | 19/9                 | 22/5½                | 24/10                 | 27/4                  | 29/10                 |
| £82/10/-            | 12/6                  | 15/-                  | 17/6½                | 19/10½               | 22/7½                | 25/-                  | 27/6                  | 30/-                  |
| £83                 | 12/7                  | 15/1                  | 17/8                 | 20/-                 | 22/9                 | 25/2                  | 27/8                  | 30/2                  |
| £83/10/-            | 12/8                  | 15/2                  | 17/9½                | 20/1½                | 22/10½               | 25/4                  | 27/10                 | 30/4½                 |
| £84                 | 12/9                  | 15/3½                 | 17/10½               | 20/3                 | 23/-                 | 25/5½                 | 28/-                  | 30/6½                 |
| £84/10/-            | 12/10                 | 15/4½                 | 18/-                 | 20/4½                | 23/2                 | 25/7½                 | 28/2                  | 30/9                  |
| £85                 | 12/10½                | 15/5½                 | 18/1                 | 20/6                 | 23/3½                | 25/9                  | 28/4                  | 30/11                 |
| £85/10/-            | 12/11½                | 15/6½                 | 18/2½                | 20/7½                | 23/5                 | 25/11                 | 28/6                  | 31/1                  |
| £86                 | 13/0½                 | 15/8                  | 18/3½                | 20/9                 | 23/7                 | 26/1                  | 28/8                  | 31/3½                 |
| £86/10/-            | 13/1½                 | 15/9                  | 18/5                 | 20/10                | 23/8½                | 26/2½                 | 28/10                 | 31/5½                 |
| £87                 | 13/2                  | 15/10                 | 18/6                 | 20/11½               | 23/10                | 26/4½                 | 29/-                  | 31/8                  |
| £87/10/-            | 13/3                  | 15/11                 | 18/7½                | 21/1                 | 24/-                 | 26/6                  | 29/2                  | 31/10                 |
| £88                 | 13/4                  | 16/-                  | 18/9                 | 21/2½                | 24/1½                | 26/8                  | 29/4                  | 32/-                  |
| £88/10/-            | 13/5                  | 16/1                  | 18/10                | 21/4                 | 24/3                 | 26/10                 | 29/6                  | 32/2                  |
| £89                 | 13/6                  | 16/2½                 | 18/11½               | 21/5½                | 24/5                 | 27/-                  | 29/8                  | 32/4½                 |
| £89/10/-            | 13/7                  | 16/3½                 | 19/0½                | 21/7                 | 24/6½                | 27/1½                 | 29/10                 | 32/6½                 |
| £90                 | 13/8                  | 16/4½                 | 19/2                 | 21/8½                | 24/8                 | 27/3½                 | 30/-                  | 32/9                  |
| £90/10/-            | 13/8½                 | 16/5½                 | 19/3                 | 21/10                | 24/9½                | 27/5                  | 30/2                  | 32/11                 |
| £91                 | 13/9½                 | 16/6½                 | 19/4½                | 21/11                | 24/11                | 27/7                  | 30/4                  | 33/1                  |
| £91/10/-            | 13/10½                | 16/8                  | 19/6                 | 22/0½                | 25/1                 | 27/9                  | 30/6                  | 33/3½                 |
| £92                 | 13/11½                | 16/9                  | 19/7                 | 22/2                 | 25/2½                | 27/10½                | 30/8                  | 33/5½                 |
| £92/10/-            | 14/-                  | 16/10                 | 19/8                 | 22/3½                | 25/4                 | 28/0½                 | 30/10                 | 33/8                  |
| £93                 | 14/1                  | 16/11                 | 19/9½                | 22/5                 | 25/6                 | 28/2                  | 31/0                  | 33/10                 |
| £93/10/-            | 14/2                  | 17/-                  | 19/11                | 22/6½                | 25/7½                | 28/4                  | 31/2                  | 34/-                  |
| £94                 | 14/3                  | 17/1                  | 20/-                 | 22/8                 | 25/9                 | 28/6                  | 31/4                  | 34/2                  |
| £94/10/-            | 14/4                  | 17/2                  | 20/1½                | 22/9½                | 25/11                | 28/8                  | 31/6                  | 34/4½                 |
| £95                 | 14/5                  | 17/3½                 | 20/2½                | 22/11                | 26/0½                | 28/9½                 | 31/8                  | 34/6½                 |
| £95/10/-            | 14/6                  | 17/4½                 | 20/4                 | 23/-                 | 26/2                 | 28/11½                | 31/10                 | 34/9                  |
| £96                 | 14/7                  | 17/5½                 | 20/5                 | 23/2                 | 26/4                 | 29/1                  | 32/-                  | 34/11                 |
| £96/10/-            | 14/7½                 | 17/6½                 | 20/6½                | 23/3                 | 26/5½                | 29/3                  | 32/2                  | 35/1                  |
| £97                 | 14/8½                 | 17/8                  | 20/8                 | 23/4½                | 26/7                 | 29/5                  | 32/4                  | 35/3½                 |
| £97/10/-            | 14/9½                 | 17/9                  | 20/9                 | 23/6½                | 26/8½                | 29/7                  | 32/6                  | 35/6                  |
| £98                 | 14/10                 | 17/10                 | 20/10                | 23/7½                | 26/10½               | 29/8½                 | 32/8                  | 35/8                  |
| £98/10/-            | 14/11                 | 17/11                 | 20/11½               | 23/9                 | 27/-                 | 29/10                 | 32/10                 | 35/10                 |
| £99                 | 15/-                  | 18/-                  | 21/1                 | 23/10½               | 27/1½                | 30/-                  | 33/-                  | 36/-                  |
| £99/10/-            | 15/1                  | 18/1                  | 21/2                 | 24/-                 | 27/3½                | 30/2                  | 33/2                  | 36/2                  |
| £100                | 15/2                  | 18/2                  | 21/3½                | 24/1                 | 27/5                 | 30/4                  | 33/4                  | 36/4½                 |
| £100/10/-           | 15/3                  | 18/3½                 | 21/5                 | 24/2½                | 27/6½                | 30/5½                 | 33/6                  | 36/6½                 |
| £101                | 15/4                  | 18/4½                 | 21/6                 | 24/4                 | 27/8                 | 30/7½                 | 33/8                  | 36/9                  |
| £101/10/-           | 15/5                  | 18/5½                 | 21/7                 | 24/5½                | 27/10                | 30/9                  | 32/10                 | 36/11                 |
| £102                | 15/5½                 | 18/6½                 | 21/8½                | 24/7                 | 27/11½               | 30/11                 | 34/-                  | 37/1                  |
| £102/10/-           | 15/6½                 | 18/8                  | 21/10                | 24/8½                | 28/1                 | 31/1                  | 34/2                  | 37/3½                 |
| £103                | 15/7½                 | 18/9                  | 21/11                | 24/10                | 28/3                 | 32/0½                 | 34/4                  | 37/5½                 |

24

PRICE PER SHEET

THIS TABLE IS NOT A PRICE LIST

PRICE  
PER  
SHEET

10 x 3"

CORRUGATIONS

GALVANIZED &amp; ZINCANNEAL

Gauge APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON

| 26        | Price<br>per<br>ton | 193<br>Sheets<br>5ft. | 161<br>Sheets<br>6ft. | 138<br>Sheets<br>7ft. | 120<br>Sheets<br>8ft. | 107<br>Sheets<br>9ft. | 96<br>Sheets<br>10ft. | 88<br>Sheets<br>11ft. | 80<br>Sheets<br>12ft. |
|-----------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| £85       | 8/10                | 10/7                  | 12/4                  | 14/2                  | 15/11                 | 17/8½                 | 19/4                  | 21/3                  |                       |
| £85/10/-  | 8/10½               | 10/7½                 | 12/5                  | 14/3                  | 16/-                  | 17/10                 | 19/5                  | 21/4½                 |                       |
| £86       | 8/11                | 10/8                  | 12/6                  | 14/4                  | 16/1                  | 17/11                 | 19/6½                 | 21/6                  |                       |
| £86/10/-  | 8/11½               | 10/9                  | 12/7                  | 14/5                  | 16/2                  | 18/-                  | 19/8                  | 21/7½                 |                       |
| £87       | 9/-                 | 10/10                 | 12/8                  | 14/6                  | 16/3                  | 18/1½                 | 19/9½                 | 21/9                  |                       |
| £87/10/-  | 9/1                 | 10/10½                | 12/8½                 | 14/7                  | 16/4                  | 18/3                  | 19/10½                | 21/10½                |                       |
| £88       | 9/1½                | 10/11                 | 12/9½                 | 14/8                  | 16/5½                 | 18/4                  | 20/-                  | 22/-                  |                       |
| £88/10/-  | 9/2                 | 11/-                  | 12/10½                | 14/9                  | 16/6½                 | 18/5½                 | 20/1½                 | 22/1½                 |                       |
| £89       | 9/3                 | 11/1                  | 12/11                 | 14/10                 | 16/7½                 | 18/6½                 | 20/3                  | 22/3                  |                       |
| £89/10/-  | 9/3½                | 11/1½                 | 13/-                  | 14/11                 | 16/9                  | 18/8                  | 20/4                  | 22/4½                 |                       |
| £90       | 9/4                 | 11/2                  | 13/1                  | 15/-                  | 16/10                 | 18/9                  | 20/5½                 | 22/6                  |                       |
| £90/10/-  | 9/4½                | 11/3                  | 13/2                  | 15/1                  | 16/11                 | 18/10½                | 20/7                  | 22/7½                 |                       |
| £91       | 9/5                 | 11/4                  | 13/3                  | 15/2                  | 17/-                  | 18/11½                | 20/8                  | 22/9                  |                       |
| £91/10/-  | 9/6                 | 11/4½                 | 13/3½                 | 15/3                  | 17/1                  | 19/1                  | 20/9½                 | 22/10½                |                       |
| £92       | 9/6½                | 11/6                  | 13/4½                 | 15/4                  | 17/2½                 | 19/2                  | 20/11                 | 23/-                  |                       |
| £92/10/-  | 9/7                 | 11/6½                 | 13/5                  | 15/5                  | 17/3½                 | 19/3½                 | 21/0½                 | 23/1½                 |                       |
| £93       | 9/8                 | 11/7                  | 13/6                  | 15/6                  | 17/4½                 | 19/4½                 | 21/2                  | 23/3                  |                       |
| £93/10/-  | 9/8½                | 11/7½                 | 13/6½                 | 15/7                  | 17/6                  | 19/6                  | 21/3                  | 23/4½                 |                       |
| £94       | 9/9                 | 11/8                  | 13/7½                 | 15/8                  | 17/7                  | 19/7                  | 21/4½                 | 23/6                  |                       |
| £94/10/-  | 9/9½                | 11/9                  | 13/8½                 | 15/9                  | 17/8                  | 19/8½                 | 21/6                  | 23/7½                 |                       |
| £95       | 9/10                | 11/10                 | 13/9                  | 15/10                 | 17/9                  | 19/9½                 | 21/7                  | 23/9                  |                       |
| £95/10/-  | 9/11                | 11/10½                | 13/10                 | 15/11                 | 17/10                 | 19/11                 | 21/8½                 | 23/10½                |                       |
| £96       | 9/11½               | 11/11                 | 13/11                 | 16/-                  | 17/11½                | 20/-                  | 21/10                 | 24/-                  |                       |
| £96/10/-  | 10/-                | 12/-                  | 14/-                  | 16/1                  | 18/0½                 | 20/1½                 | 21/11                 | 24/1½                 |                       |
| £97       | 10/1                | 12/0½                 | 14/1                  | 16/2                  | 18/1½                 | 20/2½                 | 22/0½                 | 24/3                  |                       |
| £97/10/-  | 10/1½               | 12/1½                 | 14/1½                 | 16/3                  | 18/3                  | 20/4                  | 22/2                  | 24/4½                 |                       |
| £98       | 10/2                | 12/2                  | 14/2½                 | 16/4                  | 18/4                  | 20/5                  | 22/3½                 | 24/6                  |                       |
| £98/10/-  | 10/2½               | 12/3                  | 14/3½                 | 16/5                  | 18/5                  | 20/6½                 | 22/5                  | 24/7½                 |                       |
| £99       | 10/3                | 12/3½                 | 14/4½                 | 16/6                  | 18/6                  | 20/7½                 | 22/6                  | 24/9                  |                       |
| £99/10/-  | 10/4                | 12/4½                 | 14/5                  | 16/7                  | 18/7½                 | 20/9                  | 22/7½                 | 24/10½                |                       |
| £100      | 10/4½               | 12/5                  | 14/6                  | 16/8                  | 18/8½                 | 20/10                 | 22/9                  | 25/-                  |                       |
| £100/10/- | 10/5                | 12/6                  | 14/7                  | 16/9                  | 18/9½                 | 20/11½                | 22/10                 | 25/1½                 |                       |
| £101      | 10/5½               | 12/6½                 | 14/8                  | 16/10                 | 18/10½                | 21/0½                 | 22/11½                | 25/3                  |                       |
| £101/10/- | 10/6                | 12/7½                 | 14/8½                 | 16/11                 | 19/-                  | 21/2                  | 23/1                  | 25/4½                 |                       |
| £102      | 10/7                | 12/8                  | 14/9½                 | 17/-                  | 19/1                  | 21/3                  | 23/2                  | 25/6                  |                       |
| £102/10/- | 10/7½               | 12/9                  | 14/10½                | 17/1                  | 19/2                  | 21/4½                 | 23/3½                 | 25/7½                 |                       |
| £103      | 10/8                | 12/9½                 | 14/11                 | 17/2                  | 19/3                  | 21/5½                 | 23/5                  | 25/9                  |                       |
| £103/10/- | 10/9                | 12/10½                | 15/-                  | 17/3                  | 19/4                  | 21/7                  | 23/6½                 | 25/10½                |                       |
| £104      | 10/9½               | 12/11                 | 15/1                  | 17/4                  | 19/5½                 | 21/8                  | 23/8                  | 26/-                  |                       |
| £104/10/- | 10/10               | 13/-                  | 15/2                  | 17/5                  | 19/6½                 | 21/9½                 | 23/9                  | 26/1½                 |                       |
| £105      | 10/10½              | 13/0½                 | 15/2½                 | 17/6                  | 19/7½                 | 21/10½                | 23/10½                | 26/3                  |                       |
| £105/10/- | 10/11               | 13/1½                 | 15/3½                 | 17/7                  | 19/8½                 | 22/-                  | 24/-                  | 26/4½                 |                       |
| £106      | 11/-                | 13/2                  | 15/4½                 | 17/8                  | 19/10                 | 22/1                  | 24/1                  | 26/6                  |                       |
| £106/10/- | 11/0½               | 13/3                  | 15/5                  | 17/9                  | 19/11                 | 22/2½                 | 24/2½                 | 26/7½                 |                       |
| £107      | 11/1                | 13/3½                 | 15/6                  | 17/10                 | 20/-                  | 22/3½                 | 24/4                  | 26/9                  |                       |

THIS TABLE IS NOT A PRICE LIST



PRICE  
PER  
SHEET

FLAT

GALVANIZED &  
ZINCANNEAL

APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON Gauge

| Price<br>per<br>ton | 6' Lengths           |                     |                     |                     | 8' Lengths          |                     |                     |                     |
|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                     | 110<br>Sheets<br>24" | 89<br>Sheets<br>30" | 74<br>Sheets<br>36" | 55<br>Sheets<br>48" | 83<br>Sheets<br>24" | 67<br>Sheets<br>30" | 55<br>Sheets<br>36" | 42<br>Sheets<br>48" |
| £79                 | 14/4½                | 17/9                | 21/4                | 28/9                | 19/0½               | 23/7                | 28/9                | 37/7½               |
| £79/10/-            | 14/5½                | 17/10               | 21/6                | 28/11               | 19/2                | 23/9                | 28/11               | 37/10½              |
| £80                 | 14/6½                | 18/-                | 21/7½               | 29/1                | 19/3½               | 23/10½              | 29/1                | 38/1                |
| £80/10/-            | 14/7½                | 18/1                | 21/9                | 29/3½               | 19/5                | 24/0½               | 29/3½               | 38/4                |
| £81                 | 14/9                 | 18/2½               | 21/11               | 29/5½               | 19/6                | 24/2                | 29/5½               | 38/7                |
| £81/10/-            | 14/10                | 18/4                | 22/0½               | 29/8                | 19/8                | 24/4                | 29/8                | 38/10               |
| £82                 | 14/11                | 18/5½               | 22/2                | 29/10               | 19/9                | 24/6                | 29/10               | 39/0½               |
| £82/10/-            | 15/-                 | 18/6½               | 22/3½               | 30/-                | 19/10½              | 24/7½               | 30/-                | 39/3½               |
| £83                 | 15/1                 | 18/8                | 22/5½               | 30/2                | 20/-                | 24/9½               | 30/2                | 39/6½               |
| £83/10/-            | 15/2                 | 18/9½               | 22/7                | 30/4½               | 20/1½               | 24/11½              | 30/4½               | 39/9                |
| £84                 | 15/3½                | 18/10½              | 22/8½               | 30/6½               | 20/3                | 25/1                | 30/6½               | 40/-                |
| £84/10/-            | 15/4½                | 19/-                | 22/10               | 30/9                | 20/4½               | 25/3                | 30/9                | 40/3                |
| £85                 | 15/5½                | 19/1½               | 23/-                | 30/11               | 20/6                | 25/4½               | 30/11               | 40/6                |
| £85/10/-            | 15/6½                | 19/2½               | 23/1½               | 31/1                | 20/7½               | 25/6½               | 31/1                | 40/8½               |
| £86                 | 15/8                 | 19/4                | 23/3                | 31/3½               | 20/9                | 25/8                | 31/3½               | 40/11½              |
| £86/10/-            | 15/9                 | 19/5½               | 23/4½               | 31/5½               | 20/10               | 25/10               | 31/5½               | 41/2½               |
| £87                 | 15/10                | 19/6½               | 23/6                | 31/8                | 20/11½              | 26/-                | 31/8                | 41/5                |
| £87/10/-            | 15/11                | 19/8                | 23/8                | 31/10               | 21/1                | 26/1½               | 31/10               | 41/8                |
| £88                 | 16/-                 | 19/9½               | 23/9½               | 32/-                | 21/2½               | 26/3½               | 32/-                | 41/11               |
| £88/10/-            | 16/1                 | 19/11               | 23/11               | 32/2                | 21/4                | 26/5                | 32/2                | 42/2                |
| £89                 | 16/2½                | 20/-                | 24/1                | 32/4½               | 21/5½               | 26/7                | 32/4½               | 42/3                |
| £89/10/-            | 16/3½                | 20/1½               | 24/2½               | 32/7                | 21/7                | 26/8½               | 32/7                | 42/7½               |
| £90                 | 16/4½                | 20/3                | 24/4                | 32/9                | 21/8½               | 26/10½              | 32/9                | 42/10½              |
| £90/10/-            | 16/5½                | 20/4                | 24/5½               | 32/11               | 21/10               | 27/-                | 32/11               | 43/1                |
| £91                 | 16/6½                | 20/5½               | 24/7                | 33/1                | 21/11               | 27/2                | 33/1                | 43/4                |
| £91/10/-            | 16/8                 | 20/7                | 24/9                | 33/3½               | 22/1                | 27/4                | 33/3½               | 43/7                |
| £92                 | 16/9                 | 20/8                | 24/10½              | 33/5½               | 22/2                | 27/5½               | 33/5½               | 43/10               |
| £92/10/-            | 16/10                | 20/9½               | 25/-                | 33/8                | 22/3½               | 27/7½               | 33/8                | 44/0½               |
| £93                 | 16/11                | 20/11               | 25/1½               | 33/10               | 22/5                | 27/9                | 33/10               | 44/3½               |
| £93/10/-            | 17/-                 | 21/-                | 25/3½               | 34/-                | 22/6½               | 27/11               | 34/-                | 44/6½               |
| £94                 | 17/1                 | 21/1½               | 25/5                | 34/2½               | 22/8                | 28/1                | 34/2½               | 44/9½               |
| £94/10/-            | 17/2                 | 21/3                | 25/6½               | 34/4½               | 22/9½               | 28/2½               | 34/4½               | 45/-                |
| £95                 | 17/3½                | 21/4½               | 25/8                | 34/7                | 22/11               | 28/4½               | 34/7                | 45/3                |
| £95/10/-            | 17/4½                | 21/5½               | 25/10               | 34/9                | 23/-                | 28/6                | 34/9                | 45/6                |
| £96                 | 17/5½                | 21/7                | 25/11½              | 34/11               | 23/1½               | 28/8                | 34/11               | 45/8½               |
| £96/10/-            | 17/6½                | 21/8½               | 26/1                | 35/1                | 23/3                | 28/10               | 35/1                | 45/11½              |
| £97                 | 17/8                 | 21/9½               | 26/2½               | 35/3½               | 23/4½               | 28/11½              | 35/3½               | 46/2½               |
| £97/10/-            | 17/9                 | 21/11               | 26/4½               | 35/5½               | 23/6                | 29/1                | 35/5½               | 46/5                |
| £98                 | 17/10                | 22/0½               | 26/6                | 35/8                | 23/7½               | 29/3                | 35/8                | 46/8                |
| £98/10/-            | 17/11                | 22/2                | 26/7½               | 35/10               | 23/9                | 29/5                | 35/10               | 46/11               |
| £99                 | 18/-                 | 22/3                | 26/9                | 36/-                | 23/10½              | 29/6½               | 36/-                | 47/2                |
| £99/10/-            | 18/1                 | 22/4½               | 26/11               | 36/2                | 24/-                | 29/8½               | 36/2                | 47/4½               |
| £100                | 18/2                 | 22/6                | 27/0½               | 36/4½               | 24/1                | 29/10½              | 36/4½               | 47/7½               |

THIS TABLE IS NOT A PRICE LIST

20

PRICE PER SHEET

PRICE  
PER  
SHEET

FLAT

GALVANIZED &  
ZINCANNEAL

Gauge APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON

22

| Price<br>per<br>ton | 6' Lengths           |                      |                     |                     | 8' Lengths           |                     |                     |                     |
|---------------------|----------------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|
|                     | 138<br>Sheets<br>24" | 110<br>Sheets<br>30" | 92<br>Sheets<br>36" | 69<br>Sheets<br>48" | 103<br>Sheets<br>24" | 83<br>Sheets<br>30" | 69<br>Sheets<br>36" | 52<br>Sheets<br>48" |
| £81                 | 11/9½                | 14/9                 | 17/7½               | 23/6                | 15/9                 | 19/6                | 23/6                | 31/2                |
| £81/10/-            | 11/10                | 14/10                | 17/9                | 23/7½               | 15/10                | 19/7½               | 23/7½               | 31/4½               |
| £82                 | 11/11                | 14/11                | 17/10               | 23/9                | 15/11                | 19/9                | 23/9                | 31/6½               |
| £82/10/-            | 12/-                 | 15/-                 | 17/11½              | 23/11               | 16/0½                | 19/10½              | 23/11               | 31/9                |
| £83                 | 12/1                 | 15/1                 | 18/1                | 24/1                | 16/1½                | 20/-                | 24/1                | 31/11               |
| £83/10/-            | 12/1½                | 15/2                 | 18/2                | 24/2½               | 16/2½                | 20/1½               | 24/2½               | 32/1½               |
| £84                 | 12/2½                | 15/3½                | 18/3½               | 24/4                | 16/4                 | 20/3                | 24/4                | 32/4                |
| £84/10/-            | 12/3½                | 15/4½                | 18/4½               | 24/6                | 16/5                 | 20/4½               | 24/6                | 32/6                |
| £85                 | 12/4½                | 15/5½                | 18/6                | 24/8                | 16/6                 | 20/6                | 24/8                | 32/8½               |
| £85/10/-            | 12/5                 | 15/6½                | 18/7                | 24/9½               | 16/7                 | 20/7½               | 24/9½               | 32/11               |
| £86                 | 12/6                 | 15/7½                | 18/8½               | 24/11               | 16/8½                | 20/9                | 24/11               | 33/1                |
| £86/10/-            | 12/7                 | 15/8½                | 18/10               | 25/1                | 16/9½                | 20/10               | 25/1                | 33/3½               |
| £87                 | 12/8                 | 15/10                | 18/11               | 25/3                | 16/11                | 20/11½              | 25/3                | 33/5½               |
| £87/10/-            | 12/8½                | 15/11                | 19/0½               | 25/4½               | 17/-                 | 21/1                | 25/4½               | 33/8                |
| £88                 | 12/9½                | 16/-                 | 19/2                | 25/6                | 17/1                 | 21/2½               | 25/6                | 33/10               |
| £88/10/-            | 12/10½               | 16/1                 | 19/3                | 25/8                | 17/2                 | 21/4                | 25/8                | 34/0½               |
| £89                 | 12/11                | 16/2                 | 19/4½               | 25/9½               | 17/3½                | 21/5½               | 25/9½               | 34/3                |
| £89/10/-            | 13/-                 | 16/3                 | 19/6                | 25/11½              | 17/4½                | 21/7                | 25/11½              | 34/5                |
| £90                 | 13/1                 | 16/4½                | 19/7                | 26/1                | 17/6                 | 21/8½               | 26/1                | 34/7½               |
| £90/10/-            | 13/2                 | 16/5½                | 19/8½               | 26/3                | 17/7                 | 21/10               | 26/3                | 34/10               |
| £91                 | 13/2½                | 16/6½                | 19/9½               | 26/4½               | 17/8                 | 21/11               | 26/4½               | 35/-                |
| £91/10/-            | 13/3                 | 16/7½                | 19/11               | 26/6½               | 17/9½                | 22/0½               | 26/6½               | 35/2½               |
| £92                 | 13/4                 | 16/9                 | 20/-                | 26/8                | 17/10½               | 22/2                | 26/8                | 35/5                |
| £92/10/-            | 13/5                 | 16/10                | 20/1½               | 26/10               | 17/11½               | 22/3½               | 26/10               | 35/7                |
| £93                 | 13/6                 | 16/11                | 20/2½               | 26/11½              | 18/1                 | 22/5                | 26/11½              | 35/9                |
| £93/10/-            | 13/7                 | 17/-                 | 20/4                | 27/1                | 18/2                 | 22/6½               | 27/1                | 35/11½              |
| £94                 | 13/7½                | 17/1                 | 20/5                | 27/3                | 18/3                 | 22/8                | 27/3                | 36/2                |
| £94/10/-            | 13/8½                | 17/2                 | 20/6½               | 27/5                | 18/4                 | 22/9½               | 27/5                | 36/4                |
| £95                 | 13/9                 | 17/3½                | 20/8                | 27/6½               | 18/5½                | 22/11               | 27/6½               | 36/6½               |
| £95/10/-            | 13/10                | 17/4½                | 20/9½               | 27/8                | 18/6½                | 23/-                | 27/8                | 36/9                |
| £96                 | 13/11                | 17/5½                | 20/10½              | 27/10               | 18/8                 | 23/1½               | 27/10               | 36/11               |
| £96/10/-            | 14/-                 | 17/6½                | 21/-                | 28/-                | 18/9                 | 23/3                | 28/-                | 37/1½               |
| £97                 | 14/1                 | 17/7½                | 21/1                | 28/1½               | 18/10                | 23/4½               | 28/1½               | 37/4                |
| £97/10/-            | 14/1½                | 17/9                 | 21/2½               | 28/3½               | 18/11½               | 23/6                | 28/3½               | 37/6                |
| £98                 | 14/2½                | 17/10                | 21/4                | 28/5                | 19/0½                | 23/7½               | 28/5                | 37/8½               |
| £98/10/-            | 14/3½                | 17/11                | 21/5                | 28/6½               | 19/1½                | 23/9                | 28/6½               | 37/11               |
| £99                 | 14/4                 | 18/-                 | 21/6½               | 28/8½               | 19/3                 | 23/10½              | 28/8½               | 38/1                |
| £99/10/-            | 14/5                 | 18/1                 | 21/7½               | 28/10               | 19/4                 | 24/-                | 28/10               | 38/3½               |
| £100                | 14/6                 | 18/2½                | 21/9                | 29/-                | 19/5                 | 24/1                | 29/-                | 38/5½               |
| £100/10/-           | 14/7                 | 18/3½                | 21/10               | 29/1½               | 19/6                 | 24/2½               | 29/1½               | 38/8                |
| £101                | 14/8                 | 18/4½                | 21/11½              | 29/3½               | 19/7½                | 24/4                | 29/3½               | 38/10               |
| £101/10/-           | 14/8½                | 18/5½                | 22/1                | 29/5                | 19/8½                | 24/5½               | 29/5                | 39/0½               |
| £102                | 14/9½                | 18/6½                | 22/2                | 29/7                | 19/10                | 24/7                | 29/7                | 39/3                |

THIS TABLE IS NOT A PRICE LIST

PRICE  
PER  
SHEET

FLAT

GALVANIZED &  
ZINCANNEAL

APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON Gauge

| Price<br>per<br>ton | 6' Lengths           |                      |                      |                     | 8' Lengths           |                      |                     |                     |
|---------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|---------------------|---------------------|
|                     | 172<br>Sheets<br>24" | 137<br>Sheets<br>30" | 115<br>Sheets<br>36" | 86<br>Sheets<br>48" | 129<br>Sheets<br>24" | 103<br>Sheets<br>30" | 86<br>Sheets<br>36" | 65<br>Sheets<br>48" |
| £81                 | 9/5½                 | 11/10                | 14/1                 | 18/10               | 12/7                 | 15/9                 | 18/10               | 24/11               |
| £81/10/-            | 9/6                  | 11/11                | 14/2                 | 18/11½              | 12/7½                | 15/10                | 18/11½              | 25/1                |
| £82                 | 9/7                  | 12/-                 | 14/3                 | 19/1                | 12/8½                | 15/11                | 19/1                | 25/3                |
| £82/10/-            | 9/7½                 | 12/0½                | 14/4                 | 19/2                | 12/9½                | 16/-                 | 19/2                | 25/5                |
| £83                 | 9/8                  | 12/1½                | 14/5½                | 19/4                | 12/10½               | 16/1½                | 19/4                | 25/6½               |
| £83/10/-            | 9/9                  | 12/2½                | 14/6½                | 19/5                | 12/11½               | 16/2½                | 19/5                | 25/8½               |
| £84                 | 9/9½                 | 12/3                 | 14/7½                | 19/6½               | 13/1½                | 16/4                 | 19/6½               | 25/10               |
| £84/10/-            | 9/10                 | 12/4                 | 14/8½                | 19/8                | 13/2½                | 16/5                 | 19/8                | 26/-                |
| £85                 | 9/11                 | 12/5                 | 14/9½                | 19/9½               | 13/2                 | 16/6                 | 19/9½               | 26/2                |
| £85/10/-            | 10/-                 | 12/6                 | 14/10½               | 19/10½              | 13/3                 | 16/7½                | 19/10½              | 26/4                |
| £86                 | 10/0½                | 12/7                 | 14/11½               | 20/-                | 13/4                 | 16/8½                | 20/-                | 26/5½               |
| £86/10/-            | 10/1                 | 12/7½                | 15/0½                | 20/1½               | 13/5                 | 16/9½                | 20/1½               | 26/7½               |
| £87                 | 10/2                 | 12/8½                | 15/1½                | 20/3                | 13/6                 | 16/11                | 20/3                | 26/9                |
| £87/10/-            | 10/2½                | 12/9½                | 15/2½                | 20/4                | 13/7                 | 17/-                 | 20/4                | 26/11               |
| £88                 | 10/3                 | 12/10                | 15/4                 | 20/5½               | 13/8                 | 17/1                 | 20/5½               | 27/1                |
| £88/10/-            | 10/4                 | 12/11                | 15/5                 | 20/7                | 13/8½                | 17/2                 | 20/7                | 27/3                |
| £89                 | 10/4½                | 13/-                 | 15/6                 | 20/8½               | 13/9½                | 17/3½                | 20/8½               | 27/5                |
| £89/10/-            | 10/5                 | 13/1                 | 15/7                 | 20/10               | 13/10½               | 17/4½                | 20/10               | 27/6½               |
| £90                 | 10/5½                | 13/2                 | 15/8                 | 20/11               | 13/11½               | 17/6                 | 20/11               | 27/8½               |
| £90/10/-            | 10/6½                | 13/2½                | 15/9                 | 21/0½               | 14/0½                | 17/7                 | 21/0½               | 27/10               |
| £91                 | 10/7                 | 13/3½                | 15/10                | 21/2                | 14/1½                | 17/8                 | 21/2                | 28/-                |
| £91/10/-            | 10/8                 | 13/4½                | 15/11                | 21/3½               | 14/2½                | 17/9                 | 21/3½               | 28/2                |
| £92                 | 10/8½                | 13/5½                | 16/-                 | 21/5                | 14/3½                | 17/10½               | 21/5                | 28/4                |
| £92/10/-            | 10/9                 | 13/6                 | 16/1                 | 21/6                | 14/4                 | 17/11½               | 21/6                | 28/5½               |
| £93                 | 10/10                | 13/7                 | 16/2                 | 21/7½               | 14/5                 | 18/1                 | 21/7½               | 28/7½               |
| £93/10/-            | 10/10½               | 13/8                 | 16/3                 | 21/9                | 14/6                 | 18/2                 | 21/9                | 28/9½               |
| £94                 | 10/11                | 13/9                 | 16/4                 | 21/10½              | 14/7                 | 18/3                 | 21/10½              | 28/11               |
| £94/10/-            | 11/-                 | 13/9½                | 16/5                 | 22/-                | 14/8                 | 18/4                 | 22/-                | 29/1                |
| £95                 | 11/1                 | 13/10½               | 16/6½                | 22/1                | 14/9                 | 18/5½                | 22/1                | 29/3                |
| £95/10/-            | 11/1½                | 13/11½               | 16/7½                | 22/2½               | 14/10                | 18/6½                | 22/2½               | 29/5                |
| £96                 | 11/2                 | 14/-                 | 16/8½                | 22/4                | 14/11                | 18/8                 | 22/4                | 29/6½               |
| £96/10/-            | 11/3                 | 14/1                 | 16/9½                | 22/5½               | 14/11½               | 18/9                 | 22/5½               | 29/8½               |
| £97                 | 11/3½                | 14/2                 | 16/10½               | 22/7                | 15/0½                | 18/10                | 22/7                | 29/10               |
| £97/10/-            | 11/4                 | 14/3                 | 16/11½               | 22/8                | 15/1½                | 18/11                | 22/8                | 30/-                |
| £98                 | 11/5                 | 14/4                 | 17/0½                | 22/9½               | 15/2½                | 19/0½                | 22/9½               | 30/2                |
| £98/10/-            | 11/5½                | 14/4½                | 17/1½                | 22/11               | 15/3½                | 19/1½                | 22/11               | 30/4                |
| £99                 | 11/6                 | 14/5½                | 17/2½                | 23/0½               | 15/4                 | 19/3                 | 23/0½               | 30/5½               |
| £99/10/-            | 11/7                 | 14/6½                | 17/4                 | 23/2                | 15/5                 | 19/4                 | 23/2                | 30/7½               |
| £100                | 11/7½                | 14/7                 | 17/5                 | 23/3                | 15/6                 | 19/5                 | 23/3                | 30/9                |
| £100/10/-           | 11/8                 | 14/8                 | 17/6                 | 23/4½               | 15/7                 | 19/6                 | 23/4½               | 30/11               |
| £101                | 11/9                 | 14/9                 | 17/7                 | 23/6                | 15/8                 | 19/7½                | 23/6                | 31/1                |
| £101/10/-           | 11/10                | 14/10                | 17/8                 | 23/7½               | 15/9                 | 19/8½                | 23/7½               | 31/3                |
| £102                | 11/10½               | 14/11                | 17/9                 | 23/9                | 15/10                | 19/10                | 23/9                | 31/5                |

24

PRICE PER SHEET

THIS TABLE IS NOT A PRICE LIST



PRICE  
PER  
SHEET

FLAT

GALVANIZED  
PLUS Z.A.

Gauge APPROX. PRICES PER SHEET BASED ON GIVEN RATES PER TON

26

| Price<br>per<br>ton | 6' Lengths           |                      |                      |                      | 8' Lengths           |                      |                      |                     |
|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
|                     | 250<br>Sheets<br>24" | 200<br>Sheets<br>30" | 166<br>Sheets<br>36" | 125<br>Sheets<br>48" | 187<br>Sheets<br>24" | 150<br>Sheets<br>30" | 125<br>Sheets<br>36" | 94<br>Sheets<br>48" |
| £85                 | 6/10                 | 8/6                  | 10/3                 | 13/7½                | 9/1                  | 11/4                 | 13/7½                | 18/1                |
| £85/10/-            | 6/10½                | 8/6½                 | 10/4                 | 13/8½                | 9/2                  | 11/5                 | 13/8½                | 18/2½               |
| £86                 | 6/11                 | 8/7½                 | 10/4½                | 13/9½                | 9/2½                 | 11/6                 | 13/9½                | 18/3½               |
| £86/10/-            | 6/11½                | 8/8                  | 10/5                 | 13/10                | 9/3                  | 11/6½                | 13/10                | 18/5                |
| £87                 | 7/-                  | 8/8½                 | 10/6                 | 13/11                | 9/4                  | 11/7½                | 13/11                | 18/6                |
| £87/10/-            | 7/-                  | 8/9                  | 10/6½                | 14/-                 | 9/4½                 | 11/8                 | 14/-                 | 18/7½               |
| £88                 | 7/0½                 | 8/9½                 | 10/7                 | 14/1                 | 9/5                  | 11/9                 | 14/1                 | 18/9                |
| £88/10/-            | 7/1                  | 8/10                 | 10/8                 | 14/2                 | 9/6                  | 11/10                | 14/2                 | 18/10               |
| £89                 | 7/1½                 | 8/11                 | 10/9                 | 14/3                 | 9/6½                 | 11/10½               | 14/3                 | 18/11               |
| £89/10/-            | 7/2                  | 8/11½                | 10/9½                | 14/4                 | 9/7                  | 11/11                | 14/4                 | 19/0½               |
| £90                 | 7/2½                 | 9/-                  | 10/10                | 14/5                 | 9/7½                 | 12/-                 | 14/5                 | 19/2                |
| £90/10/-            | 7/3                  | 9/0½                 | 10/11                | 14/6                 | 9/8                  | 12/1                 | 14/6                 | 19/3                |
| £91                 | 7/3½                 | 9/1                  | 10/11½               | 14/7                 | 9/9                  | 12/2                 | 14/7                 | 19/4½               |
| £91/10/-            | 7/4                  | 9/1½                 | 11/0½                | 14/8                 | 9/9½                 | 12/2½                | 14/8                 | 19/6                |
| £92                 | 7/4½                 | 9/2½                 | 11/1                 | 14/9                 | 9/10                 | 12/3                 | 14/9                 | 19/7                |
| £92/10/-            | 7/5                  | 9/3                  | 11/2                 | 14/10                | 9/11                 | 12/4                 | 14/10                | 19/8                |
| £93                 | 7/5½                 | 9/3½                 | 11/2½                | 14/10½               | 9/11½                | 12/5                 | 14/10½               | 19/9½               |
| £93/10/-            | 7/6                  | 9/4                  | 11/3½                | 14/11½               | 10/-                 | 12/6                 | 14/11½               | 19/11               |
| £94                 | 7/6½                 | 9/5                  | 11/4                 | 15/0½                | 10/1                 | 12/6½                | 15/0½                | 20/-                |
| £94/10/-            | 7/7                  | 9/5½                 | 11/5                 | 15/1½                | 10/1½                | 12/7                 | 15/1½                | 20/1½               |
| £95                 | 7/7½                 | 9/6                  | 11/5½                | 15/2½                | 10/2                 | 12/8                 | 15/2½                | 20/2½               |
| £95/10/-            | 7/8                  | 9/6½                 | 11/6                 | 15/3½                | 10/2½                | 12/9                 | 15/3½                | 20/4                |
| £96                 | 7/8½                 | 9/7½                 | 11/7                 | 15/4½                | 10/3                 | 12/9½                | 15/4½                | 20/5                |
| £96/10/-            | 7/9                  | 9/8                  | 11/7½                | 15/5½                | 10/4                 | 12/10½               | 15/5½                | 20/6½               |
| £97                 | 7/9½                 | 9/8½                 | 11/8                 | 15/6½                | 10/4½                | 12/11                | 15/6½                | 20/8                |
| £97/10/-            | 7/10                 | 9/9                  | 11/9                 | 15/7½                | 10/5                 | 13/-                 | 15/7½                | 20/9                |
| £98                 | 7/10½                | 9/10                 | 11/10                | 15/8½                | 10/6                 | 13/1                 | 15/8½                | 20/10               |
| £98/10/-            | 7/11                 | 9/10½                | 11/10½               | 15/9                 | 10/6½                | 13/1½                | 15/9                 | 20/11½              |
| £99                 | 7/11½                | 9/11                 | 11/11                | 15/10                | 10/7                 | 13/2½                | 15/10                | 21/1                |
| £99/10/-            | 8/-                  | 9/11½                | 12/-                 | 15/11                | 10/8                 | 13/3½                | 15/11                | 21/2                |
| £100                | 8/0½                 | 10/-                 | 12/0½                | 16/-                 | 10/8½                | 13/4                 | 16/-                 | 21/3½               |
| £100/10/-           | 8/1                  | 10/0½                | 12/1½                | 16/1                 | 10/9                 | 13/5                 | 16/1                 | 21/5                |
| £101                | 8/1½                 | 10/1                 | 12/2                 | 16/2                 | 10/10                | 13/6                 | 16/2                 | 21/6                |
| £101/10/-           | 8/2                  | 10/2                 | 12/3                 | 16/3                 | 10/10½               | 13/6½                | 16/3                 | 21/7                |
| £102                | 8/2½                 | 10/2½                | 12/3½                | 16/4                 | 10/11                | 13/7                 | 16/4                 | 21/8½               |
| £102/10/-           | 8/3                  | 10/3                 | 12/4½                | 16/5                 | 10/11½               | 13/8                 | 16/5                 | 21/10               |
| £103                | 8/3½                 | 10/4                 | 12/5                 | 16/6                 | 11/-                 | 13/9                 | 16/6                 | 21/11               |
| £103/10/-           | 8/4                  | 10/4½                | 12/6                 | 16/7                 | 11/1                 | 13/9½                | 16/7                 | 22/-                |
| £104                | 8/4½                 | 10/5                 | 12/6½                | 16/8                 | 11/1½                | 13/10½               | 16/8                 | 22/1½               |
| £104/10/-           | 8/5                  | 10/5½                | 12/7                 | 16/9                 | 11/2                 | 13/11                | 16/9                 | 22/3                |
| £105                | 8/5½                 | 10/6                 | 12/8                 | 16/10                | 11/3                 | 14/-                 | 16/10                | 22/4                |
| £105/10/-           | 8/6                  | 10/6½                | 12/8½                | 16/11                | 11/3½                | 14/1                 | 16/11                | 22/5½               |
| £106                | 8/6½                 | 10/7                 | 12/9½                | 17/-                 | 11/4                 | 14/1½                | 17/-                 | 22/7                |

THIS TABLE IS NOT A PRICE LIST

## TERNE PLATE

**GENERAL.**—Terne Plate or Tin-lead coated sheets are produced mainly for canister makers, where a tin-lead lining is essential.

**SIZES.**—While a variety of sizes are manufactured from time to time to customers' particular specifications, the only sizes regularly processed are 8' x 30" x 28G and 8' x 36" x 26G.

### WEIGHT PER SQ. FT. OF SHEET IN LBS.:

|     |        |     |        |
|-----|--------|-----|--------|
| 28G | 0.6581 | 20G | 1.6200 |
| 26G | 0.8207 | 18G | 2.0202 |
| 24G | 1.0308 | 16G | 2.5306 |
| 22G | 1.2956 |     |        |

### STOCK SIZE SHEETS:

| Size and Gauge    | Weight of Sheet<br>in lbs. | No. of Sheets<br>per Ton Crate |
|-------------------|----------------------------|--------------------------------|
| 8' x 30" x 28G    | 13.304                     | 85                             |
| 8' x 36" x 26G    | 19.894                     | 57                             |
| 6' x 36" x 26G    | 14.953                     | 75                             |
| 6' x 36" x 24G    | 18.738                     | 60                             |
| 6' x 36" x 22G    | 23.605                     | 48                             |
| 6' x 36" x 20G    | 29.515                     | 38                             |
| 6' x 36" x 18G    | 36.807                     | 31                             |
| 6' x 36" x 16G    | 46.106                     | 25                             |
| 75½' x 37½" x 24G | 20.436                     | 55                             |

**PACKING.**—All Terne Plate, Prime Sheets (or Firsts), Seconds and Mill Rejects are packed in crates.

**CASE MARKINGS.**—To facilitate identification, information is stencilled on cases.

Prime Sheets (or Firsts) are marked TERNE PLATE, with the number and weight of sheets on one end of the crate. The other end is marked with the number and weight of the sheets.

Seconds are marked similarly to Prime Sheets, except that the mark TERNE PLATE is followed by 2. The clips are painted red.

Mill Reject crates are marked TERNE PLATE MR, with the gauge and weight of sheets on one end of the crate. The other end is marked with the gauge and weight, clips being painted red.

## STEEL SHEET TRADE CUSTOMS

**GENERAL.**—While there have been many trade practices developed by the mutual consent of the purchaser and manufacturer, there are possible opportunities for misunderstanding unless trade customs are thoroughly understood.

Special arrangements, not covered in these notes, apply to Electrical Steels.

In the following pages the word manufacturer refers to the manufacturer of the steel sheets. The word customer means the merchant, distributor or ultimate user of the sheets.

**ORDERING SHEET.**—Sheets are supplied in a wide range of standard qualities and finishes and, when the buyer states his requirements, it is customary for the manufacturer to recommend the type of sheet which will be suitable.

**Sheets Ordered for Specific Purposes.**—The purpose for which sheets are ordered should be stated on the order; when sheets are ordered without the purpose being shown, the responsibility for the material being satisfactory must be assumed by the customer, PROVIDED the sheets are up to standard for the grade ordered.

**SHEETS ORDERED TO CHEMICAL AND PHYSICAL TESTS AND TO SPECIFIED TREATMENT.**—When a customer desires a definite fabricated result, there should be the least possible stipulation on the manufacturer as to how the material must be made.

When it is necessary to supply material to chemical specifications, then the manufacturer cannot in addition assume the responsibility of meeting physical tests and workability results. Similarly, when physical specifications have to be met, there should not be imposed upon the manufacturer the additional necessity of meeting chemical analysis and workability results.



When a customer specifies a definite treatment, then the responsibility for the characteristics of the sheet rests with the customer.

Sheets ordered to a specified chemical analysis can be accepted on the basis of heat analysis only.

**SHEET DIMENSIONS.**—Wherever possible the customer should confine his requirements to those thicknesses which correspond with the even Birmingham gauge numbers.

**SURFACE INSPECTIONS.**—Unless otherwise specified, each prime sheet must have one side which meets the surface requirements of the grade.

**SURFACE INSPECTION TOLERANCE.**—The following is the acceptable practice on inspection tolerance:

A 2% surface inspection tolerance is to apply on all primes shipped. The result of a customer's inspection, which degrades primes into seconds, if acceptable by the manufacturer, applies on all quantities in excess of the 2% tolerance.

**OFF-GAUGE MATERIAL.**—Thickness inspection becomes the responsibility of the user whenever it is considered a necessity.

It is standard practice in many plants to perform this gauge inspection, and any sheets which the customer finds outside the thickness tolerance are subject to rejection. Disposition of such material must be given by the manufacturer.

If a customer decides not to perform a thickness inspection on every piece, and if as a result some over-gauge sheet should cause damage to his equipment, the responsibility for such damage rests on the customer.

The basis of all sheet gauging is weight per unit area, and in the case of coated and some uncoated sheets this is the only practical and acceptable criterion of gauge.

**AGEING OF STEEL SHEETS.**—It is generally recognised that sheets over six months old cannot be relied upon to give consistent and satisfactory results in deep drawing. Ageing markedly increases the tendency to "Stretcher-strain," and in extreme cases is responsible for breakage. Under no circumstances can a manufacturer be held responsible for the performance of sheets after twelve months have elapsed from date of manufacture.

**STRETCHER STRAINING.**—Stretcher straining of deep drawing sheets may be caused by ageing of the sheets, temperature of the sheets, variation in the use of die lubricants, or the manner in which the sheets are drawn, over all of which the manufacturer of the sheets has no control.

Prior pre-stressing by approved equipment will usually correct stretcher straining and, when necessary, sheets should be so treated immediately before being drawn. Since this process is considered the responsibility of the customer, any costs or charges for this operation rest with the customer.

**HEAT TREATMENT BY BUYER.**—The manufacturer cannot assume responsibility for material working satisfactorily after any heat treatment which he has not approved.

Where heat treatment is part of the normal manufacturing processes to which the material is subjected, the manufacturer will guarantee the material will respond to the approved heat treatment conditions.

### **BREAKAGE TOLERANCE—DEEP DRAWING SHEETS:**

**(a) General Comment.**—Until the drawing operations of any individual stamping have been properly developed to produce suitable stampings for production runs, full absorption of breakage loss must be assumed by the customer.

When material of the correct gauge and quality has been ordered, and a full opportunity given to the manufacturer to understand the hazards to be met, then the customer

is entitled to protection against breakage loss under the following conditions:

After blanking size has been properly developed and the dies are approved for production, and the processes are standardised, then a breakage tolerance shall be established with the manufacturer, and any breakages in excess of this tolerance shall be the responsibility of the manufacturer. This breakage tolerance varies with each individual job, and must be determined by the nature and severity of the requirement.

- (b) **Normal Breakage.**—The general practice has been for the customer to absorb breakage up to and including 3% of the sheets run, that is, the ordinary drawing and stamping operations. It is recognised that, besides the naturally slight variation in the steel, there are many things to cause breakage, such as die lubrication, hold-down pressure, press stroke, scored dies, improperly placed blanks, temperature of sheets, etc.
- (c) **Special Breakage Tolerance.**—There are many applications where it is necessary for the sheet manufacturer to be allowed more than 3% for breakage.
- (d) **Method of Establishing Special Breakage Tolerances.**—As new deep drawing jobs develop, it is necessary to determine what percentage of breakage the customer should stand. In such cases, the manufacturer should not be responsible for any breakage until a run has been made after the dies have been adjusted and a sufficient number of sheets drawn to ascertain the results which will be obtained. The result of this run will determine the percentage of breakage the customer will stand, and such tolerance will then be continued until better results are obtained with the drawing or stamping in question. For instance, if the best practical result is 15% breakage, the manufacturer should be allowed that figure until less breakage is obtained. Under no conditions, however, should the manufacturer be responsible for breakage of 3% or under.



For the purpose of establishing a new breakage tolerance or for adjusting an existing tolerance, the minimum number of pressings which would be considered as constituting a run is 500.

- (e) **Basis for Computing Claims.**—Whenever breakage exceeds the normal breakage tolerance on any part, the manufacturer should be notified immediately and the run discontinued, or the responsibility shall rest with the customer. After inspection of the broken pressings and the dies, the manufacturer shall decide whether the run is to continue or whether the material is to be withdrawn.

Percentage breakage is to be calculated on quantity production of a continuous run, which may cover a weekly or monthly period or be based on a minimum quantity of two tons or the whole order, whichever is the less.

The same tolerances which apply to breakage apply also to stampings rejected as unusable for any other cause, with the exception that the manufacturer accepts all responsibility for laminated sheets.

**FABRICATION FAILURES—SHEETS OTHER THAN DEEP DRAWING.**—Where excessive fabrication failures occur due to sub-standard material, the manufacturer shall accept a claim based on the value of the sheets concerned.

**ARTICLES REJECTED FOR CAUSES OTHER THAN BREAKAGE.**—When parts are rejected as unusable, defects as would normally be due to an unsatisfactory metallurgical condition or to a defective surface in the original sheets, are the responsibility of the manufacturer.

Rejections for such causes should be kept separate for inspection, and the rejection or salvage of such material shall be subject to negotiation. Defects arising from incorrect adjustment of the customer's equipment, inadequate lubrication, etc., cannot be considered under this heading.

**LIMITATION OF LIABILITY.**—Should it be determined that material which has been fabricated is defective, it is not the responsibility of the manufacturer to assume any labour costs involved in the pressing or stamping of the defective sheets. The customer should not proceed with the drawing, fabricating or pressing of the material if it is proving unsuitable. In this event the manufacturer should be notified immediately. After the latter has made an investigation and the material is found to be defective, it then becomes a matter of negotiation between the customer and manufacturer as to what disposition is to be made of the material which has not yet been fabricated, and also to determine whether the material which has already been used can be salvaged in the interests of both parties.

## QUALITIES OF BLACK SHEETS

**HOT ROLLED COMMERCIAL BLACK.**—Commercial Black is a standard heavy gauge black sheet provided in finishes of commercial quality. The physical properties are such that the material is suitable for the majority of commercial forming operations. These sheets are not intended or guaranteed for pressing or drawing operations.

**COLD ROLLED COMMERCIAL BLACK** is a standard commercial quality sheet with a surface superior to hot rolled pickled finish, but with a light oxidised coating, for use where a bright finish is not required. The physical properties are such that the material is suitable for the majority of commercial forming operations. These sheets are not intended or guaranteed for pressing or drawing operations.

**COLD ROLLED COMMERCIAL BRIGHT** is a standard bright sheet of commercial quality with a surface superior to hot rolled pickled finish. The physical properties are such that the material is suitable for the majority of commercial forming operations. These sheets are not intended or guaranteed for pressing or drawing operations.

**HOT ROLLED DEEP DRAWING** is a standard heavy gauge sheet for use where surface before or after drawing is of secondary importance. These sheets are intended for the production of parts too difficult for the fabricating properties of commercial sheets.

**COLD ROLLED GENERAL PURPOSE DEEP DRAWING** is a standard bright sheet for use where surface before or after drawing is of secondary importance. These sheets are notable for their extra deep drawing properties.

**COLD ROLLED EXTRA DEEP DRAWING** sheet is a standard type combining a superior surface finish with extra deep drawing properties. This quality should be used in applications calling for sheets in which either or both the extra deep drawing or superior surface are of prime importance.

**ENAMEL FLAT** sheets are chemically constituted and suitably processed to adapt them to the fabricating and enamelling requirements of articles for vitreous coating under proper conditions. The physical properties are such that the material is suitable for shallow pressing, bending and forming, but is not recommended for drawing.

**ENAMEL DEEP DRAWING** sheets are chemically constituted and suitably processed to adapt them to the fabricating and enamelling requirements of articles for vitreous coating under proper conditions. The physical properties are such that the material is suitable for pressing, forming, bending, and also for severe drawing and spinning.

**TACK PLATES** are sheets specially processed to meet the requirements of the tack-making trade, and are not supplied for any other purpose. These sheets may be ordered oiled or unoled.

**SECONDS** are sheets which are rejected from the above grades for surface imperfections, split edges, or faulty dimensions.

**UNCLASSIFIED REJECTS.**—The general defects encountered in this quality are tears or splits, generally on the edges, surface imperfections such as scale. All material in any one bundle is of approximately the same gauge.

## CARBON STEELS

**QUALITIES.**—For sheet steel with high tensile strength or increased hardenability and abrasion-resistance, a higher carbon content is needed than is found in the ordinary quality black sheet. This carbon content varies with the purpose for which the steel sheet is needed, and gives rise to the standard carbon qualities.

C30 is a higher tensile sheet used mainly for structural work.

C65 is for shovels, plough discs, and miscellaneous hard-wearing or cutting edges.

HC80 is a superior quality carbon steel sheet used for circular and straight saws or other high grade cuttings edges.

It is the aim of the Company to provide sheets for any application where there is a reasonable demand. New grades of plain carbon or low alloy steel sheets will be developed as required by the trade.

**HEAT TREATMENT.**—For C65 and HC80, oil quenching is recommended from a temperature of about 820°C. This may be followed by a tempering treatment to obtain the desired hardness. Tempering time for these qualities (9 gauge to 16 gauge) is about 15 to 20 minutes at the tempering temperature.



## ELECTRICAL STEELS

**GENERAL.**—The steel core components of motors, alternators and transformers are made up of high quality special sheet steel laminations. The stringency of laboratory tests, and inspection and supervision carried out by a staff of trained metallurgists, ensure that Lysaght's Electrical Steels are to the standard of the best sheets produced overseas for similar applications. Various qualities are made for different purposes, and full details will be provided on application to this Company.

The STALLOY types are used for transformer work and other applications where low electrical losses are essential. MOTOR 100, MEDIUM RESISTANCE, and SPECIAL LOHYS are used for motors of all types, large motor-generators, small transformers, and reactors.

Electrical steel sheets are available in a variety of surface finishes, depending primarily on the degree of interlamination resistance required.

### ELECTRICAL STEEL DATA

| Quality           | Thick-<br>ness | Core Losses at 50 Cycles         |        |                    |          |
|-------------------|----------------|----------------------------------|--------|--------------------|----------|
|                   |                | Guar Max. Loss<br>B=10,000 gauss |        | Approx. equivalent |          |
|                   |                |                                  |        | B=13,000           | B=15,000 |
|                   |                | W./lb.                           | W./Kg. | W./Kg.             | W./Kg.   |
| Special Lohys ..  | .018"          | 1.23                             | 2.71   | 4.60               | 6.60     |
| Med. Resistance   | .020"          | 1.14                             | 2.51   | 4.18               | 6.00     |
| Motor 100 .....   | .020"          | 1.00                             | 2.20   | 3.66               | 5.30     |
| Stalloy 150 ..... | .020"          | .81                              | 1.78   | 3.04               | 4.55     |
| Stalloy 140 ..... | .020"          | .74                              | 1.63   | 2.77               | 4.17     |
| Stalloy 130 ..... | .020"          | .68                              | 1.50   | 2.55               | 3.84     |
| Stalloy 120 ..... | .020"          | .63                              | 1.39   | 2.36               | 3.56     |
| Stalloy 150 ..... | .014"          | .68                              | 1.50   | 2.52               | 3.75     |
| Stalloy 140 ..... | .014"          | .63                              | 1.40   | 2.35               | 3.50     |
| Stalloy 130 ..... | .014"          | .59                              | 1.30   | 2.20               | 3.10     |
| Stalloy 120 ..... | .014"          | .54                              | 1.20   | 2.02               | 2.80     |
| Stalloy 110 ..... | .014"          | .50                              | 1.10   | 1.87               | 2.55     |
| Stalloy 105 ..... | .014"          | .475                             | 1.05   | 1.80               | 2.47     |
| Stalloy 100 ..... | .014"          | .455                             | 1.00   | 1.74               | 2.35     |
| Stalloy 95 .....  | .014"          | .43                              | 0.95   | 1.65               | 2.25     |
| Stalloy 90 .....  | .014"          | .41                              | 0.90   | 1.57               | 2.12     |

**NOTE.**—Electrical Steel Sheets are available in a variety of surface finishes, depending primarily on the degree of interlamination resistance required. Full details are available in Lysaght's Electrical Steel Catalogue.

## BIRMINGHAM GAUGE

The standard gauge table used for Black Steel Sheets is known as the Birmingham Gauge, or B.G. It must not be confused with either the Birmingham Wire Gauge (B.W.G.) or the Standard Wire Gauge (S.W.G.).

## GAUGE TABLE

| Gauge | Thickness |       | lbs. per sq. ft. | Gauge | Thickness |      | lbs. per sq. ft. |
|-------|-----------|-------|------------------|-------|-----------|------|------------------|
|       | Ins.      | Mms.  |                  |       | Ins.      | Mms. |                  |
| 8     | .1570     | 3.988 | 6.41             | 20    | .0392     | .996 | 1.60             |
| 9     | .1398     | 3.551 | 5.70             | 21    | .0349     | .886 | 1.42             |
| 10    | .1250     | 3.175 | 5.10             | 22    | .0312     | .794 | 1.27             |
| 11    | .1113     | 2.827 | 4.54             | 23    | .0278     | .707 | 1.13             |
| 12    | .0991     | 2.517 | 4.04             | 24    | .0247     | .629 | 1.01             |
| 13    | .0882     | 2.240 | 3.60             | 25    | .0220     | .560 | .90              |
| 14    | .0785     | 1.994 | 3.20             | 26    | .0196     | .498 | .80              |
| 15    | .0699     | 1.775 | 2.85             | 27    | .0174     | .443 | .71              |
| 16    | .0625     | 1.587 | 2.55             | 28    | .0156     | .396 | .64              |
| 17    | .0556     | 1.412 | 2.27             | 29    | .0139     | .353 | .57              |
| 18    | .0495     | 1.257 | 2.02             | 30    | .0123     | .312 | .50              |
| 19    | .0440     | 1.118 | 1.80             |       |           |      |                  |

## GAUGE TOLERANCES

Tolerances permitted by the trade in Uncoated Sheets:

| Birmingham Gauge No. | Inches | Range for Application of Tolerances | Tolerance Plus or minus |
|----------------------|--------|-------------------------------------|-------------------------|
| 8                    | .1570  |                                     | .009"                   |
| 9                    | .1398  |                                     | .009"                   |
| 10                   | .1250  | .1323-.1181                         | .009"                   |
| 11                   | .1113  | .1180-.1052                         | .009"                   |
| 12                   | .0991  | .0151-.0936                         | .009"                   |
| 13                   | .0882  | .0935-.0833                         | .007"                   |
| 14                   | .0785  | .0832-.0742                         | .007"                   |
| 15                   | .0699  | .0741-.0662                         | .006"                   |
| 16                   | .0625  | .0661-.0591                         | .006"                   |
| 17                   | .0556  | .0590-.0526                         | .005"                   |
| 18                   | .0495  | .0525-.0468                         | .005"                   |
| 19                   | .0440  | .0467-.0416                         | .004"                   |
| 20                   | .0392  | .0415-.0370                         | .004"                   |
| 21                   | .0349  | .0368-.0330                         | .0035"                  |
| 22                   | .03125 | .0329-.0295                         | .0035"                  |
| 23                   | .02782 | .0294-.0263                         | .003"                   |
| 24                   | .02476 | .0262-.0234                         | .003"                   |
| 25                   | .02204 | .0233-.0208                         | .003"                   |
| 26                   | .01961 | .0207-.0185                         | .003"                   |
| 27                   | .01745 | .0184-.0165                         | .002"                   |
| 28                   | .0156  | .0164-.0148                         | .002"                   |
| 29                   | .0139  | .0147-.0131                         | .002"                   |
| 30                   | .0123  | .0130-                              | .002"                   |

## PACKING OF UNCOATED STEEL SHEETS

Uncoated sheets are packed in envelopes, bundles, or crates.

**STEEL ENVELOPES.**—Envelopes are made of black steel sheet, which, in addition to protecting the contents, can be used for working-up purposes when empty.

**BUNDLES.**—Bundles are a convenient method of packing sheets of the heavier gauges.

**CRATES.**—Crates consist of a timber base supporting Sisalkraft wrapped sheets.

### PACKING STANDARD

Standard Packing:

Weight of package: One or two tons.

|                                                                             | All States                                          | N.S.W.                                               |
|-----------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|
| Hot Rolled Commercial Black .....                                           | Bundles unwrapped, steel strapping.                 | Bundles unwrapped, steel strapping.                  |
| C.R. Commercial Black and C.R. Commercial Bright .....                      | Envelopes or crates, sisalkraft wrapped with skids. | Envelopes or bundles, sisalkraft wrapped with skids. |
| Hot Rolled Deep Drawing .....                                               | Crates, sisalkraft wrapped with skids.              | Bundles, sisalkraft wrapped with skids.              |
| C.R. Extra Deep Drawing .....                                               | Crates, sisalkraft wrapped with skids.              | Crates, sisalkraft wrapped with skids.               |
| C.R. General Purpose Deep Drawing, Enamel Flat, Enamel D.D., and Tack Plate | Crates, sisalkraft wrapped with skids.              | Bundles, sisalkraft wrapped with skids.              |

Unless otherwise specified, sheets are supplied as follows:—

#### OILED

Pickled sheets.  
C.R. Commercial Bright.  
Hot Rolled Deep Drawing.  
Cold Rolled Extra Deep Drawing.  
Cold Rolled General Purpose Deep Drawing.  
Tack Plate.

#### UNOILED

H.R. Commercial Black.  
C.R. Commercial Black.  
Enamel Flat.  
Enamel Deep Drawing.



## BLACK STEEL SHEETS

## Comparison of Sheet and Wire Gauges

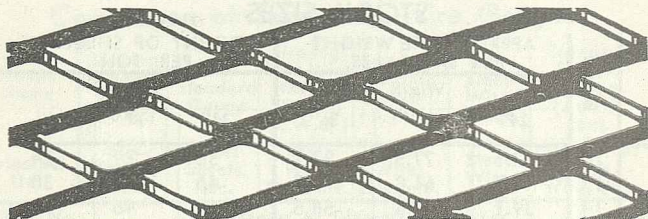
| Gauge Name    | Birmingham Gauge (B.G.)         | U.S. Standard Gauge | Birmingham Wire Gauge (Stubs') (B.W.G.) | Imperial Standard (British) (I.S.W.G.) | U.S. Steel Wire Gauge | Browne & Sharpe Gauge (American) |
|---------------|---------------------------------|---------------------|-----------------------------------------|----------------------------------------|-----------------------|----------------------------------|
| Principal Use | Steel Sheets, etc.              | Steel Sheets, etc.  | Steel Wire, Shfts., etc.                | Steel Wire, Shfts., etc.               | Steel Wire            | Non-ferrous Sheets, Wire, etc.   |
| Gge. No.      | Thickness or Diameter in Inches |                     |                                         |                                        |                       |                                  |
| 4/0           | .5416                           | .398                | .454                                    | .400                                   | .3938                 | .4600                            |
| 3/0           | .5000                           | .368                | .425                                    | .372                                   | .3625                 | .4096                            |
| 2/0           | .4452                           | .337                | .380                                    | .348                                   | .3310                 | .3648                            |
| 0             | .3964                           | .306                | .340                                    | .324                                   | .3065                 | .3249                            |
| 1             | .3532                           | .2757               | .300                                    | .300                                   | .2830                 | .2893                            |
| 2             | .3147                           | .2604               | .284                                    | .276                                   | .2625                 | .2576                            |
| 3             | .2804                           | .2451               | .259                                    | .252                                   | .2437                 | .2294                            |
| 4             | .2500                           | .2298               | .238                                    | .232                                   | .2253                 | .2043                            |
| 5             | .2225                           | .2145               | .220                                    | .212                                   | .2070                 | .1819                            |
| 6             | .1981                           | .1991               | .203                                    | .192                                   | .1920                 | .1620                            |
| 7             | .1764                           | .1832               | .180                                    | .176                                   | .1770                 | .1443                            |
| 8             | .1570                           | .1685               | .165                                    | .160                                   | .1620                 | .1285                            |
| 9             | .1398                           | .1532               | .148                                    | .144                                   | .1483                 | .1144                            |
| 10            | .1250                           | .1379               | .134                                    | .128                                   | .1350                 | .1019                            |
| 11            | .1113                           | .1225               | .120                                    | .116                                   | .1205                 | .0907                            |
| 12            | .0991                           | .1072               | .109                                    | .104                                   | .1055                 | .0808                            |
| 13            | .0882                           | .0919               | .095                                    | .092                                   | .0915                 | .0720                            |
| 14            | .0785                           | .0766               | .083                                    | .080                                   | .0800                 | .0641                            |
| 15            | .0699                           | .0689               | .072                                    | .072                                   | .0720                 | .0571                            |
| 16            | .0625                           | .0613               | .065                                    | .064                                   | .0625                 | .0508                            |
| 17            | .0556                           | .0551               | .058                                    | .056                                   | .0540                 | .0453                            |
| 18            | .0495                           | .0490               | .049                                    | .048                                   | .0475                 | .0403                            |
| 19            | .0440                           | .0429               | .042                                    | .040                                   | .0410                 | .0359                            |
| 20            | .0392                           | .0368               | .035                                    | .036                                   | .0348                 | .0320                            |
| 21            | .0349                           | .0337               | .032                                    | .032                                   | .0317                 | .0285                            |
| 22            | .0312                           | .0306               | .028                                    | .028                                   | .0286                 | .0253                            |
| 23            | .0278                           | .0276               | .025                                    | .024                                   | .0258                 | .0226                            |
| 24            | .0247                           | .0245               | .022                                    | .022                                   | .0230                 | .0201                            |
| 25            | .0220                           | .0214               | .020                                    | .020                                   | .0204                 | .0179                            |
| 26            | .0196                           | .0184               | .018                                    | .018                                   | .0181                 | .0159                            |
| 27            | .0174                           | .0169               | .016                                    | .0164                                  | .0173                 | .0142                            |
| 28            | .0156                           | .0153               | .014                                    | .0148                                  | .0162                 | .0126                            |
| 29            | .0139                           | .0138               | .013                                    | .0136                                  | .0150                 | .0113                            |
| 30            | .0123                           | .0123               | .012                                    | .0124                                  | .0140                 | .0100                            |
| 31            | .0110                           | .0107               | .010                                    | .0116                                  | .0132                 | .00893                           |
| 32            | .0098                           | .0100               | .009                                    | .0108                                  | .0128                 | .00795                           |
| 33            | .0087                           | .0092               | .008                                    | .0100                                  | .0118                 | .00708                           |
| 34            | .0077                           | .0084               | .007                                    | .0092                                  | .0104                 | .00630                           |
| 35            | .0069                           | .0077               | .005                                    | .0084                                  | .0095                 | .00561                           |
| 36            | .0061                           | .0069               | .004                                    | .0076                                  | .0090                 | .00500                           |

# BLACK STEEL SHEET

## STOCK SIZES

|                | Gauge | APPROXIMATE WEIGHT<br>PER SHEET—LBS. |       |       | COUNT OF SHEETS<br>PER TON |     |     |
|----------------|-------|--------------------------------------|-------|-------|----------------------------|-----|-----|
|                |       | Width                                |       |       | Width                      |     |     |
|                |       | 24"                                  | 30"   | 36"   | 24"                        | 30" | 36" |
| 6-FOOT LENGTHS | 10    | 62.1                                 | 77.5  | 92.9  | 36                         | 29  | 24  |
|                | 12    | 49.3                                 | 61.8  | 73.7  | 46                         | 36  | 30  |
|                | 14    | 39.1                                 | 48.8  | 58.5  | 57                         | 46  | 38  |
|                | 16    | 31.0                                 | 38.7  | 46.5  | 72                         | 58  | 48  |
|                | 18    | 24.6                                 | 30.8  | 36.9  | 91                         | 73  | 61  |
|                | 20    | 19.5                                 | 24.4  | 29.3  | 115                        | 92  | 77  |
|                | 22    | 15.5                                 | 19.4  | 23.2  | 142                        | 116 | 96  |
|                | 24    | 12.3                                 | 15.4  | 18.4  | 182                        | 146 | 122 |
|                | 26    | 9.8                                  | 12.2  | 14.6  | 230                        | 184 | 154 |
|                | 28    | 7.8                                  | 9.7   | 11.6  | 289                        | 231 | 193 |
|                | 30    | 6.2                                  | 7.7   | 9.2   | 367                        | 294 | 245 |
| 7-FOOT LENGTHS | 10    | 72.3                                 | 90.3  | 108.3 | 31                         | 25  | 21  |
|                | 12    | 57.4                                 | 71.7  | 85.9  | 39                         | 31  | 26  |
|                | 14    | 45.6                                 | 56.9  | 68.2  | 49                         | 39  | 33  |
|                | 16    | 36.2                                 | 45.1  | 54.1  | 62                         | 50  | 41  |
|                | 18    | 28.7                                 | 35.0  | 43.0  | 78                         | 63  | 52  |
|                | 20    | 22.8                                 | 28.4  | 34.1  | 99                         | 79  | 66  |
|                | 22    | 18.1                                 | 22.6  | 27.0  | 124                        | 99  | 83  |
|                | 24    | 14.3                                 | 17.9  | 21.5  | 156                        | 125 | 104 |
|                | 26    | 11.4                                 | 14.2  | 17.0  | 197                        | 158 | 132 |
|                | 28    | 9.0                                  | 11.3  | 13.5  | 248                        | 198 | 166 |
|                | 30    | 7.2                                  | 9.0   | 10.7  | 315                        | 252 | 110 |
| 8-FOOT LENGTHS | 10    | 82.6                                 | 103.1 | 123.6 | 27                         | 22  | 18  |
|                | 12    | 65.5                                 | 81.8  | 98.1  | 34                         | 27  | 23  |
|                | 14    | 52.0                                 | 64.9  | 77.9  | 43                         | 35  | 29  |
|                | 16    | 41.3                                 | 51.5  | 61.8  | 54                         | 43  | 36  |
|                | 18    | 32.8                                 | 40.9  | 49.1  | 69                         | 55  | 46  |
|                | 20    | 26.0                                 | 32.5  | 38.9  | 87                         | 69  | 58  |
|                | 22    | 20.6                                 | 25.8  | 30.9  | 105                        | 87  | 72  |
|                | 24    | 16.4                                 | 20.5  | 24.5  | 137                        | 110 | 91  |
|                | 26    | 13.0                                 | 16.2  | 19.5  | 173                        | 138 | 115 |
|                | 28    | 10.3                                 | 12.9  | 15.5  | 217                        | 174 | 145 |
|                | 30    | 8.2                                  | 10.2  | 12.3  | 276                        | 221 | 184 |

## LYSAGHT EXPANDED METAL



**INTRODUCTION.**— Expanded Metal has been manufactured for some 60 years, and is now used in almost every branch of engineering and building trade. It is made from sheet metal which, by slitting and stretching, without any waste of material, converts it into a network of diamond-shaped mesh. Unlike netting, Expanded Metal is not an interlacing of loose or separate pieces. The strands are all part of the parent metal, rigidly unified at their junctions.

Lysaght Expanded Metal is produced in two types:—

- (a) Lathing Mesh (and Accessories), for plastering work in the building trade.
- (b) Ornamental Mesh, where a high degree of accuracy and finish is required.

**SIZES OF MESHES.**— Lysaght machines are capable of producing a variety of meshes from  $1/8''$  upwards but, following popular demand, general usage for plastering is  $13/32''$  mesh, which is the measurement across the short diagonal.

**BASE MATERIALS.**— Many ductile materials can be expanded, such as steel, aluminium, copper, monel metal, brass and other alloys, but the chief material for Expanded Metal is Lysaght high grade, low carbon steel sheet.

**PACKING.**— Sheets of ornamental mesh are packed in skeleton cases. Lathing mesh sheets are supplied in bundles of 10.

**PROTECTIVE COATING.**— For protective measures, unless otherwise specified, all Lysaght Expanded Steel Metal lathing is supplied coated with a rust inhibitor before despatch.

**PLASTER LATHING.**— Expanded Metal is most extensively used as a plaster lathing. Plaster should be applied in situ, without joints to mar the surface, on a background of Expanded Metal. The most important requirement of the background is that it should provide an adequate key for the plaster. In each square foot of Expanded Metal lathing there are approximately 500 meshes, each mesh forming a key for the support of the rendering. For plastering purposes, sheets must be stretched tight and fixed firmly to studs at not more than  $18''$  centres with galvanized  $1\frac{1}{4}''$  clouts. The long way of the mesh **MUST** be horizontal, and sheets should be fixed so that the strands all slope **DOWNWARDS** and **INWARDS**. Sheets should not finish in a corner, but should be bent at right angles on to adjoining studs or supports. Sides of sheets should overlap one inch and be wired together.



**PLASTER ENCASEMENT OF STEEL WORK.**—For fireproofing, both with concrete and lightweight aggregates, Expanded Metal is extensively used. Suspension channels, furring pieces and corner beadings are made for this type of construction, also lightweight single and double partition components.

## Lysaght Expanded Metal Lathing

| Mesh size       | Strand Width | Catalogue No. | Weight per sq. yd. | Sheet Sizes |         | Sheets per Bundle |
|-----------------|--------------|---------------|--------------------|-------------|---------|-------------------|
|                 |              |               |                    | Width       | Lengths |                   |
| 13/32" x 1"     | 1/16"        | PL 25         | 2.5 lb.            | 27"         | 8' & 9' | 10                |
| S.W.M. x L.W.M. | 1/16"        | PL 34         | 3.4 lb.            | 27"         | 8' & 9' | 5                 |

A general purpose flat expanded diamond mesh lath used for walls, ceilings, and for fireproofing steel columns and beams. It is easily bent and formed to suit ornamental work.

**MATERIAL.**—Steel painted with rust inhibitor, or galvanized if specified. (PL34 has a yellow edge.)

**SIZE AND WEIGHT (Per sq. yd.).**—96" x 27"—PL25—2.50 lbs.  
PL34—3.40 lbs.

**PACKING (Per bundle).**— PL25—10 sheets (20 sq. yds.)—50 lbs.  
PL34— 5 sheets (10 sq. yds.)—34 lbs.

**NOTE.**— PL25 and PL34 can also be supplied in lengths of 108" when specified.

## Lysaght Expanded Metal Lathing Accessories

### LYSAGHT COLD ROLLED CHANNEL



An accurately formed channel of uniform straightness and weight. The channels are used for the framing of suspended and furred ceilings and for wall furring, studding and stiffening of solid and hollow partitions.

**MATERIAL.**—Steel 16G, painted with rust inhibitor.

**LENGTHS.**— 16' and 20'.

**SIZES AND WEIGHTS (per 1000 lin. ft.).**— LC 75— $\frac{3}{4}$ " x  $\frac{1}{2}$ "—300 lb.  
LC150— $1\frac{1}{2}$ " x  $\frac{1}{2}$ "—500 lb.  
LC200—2" x  $\frac{1}{2}$ "—600 lb.

**PACKING.**—  
Lengths of Bundle

Minimum weight of Bundle

|     | LC75 20 lengths/bundle | LC150 10 lengths/bundle |
|-----|------------------------|-------------------------|
| 16' | 96lb.                  | 80lb.                   |
| 20' | 120lb.                 | 100lb.                  |

## LYSAGHT CHANNEL CLIP



A heavy gauge hanger clip for use with joist clips to support furring or carrying channels.

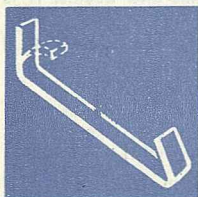
**MATERIAL.**—Steel, 12G, galvanized.

**SIZES.**—CC 75— $\frac{3}{4}$ " x  $\frac{3}{4}$ ".  
CC150— $1\frac{1}{2}$ " x  $\frac{3}{4}$ ".

**PACKING AND WEIGHT.**—

CC 75—Box of 100 pieces—7lb. nominal.  
CC150—Box of 100 pieces—10lb. nominal.

## LYSAGHT JOIST CLIP



A heavy gauge clip for attaching to the undersides of steel girders and beams to support channel clips or hangers for furred or suspended ceilings.

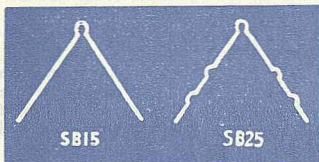
**MATERIAL.**—Steel, 12G, galvanized.

**SIZES.**—JC9— $7\frac{1}{2}$ " x  $\frac{3}{4}$ "; JC12— $10\frac{1}{2}$ " x  $\frac{3}{4}$ ".

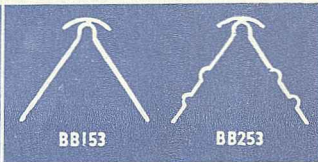
**PACKING AND WEIGHTS.**—

JC 9—Box of 100 pieces—19lb. nominal.  
JC12—Box of 100 pieces—25lb. nominal.

## LYSAGHT CORNER BEADING



SMALL NOSE—SB15, 25, 30



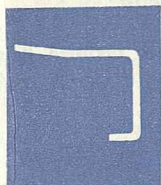
BULL NOSE—BB153, BB253

A die-straight bead with perforated flanges. Used for reinforcing the corners of columns, beams and masonry work. Staggered perforations provide an excellent plaster key right up to the nose of the bead.

A broad-nose corner bead spot-welded to a wing section. Used to reinforce exterior corners where rounded edges are desired.

|       |                 |                   |                       |     |                    |
|-------|-----------------|-------------------|-----------------------|-----|--------------------|
| SB15  | 26G. galv.      | 8', 9', 10' & 12' | $1\frac{1}{2}$ " wing | 145 | lb. per 1000 l/ft. |
| SB25  | " "             | " " " " "         | $2\frac{1}{2}$ "      | 235 | " " " "            |
| SB30  | " "             | " " " " "         | 3"                    | 290 | " " " "            |
| BB153 | 20G. steel trim | 8', 9' & 10'      | $1\frac{1}{2}$ "      | 310 | " " " "            |
| BB253 | 26G. wing       | " " " "           | $2\frac{1}{2}$ "      | 405 | " " " "            |

## LYSAGHT CASING BEADS—SC4, SC6, SC7



A short wing square casing bead used as a plaster stop and trim around door, window and other openings.

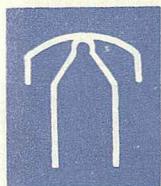
**MATERIAL.**—24G steel galv.

**LENGTHS.**—7' and 10'.

**SIZES AND WEIGHTS.**—

|     |       |                                    |                           |
|-----|-------|------------------------------------|---------------------------|
| SC4 | ..... | $\frac{1}{8}$ " x $1\frac{1}{8}$ " | leg—160lb. per 1000 l/ft. |
| SC6 | ..... | $\frac{1}{8}$ " x $1\frac{1}{8}$ " | " —180 " " " "            |
| SC7 | ..... | $\frac{1}{8}$ " x $1\frac{1}{8}$ " | " —190 " " " "            |

## LYSAGHT PARTITION TRIM—PT258



A partition cap spot-welded to a wing section. Used for 2" solid partitions, also as a stair rail cap.

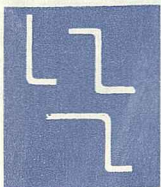
**MATERIAL.**—20G galv. steel trim (prime painted).  
26G galv. steel wing.

**LENGTHS.**—7', 8', 9', 10' and 12'.

**SIZE AND WEIGHTS.**—PT258:  $2\frac{1}{2}$ " wing x 2" width of trim—680lb. per 1000 l/ft.

**PACKING.**—100 pieces per package.

## LYSAGHT CEILING RUNNER



A specially designed steel section for fastening to the ceiling in order to provide positive anchorage and alignment of  $\frac{3}{4}$ " and  $1\frac{1}{2}$ " channels.

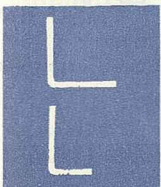
**MATERIAL.**—26G galv.

**LENGTHS.**—10' only.

**SIZES AND WEIGHTS.**—

|       |                                                       |                       |
|-------|-------------------------------------------------------|-----------------------|
| CR500 | $\frac{5}{8}$ " x $2\frac{3}{8}$ "                    | 185lb. per 1000 l/ft. |
| CR510 | $\frac{5}{8}$ " x $2\frac{5}{8}$ " x $1\frac{1}{4}$ " | 280 " " " "           |
| CR516 | $\frac{5}{8}$ " x $1\frac{7}{8}$ " x 2"               | 280 " " " "           |

## LYSAGHT BEAM RUNNER—BR75, BR150



A steel section similar in application to the ceiling runner. Attached to a beam, it holds the  $\frac{3}{4}$ " and  $1\frac{1}{2}$ " channels in alignment.

**MATERIAL.**—26G steel galv.

**LENGTH.**—10' only.

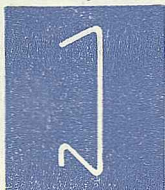
**SIZES AND WEIGHTS.**—

|       |      |                                     |                       |
|-------|------|-------------------------------------|-----------------------|
| BR 75 | .... | $3\frac{1}{4}$ " x $1\frac{1}{4}$ " | 280lb. per 1000 l/ft. |
| BR150 | .... | $2\frac{1}{2}$ " x 2"               | 280 " " " "           |

**PACKING.**—20 pieces per package.



## LYSAGHT BASE TRIM—BT250



An accurately formed wall and partition Base Trim suitable for any type of wall requiring a flush plastered finish.

**MATERIAL.**— 20G steel galvanized.

**LENGTH.**— 10' only.

**SIZE AND WEIGHT.**— BT250:  $2\frac{1}{2}''$  x  $\frac{5}{8}''$ —500lb. per 1000 l/ft.

**PACKING.**— 10 pieces per package.

## LYSAGHT BASE TRIM SPLICE PLATE—SP250

Used to butt join Base Trims to provide an unbroken line.

**MATERIAL.**— 20G steel galvanized.

**SIZE.**— SP250: 4'' x  $2\frac{1}{2}''$ .

**PACKING.**— 100 pieces per package (8lb. nominal weight).

## LYSAGHT BASE TRIM CLIP

A special clip for holding the Base Trim to the  $\frac{3}{4}''$  channel studs.

**MATERIAL.**— 24G steel galvanized.

**SIZE.**— 2'' x 1'' x  $\frac{9}{16}''$  slot.

**PACKING.**— 1,000 per box—7lb. nominal weight.

## LYSAGHT FLOOR RUNNERS—FR100

A steel channel suitable for 2'' solid partitions with metal base trims.

**MATERIAL.**— 22G galvanized.

**LENGTH.**— 10' only.

**SIZE AND WEIGHT.**— FR100: 1'' x  $\frac{3}{8}''$ —150lb. per 1000 l/ft.

**PACKING.**— 20 pieces per bundle.

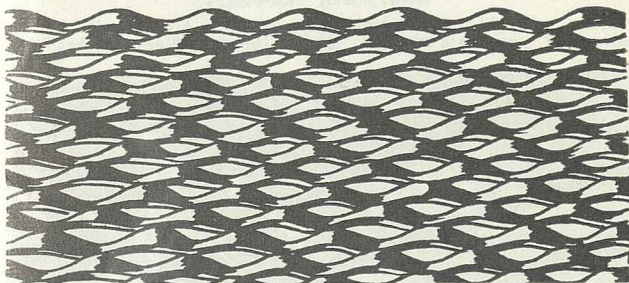
## LYSAGHT ORNAMENTAL MESH

Extensively used for decorative and protective finishes as well as for containers of many kinds, Lysaght Expanded Metal Ornamental Mesh is produced in the following mesh sizes:—

- "A" Mesh— $1/8"$  x  $7/16"$
- "C" Mesh— $1/4"$  x  $1-1/8"$
- "D" Mesh— $3/8"$  x  $1-11/16"$
- "FM" Mesh 23mm. x 64mm.

Available in varying strand widths from  $1/32"$  to  $1/4"$ , and in gauges 16 and lighter in mild steel, 20 and lighter in stainless steel, and 12 and lighter in aluminium, etc. Widths: 2', 3', 4'; various lengths.

**WEIGHT PER SQUARE YARD.**—Variable, dependent on gauge, mesh size, and width of strand.



## FLATTENED EXPANDED METAL ORNAMENTAL MESH

Lysaght Expanded Metal Ornamental Mesh can be flattened by a cold rolling operation which brings the strands of the mesh into the same plane. The gauge or thickness is slightly reduced without appreciably affecting the strength.

### TYPICAL USES:

**Decorative Finishes.**—Radios, heaters, grilles, ornamental trims, display counters, window dressing, modern furniture.

**Protective Finishes.**—Switchboards, transformers, refrigerator motor backings, machinery guards, ventilators.

**Containers.**—Baskets, bins, cages, carriers, pallets, trays.

## STEEL DECKING

Lightweight fireproof building construction is rapidly becoming an integral part of modern building methods.

Steel Decking is used extensively in this type of construction. The decks can be used for floors, roofs, and as wall cladding.

Lysaght's Works Pty. Limited, Newcastle Works, is equipped to manufacture a wide range of decks to specified shapes.

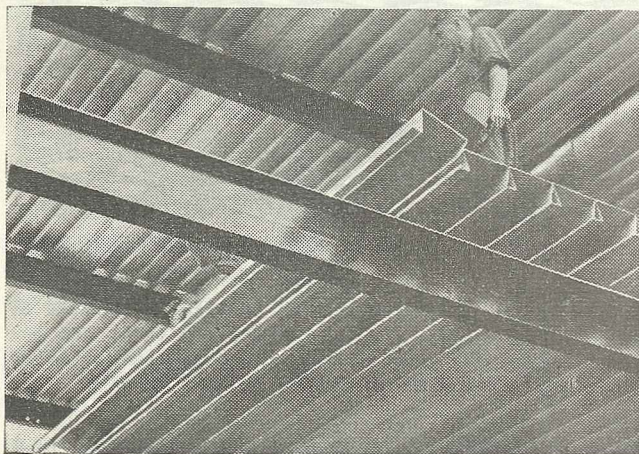
The Company would be pleased to advise on matters relating to the use of Steel Decking in lightweight building construction, and would welcome opportunities to submit quotations for the supply of steel sheets formed to particular specifications.

## STEEL FLOOR AND ROOF DECKS

### "TRI-LOK"

(Pat. Pend. 22374/56)

Decks of galvanized high-grade steel. Also available in galvanized phosphate treated, Zincanneal and Black finishes.



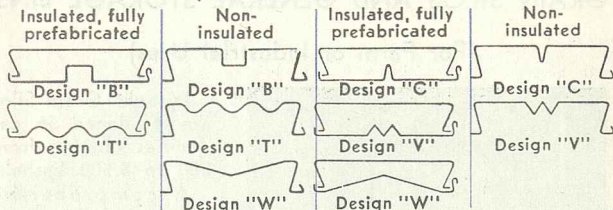
This special type deck is used in modern construction projects for roof or floor decking and, with slight variation of size and gauge, as wall cladding.

The illustration above shows "TRI-LOK" Decking being placed in position.



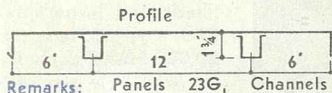
# "TRI-LOK" WALL CLADDING

(Pat. Pend. No. 22374/56)



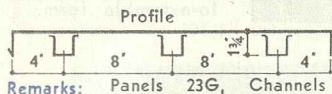
For further details write to Lysaght's Works Pty. Ltd., Newcastle Works, or John Lysaght (Aust.) Pty. Ltd., all capital cities.

## ROOF DECKS (RUBEROID TYPE)



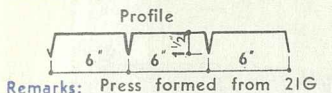
Product: 2 Channel, "B" type Deck.

Size: 24" finished width.



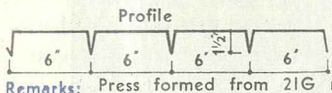
Product: 3 Channel, "B" type Deck.

Size: 24" finished width.



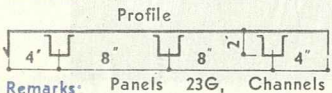
Product: 2 Channel, "C" type Deck.

Size: 18" finished width.



Product: 3 Channel, "C" type Deck.

Size: 24" finished width.



Product: 3 Channel, "D" type Deck.

Size: 24" finished width.

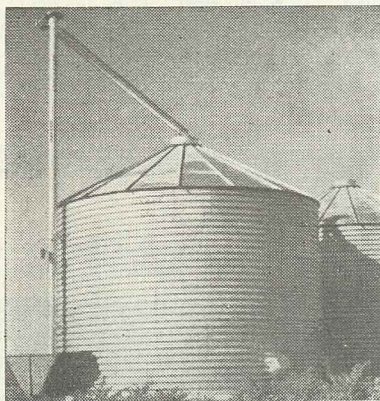
Standard lengths for all Decks range from 4' to 12' in increments of 4".

The channels are enlarged at one end of each panel to facilitate fitting. Present finish is by stove painting.

## LYSAGHT SPECIAL PRODUCTS

### GRAIN SILOS AND GENERAL STORAGE BINS

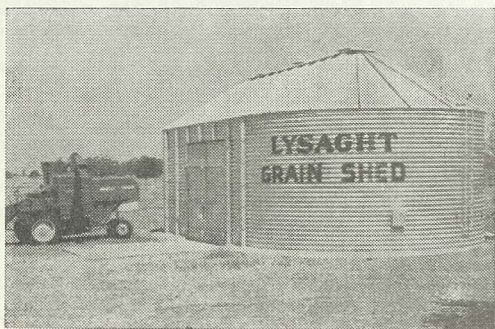
(For Farm or Industrial Uses)



Lysaght Grain Silos are produced in capacities ranging from 200 to 8,500 bushels.

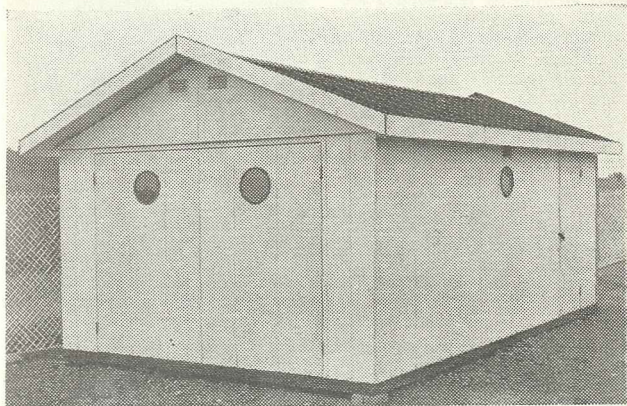
A comprehensive range of Lysaght Augers (Spiral Conveyors) is available for filling and emptying.

11,500-bushel Grain Sheds and large steel Storage Silos to 50,000-bushel capacity are available in ready-to-assemble form.



For further details and agents' names, write to Lysaght's Works Pty. Limited, Newcastle, or John Lysaght (Aust.) Pty. Limited, capital cities.

## LYSAGHT SPECIAL PRODUCTS (continued) ALL-STEEL GARAGE



19' 6" long x 12' 0" wide.

Wall height 7' 0" — Over-all height 10' 0".

STEEL GARAGE

Flat specially formed Zincaneal Rust-resistant steel panels.

Includes:

Double doors, 6' 8" high x 8' 8" wide.

Side Door, 6' 8" high x 2' 8" wide.

Porthole-type Fixed Windows.

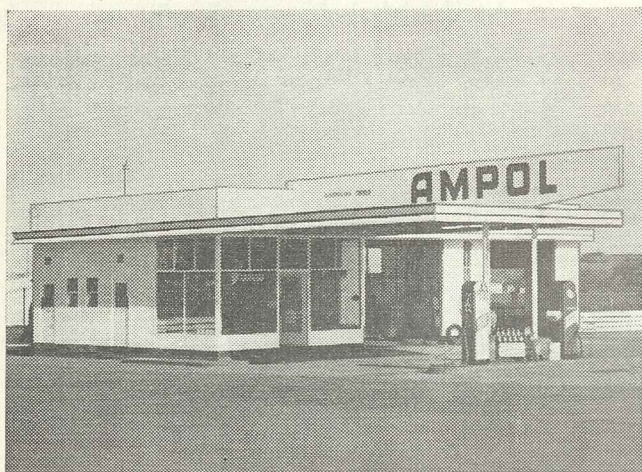
Pressed Louvre Ventilators.

Barge Boards, Fascia-type, concealed guttering.

**WATERPROOF — FIREPROOF**



## LYSAGHT SPECIAL PRODUCTS (continued) FORMED STEEL PANELS AND FLOOR UNITS



Typical All-steel Service Station erected in N.S.W.

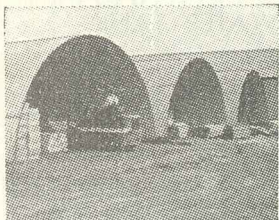
Manufacture of these items in quantity can be carried out to individual design and specification.

Dimensions of the panels depend primarily on structural strength required and finished appearance, and, secondly, on convenience of installation. Zincanneal steel panels are favoured for walls, roofs, ceilings, etc., whilst galvanized steel panels are normally used in floor construction. Manufacturing limitations in regard to panel form are not severe, and little difficulty is experienced in prefabricating panels to individual requirements.

(These have already been used in Service Stations, Garages, and floors in multi-storeyed buildings.)

## LYSAGHT SPECIAL PRODUCTS (continued)

### UTILITY TUNNEL



An economical all-purpose shelter. Specially designed to eliminate need for structural support.

Construction: Heavy gauge galv. corrugated steel sheets.

Length: Multiples of 10' 5" (to any length).

Available in the following heights and widths:—

| Diameter | Base width | Height  |
|----------|------------|---------|
| 14' 4"   | 4' 4"      | 7' 6"   |
| 14' 4"   | 13' 8"     | 9' 3"   |
| 19' 1"   | 19' 1"     | 9' 10½" |
| 23' 10½" | 23' 10½"   | 12' 3"  |

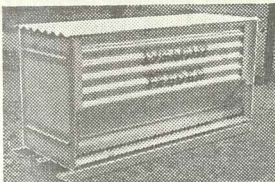
### OPEN-END BARN



Designed for temporary bulk or bagged grain storage, and also as an all-purpose shelter.

No internal framework, but some form of external buttress necessary.

Height, 18' 6"; width, 27' 3"; length, multiples of 12' 6" (to any length).



### SHEEP SELF-FEEDER

50-bushels capacity. Total trough length 16' — 8' each side. Full opening hinged lid. Adjustable swinging troughs. Sturdy skid base for towing.

### UTILITY SHED



Basic unit 20' long x 10' wide. Maximum headroom, 8'; minimum, 6' 6".

Optional extras available.—Front wall, double hinged doors, barge board, side door, rear window frame.



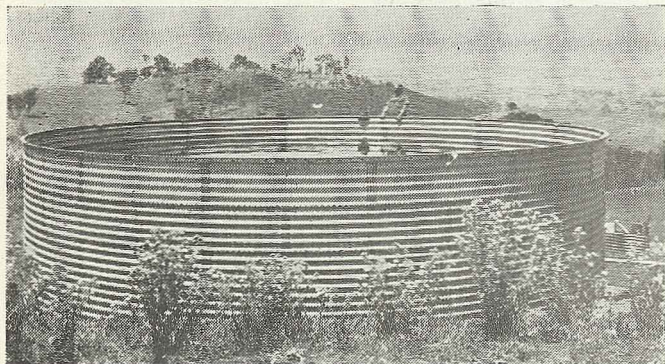
## LYSAGHT SPECIAL PRODUCTS (continued)

### LARGE-CAPACITY WATER TANK

(READY TO ASSEMBLE)

Large-capacity Water Tank Sets of heavy gauge galvanized curved sheets are manufactured by Lysaght's Works Pty. Limited, Newcastle, in six standard sizes:—

10,000 tall or squat    25,000    50,000    75,000    100,000 gallons.



For further details and agents' names, write to Lysaght's Works Pty. Limited, Newcastle, or John Lysaght (Aust.) Pty. Limited, capital cities.

## SPECIAL HARDWARE PRODUCTS

**LYSAGHT-MARSDEN BRAND.**—Manufactured by Lysaght's Works Pty. Ltd., Newcastle Works, from high carbon steels and heat-treated under rigid supervision.

**LYSAGHT-MARSDEN BRAND CARPENTERS' SAWS.**—In a full range of Rip, Hand, Panel and Tenon Saws. The only all-Australian Taper-ground Saw.

**LYSAGHT-MARSDEN BRAND CANE KNIVES.**—Of highest quality, with 15", 12" or 9" handles.

**LYSAGHT-MARSDEN BRAND CIRCULAR SAW BLANKS.**—From 6" to 48" diameter, and in a full range of gauges.

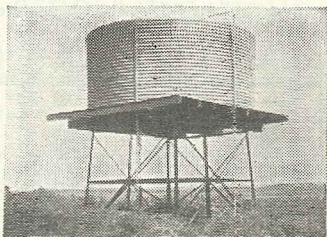
**SEEDLING TUBES** (as used by Forestry Commissions) are manufactured from galvanized sheets in the following standard sizes:—

6" x 6" (1 $\frac{3}{4}$ " dia.) crimped or plain.

8" x 6" (1 $\frac{3}{4}$ " dia.)    "    "    "



## LYSAGHT ORB CORRUGATED STEEL SHEETS FOR TANK-MAKING



In Australia to-day many millions of gallons of water are safely stored in tanks made from Lysaght's Orb Corrugated Galvanized Iron. Ranging in size from the familiar 500-gallon householder tank to giants capable of holding 100,000 gallons, they have proved themselves the most economical and efficient means of storing water available to the country dweller.

In industry, where supplies of "soft" rain water are a necessary part of the manufacturing process, Lysaght's Orb Galvanized Iron provides adequate storage facilities at low cost extended over many years.

### CAPACITY OF TANKS—CALCULATIONS

**SQUARE OR RECTANGULAR SECTION.**—All dimensions in feet:—

length x breadth x depth x  $6\frac{1}{4}$  = capacity in gallons.

**CIRCULAR.**—Capacity in gallons given by either of the following rules:—

A.  $\frac{\pi}{4} \times (\text{diameter})^2 \times \text{height} \times 6\frac{1}{4}$ .

B. Multiply circumference by itself and by half the height —  $C^2 \times h/2$ .

C. Multiply diameter by itself and by five times the height —  $D^2 \times 5h$ .

Example.—Diameter 6ft., height 6ft.

$$6 \times 6 \times 30\text{ft.} = 1,080 \text{ gals approximately.}$$

# Capacity of Corrugated Galvanized Sheet Tanks

WALL SHEETS ALL OF ONE SIZE FOR EACH TANK

| Height of Tank    | No. of Sheets to the Tank Perimeter | Capacity in Gallons |             |              |              |              |
|-------------------|-------------------------------------|---------------------|-------------|--------------|--------------|--------------|
|                   |                                     | 8ft. Sheets         | 9ft. Sheets | 10ft. Sheets | 11ft. Sheets | 12ft. Sheets |
| 4' or Two Rings   | 1                                   | —                   | —           | 180          | 220          | 270          |
|                   | 2                                   | 470                 | 600         | 740          | 910          | 1,080        |
|                   | 3                                   | 1,060               | 1,350       | 1,680        | 2,050        | 3,450        |
|                   | 4                                   | 1,900               | 2,400       | 3,000        | 3,600        | 4,300        |
|                   | 5                                   | 3,000               | 3,700       | 4,600        | 5,500        | 6,600        |
|                   | 6                                   | 4,200               | 5,200       | 6,500        | 7,900        | 9,500        |
|                   | 7                                   | 5,500               | 7,000       | 10,900       | 10,300       | 12,400       |
|                   | 8                                   | 7,200               | 9,200       | 12,400       | 13,400       | 16,200       |
| 6' or Three Rings | 4                                   | 2,800               | 3,600       | 4,500        | 5,300        | 6,300        |
|                   | 5                                   | 4,400               | 5,400       | 6,700        | 8,200        | 9,900        |
|                   | 6                                   | 6,100               | 7,800       | 9,700        | 11,300       | 13,600       |
|                   | 7                                   | 8,200               | 10,000      | 12,500       | 15,400       | 18,600       |
|                   | 8                                   | 10,000              | 13,000      | 16,400       | 20,100       | 24,300       |
|                   | 9                                   | 12,700              | 16,500      | 20,800       | 25,500       | 30,700       |
|                   | 10                                  | 15,700              | 20,400      | 25,600       | 31,500       | 37,900       |
|                   | 11                                  | 19,100              | 24,700      | 31,000       | 38,100       | 45,900       |
|                   | 12                                  | 22,700              | 29,400      | 36,900       | 45,400       | 54,600       |
| 8' or Four Rings  | 4                                   | —                   | —           | 5,700        | 7,000        | 8,400        |
|                   | 5                                   | 5,600               | 7,200       | 9,000        | 10,500       | 12,600       |
|                   | 6                                   | 8,100               | 9,800       | 12,300       | 15,100       | 18,200       |
|                   | 7                                   | 10,300              | 13,300      | 16,700       | 20,600       | 24,800       |
|                   | 8                                   | 13,400              | 17,400      | 21,900       | 26,900       | 32,400       |
|                   | 9                                   | 18,200              | 22,000      | 27,700       | 34,000       | 41,000       |
|                   | 10                                  | 21,000              | 27,200      | 34,200       | 42,000       | 50,600       |
|                   | 11                                  | 25,400              | 32,900      | 41,400       | 50,800       | 61,200       |
|                   | 12                                  | 30,200              | 39,200      | 49,300       | 60,500       | 72,900       |

The above allows sheet end lap of—

4" for tanks up to 5,000 gallons.

6" for tanks from 5,000 gallons to 10,000 gallons.

9" for tanks over 10,000 gallons.

## GAUGE OF WALL SHEETS

Maximum diameters allowable

| Height of Tank in ft. | Gauge |     |     |     |     |     |
|-----------------------|-------|-----|-----|-----|-----|-----|
|                       | 24    | 22  | 20  | 18  | 16  | 14  |
|                       | ft.   | ft. | ft. | ft. | ft. | ft. |
| 4                     | 30    | 38  | 48  | 60  | 75  | 90  |
| 6                     | 20    | 25  | 32  | 40  | 50  | 60  |
| 8                     | 15    | 18  | 24  | 30  | 36  | 42  |

# CORRUGATED GALVANIZED IRON TANKS

## RECOMMENDATIONS

1. Use only Lysaght Orb Galvanized Sheet.
2. Curve sheets gently and gradually. Severe changes in curvature on each pass and rapid speeds tend to force the zinc coating off the sheets. Curving rolls should be smoothly dressed, aligned, etc.
3. Tanks intended for use as rainwater tanks should be treated with TECT-A-TANK before filling. Tanks intended for the storage of underground or river waters can be painted inside with zinc dust/zinc oxide paint or a paint made of
  - $2\frac{1}{2}$  lb. of cement,
  - 1 pint of boiled linseed oil,
  - 1 oz. of gold size or  $\frac{1}{4}$  pint of terebine.The mixture should be well stirred during use.
4. All tanks should be fed individually from the supply, and not by connecting one tank to another. If tanks are connected to a common main, then cocks must be provided between each tank and the main to prevent inter-tank flow of water.
5. Provide strainers to prevent contamination by leaves, etc.
6. Provide ample ventilation in the case of covered tops.
7. Where practicable, install in shade.
8. In case of early failure of tank, advise the nearest office of John Lysaght (Aust.) Pty. Ltd., because renewal in the same form may give a repetition of the first experience. In very few cases has early failure been entirely due to any fault in the galvanized sheet.
9. If it is suspected that the water to be stored is corrosive to galvanized iron, send a sample of about two pints to the nearest office of John Lysaght (Aust.) Pty. Ltd., together with all relevant information. When sampling water, use perfectly clean vessels and stoppers, and rinse each one several times with the water being sampled before finally filling. The water will be analysed and a report made to the user stating any recommendations and/or precautions.

## CURVING ROLLS

Experience indicates that a better and more even grip of the sheets is obtained if the flutes of the roll are slightly shallower than the flutes of the sheet. The reason for this is that the standard  $\frac{3}{4}$ " depth of corrugations includes twice the thickness of metal in the sheet. As curving is applied principally to 24G, the recommended depth of flute for the curving rolls is  $11/16$ " bare (actually  $43/64$ ").



*Corr. Galv. Iron Tanks in Common Use*

| Capacity<br>of Tank<br>Gallons | Height | Dia-<br>meter | Walls<br>8/3" Corrugations<br>Orb Sheets |        |       | Bottom & Roof<br>Widths of 6'<br>Sheets Q.H. |             |
|--------------------------------|--------|---------------|------------------------------------------|--------|-------|----------------------------------------------|-------------|
|                                |        |               | No.                                      | Length | Gauge | Bottom<br>24G                                | Roof<br>26G |
| 100                            | 2' 0"  | 3' 2"         | 1                                        | 10' 0" | 24    | 1-24"                                        | 1-24"       |
| 200                            | 4' 0"  | 3' 2"         | 2                                        | 10' 0" | 24    | 1-24"                                        | 1-24"       |
| 300                            | 6' 0"  | 3' 2"         | 3                                        | 10' 0" | 24    | 1-24"                                        | 1-24"       |
| 300 Squat                      | 4' 0"  | 4' 0"         | 2                                        | 6' 0"  | 24    | 1-36"                                        | 1-36"       |
|                                |        |               | 2                                        | 7' 0"  | 24    |                                              |             |
| 400                            | 6' 0"  | 3' 8"         | 6                                        | 6' 0"  | 24    | 1-36"                                        | 1-36"       |
| 400 Squat                      | 4' 0"  | 4' 4"         | 4                                        | 7' 0"  | 24    | 1-36"                                        | 1-36"       |
| 500                            | 6' 0"  | 4' 0"         | 3                                        | 6' 0"  | 24    | 1-36"                                        | 1-36"       |
|                                |        |               | 3                                        | 7' 0"  | 24    |                                              |             |
| 500 Squat                      | 4' 0"  | 4' 11"        | 4                                        | 8' 0"  | 24    | 2-30"                                        | 2-30"       |
| 600                            | 6' 0"  | 4' 4"         | 6                                        | 7' 0"  | 24    | 1-36"                                        | 1-36"       |
| 600 Squat                      | 4' 0"  | 5' 3"         | 2                                        | 8' 0"  | 24    | 1-36"                                        | 1-36"       |
|                                |        |               | 2                                        | 9' 0"  | 24    | 1-30"                                        | 1-30"       |
| 800                            | 6' 0"  | 5' 0"         | 6                                        | 8' 0"  | 24    | 1-36"                                        | 1-36"       |
|                                |        |               |                                          |        | 24    | 1-30"                                        | 1-30"       |
| 800 Squat                      | 4' 0"  | 6' 3"         | 4                                        | 10' 0" | 24    | 1-30"                                        | 1-30"       |
|                                |        |               |                                          |        | 24    | 2-24"                                        | 2-24"       |
| 1,000 Small                    | 6' 0"  | 5' 7"         | 6                                        | 9' 0"  | 24    | 2-36"                                        | 2-36"       |
| 1,000 Full                     | 6' 0"  | 5' 11"        | 3                                        | 9' 0"  | 24    | 2-36"                                        | 2-36"       |
|                                |        |               | 3                                        | 10' 0" | 24    |                                              |             |
| 1,000 Squat                    | 4' 0"  | 6' 11"        | 4                                        | 11' 0" | 24    | 1-36"                                        | 1-36"       |
|                                |        |               |                                          |        |       | 2-30"                                        | 2-30"       |
| 1,000 Squat                    | 4' 0"  | 7' 4"         | 6                                        | 8' 0"  | 24    | 3-36"                                        | 3-36"       |
| 1,200                          | 6' 0"  | 6' 3"         | 6                                        | 10' 0" | 24    | 1-30"                                        | 1-30"       |
|                                |        |               |                                          |        |       | 2-24"                                        | 2-24"       |
| 1,500                          | 6' 0"  | 7' 1"         | 3                                        | 7' 0"  | 24    | 2-30"                                        | 2-30"       |
|                                |        |               | 6                                        | 8' 0"  | 24    | 1-36"                                        | 1-36"       |
| 2,000                          | 6' 0"  | 8' 3"         | 9                                        | 9' 0"  | 24    | 3-36"                                        | 3-36"       |
|                                |        |               |                                          |        |       | 1-30"                                        | 1-30"       |
| 3,000                          | 6' 0"  | 10' 0"        | 3                                        | 9' 0"  | 24    | 6-36"                                        | 6-36"       |
|                                |        |               | 9                                        | 8' 0"  | 24    |                                              |             |
| 4,000                          | 6' 0"  | 11' 6"        | 6                                        | 10' 0" | 24    |                                              |             |
|                                |        |               | 6                                        | 9' 0"  | 24    | 7-36"                                        | 7-36"       |
| 5,000                          | 6' 0"  | 13' 0"        | 9                                        | 9' 0"  | 24    |                                              |             |
|                                |        |               | 6                                        | 8' 0"  | 24    | 9-36"                                        | 9-36"       |
|                                |        |               |                                          |        |       | 36" wide                                     | *           |
| 10,000                         | 6' 0"  | 18' 0"        | 18                                       | 10' 0" | 22    | 17-22G                                       |             |
| 15,000                         | 6' 0"  | 22' 6"        | 12                                       | 10' 0" | 22    | 26-22G                                       |             |
|                                |        |               | 12                                       | 9' 0"  |       |                                              |             |
| 20,000                         | 6' 0"  | 25' 6"        | 15                                       | 10' 0" | 22    | 32-22G                                       |             |
|                                |        |               |                                          | 9' 0"  |       |                                              |             |
| 30,000                         | 6' 0"  | 32' 6"        | 33                                       | 10' 0" | 20    | 50-20G                                       |             |

\*Above 2,000 gallons only 36"-wide sheets are considered.

As tanks of 10,000 gallons capacity and above are not usually provided with tops, no material is included in this data for same.

# Lysaght TECT-A-TANK

Makes Tanks Last Longer —

## Another Lysaght Achievement

As a result of years of research in the field of corrosion, Lysaght's have now produced a product which greatly increases the life of new galvanized iron tanks used for the storage of rain water. This product, known as Tect-A-Tank, has proved far superior to any previously known means of protection. Field trials have proved its value. It is particularly effective in areas subject to heavy down-pours where, due to the high purity of the water, it has been common in the past for a proportion of early failures to occur in untreated tanks. Its use is limited to new tanks, and the treatment is not suitable for bore, well or river waters.

Tect-A-Tank consists of a mixture of specially developed crystals packed in hygienic plastic tubes of two lengths, suitable for use in either tall or squat tanks. Each tube will treat any tank up to 1,500 gallons. For larger tanks an additional tube is used for each 1,000 gallons increase in capacity. Tect-A-Tank is easy to use. The tube is simply hung in the new tank before it starts to fill with rain water.

The crystals commence their work immediately any water enters the tank, and dissolve completely in six to nine months, forming a microscopic protective film on the interior, the effect of which will last for the life of the tank. Because of the design of the tube, full protection is afforded to the whole of the tank, whether filling takes place at once or in stages over a lengthy period. One application of Tect-A-Tank is sufficient to obtain a long tank life. The empty tube may be removed if desired, but is not harmful if left in the tank. Tect-A-Tank dissolved in rain water is harmless for drinking purposes, has no taste or odour, and does not affect the hardness of the water.

Fuller technical details on Tect-A-Tank can be provided on application to Lysaght's Works Pty. Limited, Newcastle.

Tect-A-Tank is available from plumbers and hardware stores. If unobtainable locally, communicate with Lysaght's Works Pty. Limited, Newcastle, or offices of John Lysaght (Aust.) Pty. Limited in the capital cities.

## MISCELLANEOUS DATA

1 Cubic foot of distilled water at 62°F. weighs 62.321 lb. For all practical purposes, 62.5 lb.

1 Gallon of water weighs 10 lb.

1 Cubic foot =  $6\frac{1}{4}$  gallons.

8 Gallons = 1 bushel. 1 Bag = 3 bushels.

1 Bushel is equivalent to 1.28 cubic feet of space.

1 Bushel of wheat weighs approximately 60 lb.

1 Bushel of oats weighs 40 lb.

## ELECTRICAL STAMPINGS . . .



*for all requirements*

# Joseph Sankey & Sons

(Aust.) Pty. Ltd.

**GENERAL.** Sankeys are a world-wide organisation who for many years have specialised in the manufacture of stampings for the electrical industry. The Newcastle plant is one of the largest in the Southern Hemisphere capable of producing a great variety of stampings.

Electrical laminations are produced from a comprehensive range of special Australian silicon steels rolled and processed in Newcastle by Lysaght's Works Pty. Ltd. Details of these steels are shown on page

**ELECTRIC MOTORS.** The essential core of an electric motor is built up of a large number of thin stampings or laminations to form a stator and a rotor. Sankeys manufacture laminations for motors ranging from the tiniest fan motor to large industrial motors of 100 h.p. or more.

Most of these laminations are manufactured to customers' particular designs, but tools are also held in stock to produce a range of standard blank sizes, in which case slot details are supplied by the customer.

**RADIO AND TELEVISION.** In every radio set there is at least one small transformer; in television sets there are several. These small transformers are relatively simple, consisting mainly of a stack of laminations in the form of E's and I's.

Sankeys manufacture a large range of standard sizes of E and I laminations from 9/16" to 2-1/4" centre limb width.

**LIGHTING.** Modern fluorescent lighting operates on a very low voltage, which necessitates the use of a special type of transformer called a ballast. The standard U-shape lamination is produced by Sankeys for this purpose, as well as other special shapes to customers' designs.

**TRANSFORMERS.** The vast development of electricity generation and distribution in Australia calls for a great number of large transformers. The cores of such transformers are composed of accurately sheared and holed strips of high grade electrical steel. Sankeys are producing many of these cores, being equipped with the modern plant necessary to ensure the accuracy of shearing and holing required.

Enquiries are welcomed for the supply of small or large quantities of stampings, either from Sankeys' standard range or to your own particular design. In the latter case, detailed and dimensioned drawings will facilitate quotation.

Please address your enquiries to Joseph Sankey & Sons (Aust.) Pty. Ltd., P.O., NEWCASTLE, or to John Lysaght (Aust.) Pty. Ltd. in all capital cities.



## G.K.N. GROUP AGENCIES

Many companies of the G.K.N. Group manufacture goods which reach the Australian market. Full information about the following products, also literature and quotations, may be obtained on application to John Lysaght (Australia) Pty. Limited.

### G.K.N. (S.W.) LTD.

Castle Works & Rolling Mills—Cardiff, Wales, U.K.

Steel Bars and Sections. Hot and Cold Rolled Strip, fully hard, annealed and re-rolled to intermediate tempers as specified. Packing Case Hoops, Tube Strips, and High-tensile Strapping, etc. Wire, hard drawn brights, also bright and black annealed.

### G.K.N. (MIDLANDS) LTD.

Atlas Works—Darlaston, Staffs., U.K.

Railway Track Fastenings, Dogspikes, Fishbolts, Spring Washers.

### G.K.N. (MIDLANDS) LTD.

Cwmbran Works—Cwmbran, Mon., U.K.

Railway Track Fastenings, Cast Iron Sleeper Plates, etc.

### JOSEPH SANKEY & SONS LTD.

Hadley Castle Works—Wellington, U.K.

Motor Vehicle Wheels and Chassis Frames, Pressings.

### SANKEY-SHELDON LIMITED

46 Cannon Street, London, E.C.4, U.K.

Steel Furniture, Metal Trim Unistrut.

### EXORS. OF JAMES MILLS LTD.

Bredbury Steel Works—Woodley, near Stockport, England, U.K.

Bright Free-cutting Steel, leaded and non-leaded, Rounds, Flats, Hexagons, Squares and Special Sections. Railway Track Fastenings. Macbeth Spring Spikes. Mills Spring Steel Jaws and Keys. Rail Lubricators, Hurcol and Aladdin.

### BAYLISS JONES & BAYLISS LTD.

Victoria Works, Wolverhampton, U.K.

Railway Track Fastenings. Telephone and Transmission Line Hardware. Steel Fence Posts. Rolled Steel Sections.

### THE TENTOR BAR CO. LTD.

43 Upper Grosvenor Street, London, W.1, England, U.K.

Steel Reinforcing Bars.

### TWISTEEL REINFORCEMENT LIMITED

43 Upper Grosvenor Street, London, W.1, England, U.K.

Design serviced. Steel Reinforcement.

### USKSID ENGINEERING CO. LTD.

Uskside Iron Works—Newport, England, U.K.

Mining and Industrial Equipment. Winders and Haulages. Belt Conveyors. Electrical Coat Cutters. Heavy Duty Pumps. Compressed Air Jigging Conveyor Engines, etc.

### SOMERSET WIRE CO. LTD.

Steel Wire Manufacturers—Bridgwater, Somerset, England, U.K.

High Tensile Steel Wires, Bright and Galvanized, Wire for Pre-stressed Concrete. Bedding and Seating Rope and Industrial Spring making.

## UNISTRUT

Unistrut is a frame construction system which enables the fabrication of a large variety of strong sections.

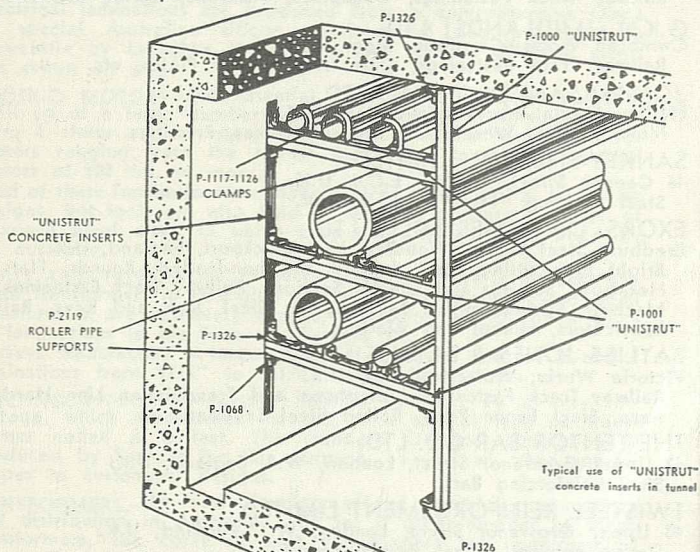
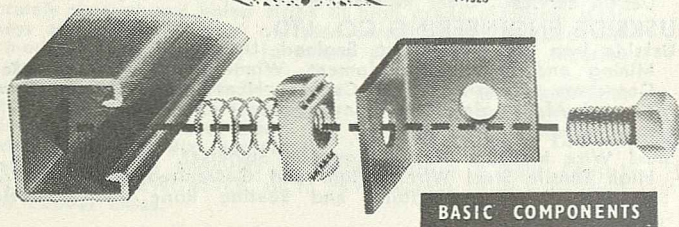
The method of construction allows the pulling down and re-use of all components as and when necessary.

Unistrut basically consists of formed steel channel sections, spring-loaded bolts and nuts, and other joining components.

All of these components may be fitted at any given position to give a structure to practically any design.

Particularly suitable for use in concrete structures, where special concrete inserts may be used.

Load data and details available from John Lysaght (Aust.) Pty. Ltd. in all capital cities.



# FIXING OF CORRUGATED SHEETS GALVANIZED IRON OR ZINCANNEAL

**GENERAL.**—Of all building materials in common use, Lysaght Corrugated Galvanized Iron or Zincanneal sheeting is one of the most popular, being adaptable for roofs, side walls, and vertical sheeting of all descriptions.

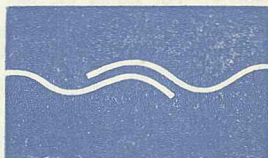
As is well known, corrugated sheet steel is produced in three pitches of corrugations, 5", 3", and 1", sometimes referred to as ripple iron. 3" pitch is that in most common use, and is produced in three widths, 8 x 3", 10 x 3", and 12 x 3" corrugations.

When a corrugated sheet is placed flat and observed, it will be found that there are a number of crests and hollows. If these are counted there will be found to be more of one than the other. If there are more crests than hollows, then the sheet is the "right way" up. This side of the sheet should be bearing Lysaght's brand.

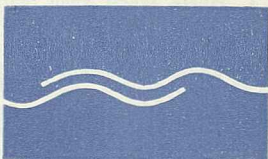
**SIDE LAPS.**—Sheets are said to be lapped one corrugation when both sheets are laid the right way up, and, as illustrated, the crest of one sheet fits over the crest of the other sheet. This lap is used for covering walls, or for roofs in dry areas.

Sheets are said to be lapped one and a half corrugations when sheets are laid with every second one up-side down, and with one crest and one hollow of each sheet matched. This is the standard lap for roofs. It is only used for wall sheeting where special protection from driving rain is required.

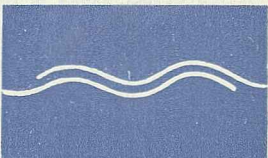
Sheets are said to be lapped two corrugations when two crests and one hollow of each sheet are matched, both sheets being the right way up. This is only required for special roof protection, e.g., low-pitched roofs such as awnings and lean-to's. The following table shows details of sheet sizes and coverages for the various side laps. In the following paragraphs we shall confine our remarks to the application of 3" corrugation steel sheet.



1 Corrug. Side Lap



1 1/2 Corrs. Side Lap



2 Corrs. Side Lap

## COVERAGE

|                                            | 8 x 3" Corr. | 10 x 3" Corr. | 12 x 3" Corr. |
|--------------------------------------------|--------------|---------------|---------------|
| Overall width of sheet ..                  | 2' 1 1/2"    | 2' 7 1/2"     | 3' 1 1/2"     |
| One corrugation lap ....                   | 2' 0"        | 2' 6"         | 3' 0"         |
| One and a half corruga-<br>tions lap ..... | 1' 10 1/2"   | 2' 4 1/2"     | 2' 10 1/2"    |
| Two corrugations lap ....                  | 1' 9"        | 2' 3"         | 2' 9"         |



For estimating the number of sheets required for one side of a pitched roof, it is usual to divide the length of roof to be covered by the width of the corrugated sheet used, allowing the appropriate deduction for the side lap required—e.g., using 10 x 3" corrugations sheet, side lap one corrugation, length of roof 50'. Then number of sheets required =  $20$ —i.e.,  $50 \div 2.5$ . It is usual to add one sheet for wastage, making a total of 21.

**PITCH OF ROOFS.**—Corrugated steel sheets are suitable for any roof pitch. Though a slope greater than  $\frac{1}{4}$  is preferred in snow country, for most Australian conditions slopes  $\frac{1}{4}$  and less are more pleasing to the eye.

**END LAPS.**—For pitches steeper than 1 in 4 use 6" end lap minimum; for pitches less than 1 in 4 use 9" end lap.

**SIDING.**—For siding use one corrugation side lap and 4" end lap.

**FIXING OF SHEETS.**—Sheets are fixed as follows:—

1. Roof sheets should be fixed through the top of every second corrugation at ends of sheets and every third corrugation at intermediate fixings.
2. Wall sheets should be fixed through the top of every third corrugation at end fixings and every fourth corrugation at intermediate fixings.
3. Where sheets span more than 3' between battens or purlins, it is advisable to fix the side lap at an intermediate point with a self-tapping screw or gutter bolt.

Following are details of the various nails, screws, etc., used for fixing corrugated sheeting.

**GALVANIZED ROOFING NAILS.**—Galvanized roofing nails are manufactured in lengths of 2" and  $2\frac{1}{4}$ ". They are normally purchased by the cwt. from manufacturers, but may be purchased by the pound in small quantities. For estimating purposes it may be assumed that a 1-lb. packet of  $2\frac{1}{4}$ " contains 100 nails, and that approx. 70 nails or 1 lb. of nails are required for one square of roofing. Galvanized roofing nails are the most suitable for fixing roofing sheets to hardwood roof timbers.

**GALVANIZED TWISTED-SHANK ROOFING NAILS.**—Galvanized twisted-shank roofing nails are similar to the standard roofing nail, with the exception that the shank has been twisted in order to obtain a better grip in the timber roof members. They are manufactured in lengths of 2" and  $2\frac{1}{4}$ ", and are normally used where the roof timbers are oregon or cypress. These nails are purchased by the cwt. from the manufacturers, but can be obtained from local hardware stores in 1-lb. lots. Approximately 70  $2\frac{1}{4}$ " roofing nails weigh 1 lb.

**GALVANIZED ROOFING SCREWS.**—Galvanized roofing screws are normally used in the softer roofing timbers such as oregon and cypress. Screws should be used in conjunction with lead or diamond galvanized sheet steel washers. For estimating purposes 70 screws and washers are required per 100 sq. ft. of roof area.  $1\frac{3}{4}$ " screws can be used, though 2" are normal for 3" corrugations sheet.

$2\frac{1}{4}$ " and  $2\frac{1}{2}$ " are required for 5" corrugations sheet.

$1\frac{1}{4}$ "—56 screws per lb., or  $1\frac{1}{4}$  lb. per square of roofing.

2"—50 screws per lb., or 1.4 lb. per square of roofing.

Though lead washers may be used alone, it is preferable that they be accompanied by a steel washer.

An impregnated paper washer should be used in conjunction with diamond metal washers.

Lead washers are bought approximately 64 per lb.

**GALVANIZED HOOK BOLTS.**—Galvanized hook bolts are used in a variety of shapes to fix corrugated steel sheet to steel structural members. These are available in lengths from 4" to 6", width from  $2\frac{1}{4}$ " to  $\frac{3}{8}$ ". For estimating purposes it may be assumed that half a gross of bolts are required for each square of roofing. Hook bolts should be ordered 2" longer than the width of purlin or rafter with which they are to be used, and to have a minimum thread of  $1\frac{1}{2}$ ".

When fixing, both edges of the sheet should be secured first to prevent the sheet spreading or becoming fan-shaped, which trouble may become more pronounced as the job progresses. When sheeting roofs or walls, the sheets of iron should be fixed in threes, the two outer sheets placed either under or over the middle sheet for one and a half corrugations; the building will then be quite proof against rain or wind.

A corrugated iron roof will last longer if the ends and side laps of sheets are painted, before fixing, with zinc dust, red oxide, or any good quality roofing paint. These points of contact are where corrosion may begin.

Zincanneal sheeted roofs may be painted immediately on erection, but unless using zinc dust paints, galvanized iron roofs should not be painted until the sheet has weathered—say six (6) months after erecting.

The development of metallic zinc dust paints has made possible the painting of new galvanized sheets without weathering or priming. The ingredients are obtained from leading manufacturers, and the paint has a covering capacity of 420 sq. ft. per gallon if sprayed, and 445 sq. ft. if brushed.

## RIDGING

To ensure the correct finish to the ridge of a roof, it is necessary to provide ridge capping, which may be either of the Standard or Ventilating type.

**STANDARD RIDGE CAPPING (See Fig. 1).—** Standard Ridge Capping (Ridge Capping with Roll) should be formed to the pattern as shown in Australian Standard Specification No. SPR3-1931. It will be found, however, that manufacturers in the various States may depart slightly from the standard pattern, but in the main the variation will be slight. When ordering various sizes of Ridge Capping, it should be noted that the size referred to is the width of the flat sheet from which the ridging is formed. The most popular sizes are 14" to 18", the 18" being used mainly for domestic construction, 14" to 16" being used for small sheds such as country farm structures.

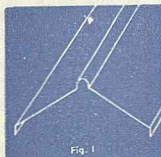


Fig. 1

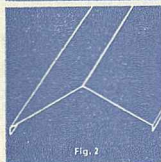


Fig. 2

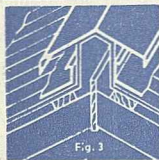


Fig. 3

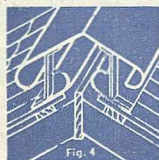


Fig. 4

Standard Ridge Capping should be of 24G Queen's Head Galvanized Iron or Zincanneal sheet, formed from the required width of sheet in 6' or 8' lengths—Fig. 1.

All Ridge Capping shall be securely fixed in conjunction with the roofing sheets with galvanized screws and lead washers or specially twisted galvanized roofing nails pierced through the top of every second corrugation and dressed well down into the corrugations.

**PLAIN RIDGE CAPPING (See Fig. 2).—** The plumber makes his own ridging, and normally forms it as a plain Ridge Capping without roll, as in Figure 2. This is prepared in lengths of 6' or 8' from 24G Queen's Head or Zincanneal flat sheet, and is applied to the roof in a similar manner as Standard Ridge Capping.

**VENTILATING RIDGES.—** Where it is necessary to obtain the maximum amount of ventilation in a building, it will be found that the application of a Ventilating Ridge will provide the requisite flow of air. Where it is desired to bird-proof ventilating ridges,  $\frac{1}{2}$ " galvanized wire mesh should be soldered to underside of Ridge Capping, taken down behind flashing, and either soldered to flashing or fixed to roof batten—Figs. 3 and 4.



## EAVES GUTTERS OR SPOUTING

The chief types of Eaves Gutters (alternatively called spouting) are as illustrated. With few exceptions, common practice is to use the standard quadrant type (Fig. 1). Though the shape of this is set out in Australian Standard Specification SPR13-1931, a number of manufacturers still fabricate quadrant guttering (or spouting) to their own particular pattern. Where replacements have to be made of small lengths of guttering to old buildings, then the material is formed to a pattern conforming to the existing installation.

### STANDARD EAVES GUTTERS (OR SPOUTING).—

Eaves gutters of the type and size selected should be formed from 24G Queen's Head Galvanized or Zincanneal R.L. flat sheet in 6' or 8' lengths, fixed in position with required falls to outlets; lapped, double riveted, and soldered at joints. Cut gutters to receive thimble connection of downpipes and properly solder at these junctions.

**EAVES GUTTERS FIXING.**—Eaves gutters can be fixed to the eaves with a variety of straps or brackets according to the method of fixing and type of bracket or gutter selected.

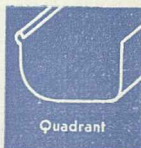
Brackets can be fixed:—

- To fascia boards with galvanized nails.
- To rafters with galvanized nails.
- In all-steel constructions to corrugated roofing sheets with galvanized bolts, nuts, and washers.

Brackets are formed from 16G galvanized strip and fastened over or on to the guttering.

In general, straps are bent over the lip of the gutter. To support the gutters against heavy snow or leaf loads, handling of gutters when cleaning, etc., an overstrap can be provided to fasten on to the rafters. Constructions exist using a distance tube and spike, or in which the bracket is riveted or attached by a nut and washer to the guttering.

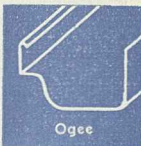
**SIZE OF GUTTERS.**—The size of the gutter necessary will depend upon the size and number of downpipes necessary to carry away the maximum rainfall from any given roof. The size of the gutter should be such that the entry of the downpipe will fit snugly into the bottom of the gutter, and will not project up the outer face. Galvanized crimp wire gratings must be provided at all downpipe outlets.



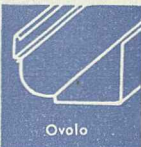
Quadrant



Bullnose  
Quadrant



Ogee



Ovolo



Half Round

## DOWNPIPES

**GENERAL.**—Downpipes are formed from 24G Queen's Head Galvanized or Zincanneal R.L. flat sheets in 6' or 8' lengths. The longitudinal joint may be formed with a  $\frac{3}{8}$ " seamed joint, or alternatively lapped  $\frac{1}{4}$ " and soldered.

**TYPES.**—Downpipes may be of round or rectangular section. The normal range of round downpipes is from 2"-6" dia., 3" being the usual size for cottage construction, 4" for farm sheds, while 5" and 6" sizes are generally confined to factory buildings. The downpipes may be formed from tapered strips, so that one end is slightly larger than the other, to allow lengths of downpipes to be fitted together, or alternatively one end of the pipe can be crimped.

| ROUND          |                 |                                    |                                          | RECTANGULAR                 |                 |                                    |                                          |
|----------------|-----------------|------------------------------------|------------------------------------------|-----------------------------|-----------------|------------------------------------|------------------------------------------|
| Dia.<br>inches | Area<br>sq. in. | Roof<br>area<br>drained<br>sq. ft. | Area of<br>building<br>roofed<br>sq. ft. | Size of<br>Piping<br>inches | Area<br>sq. in. | Roof<br>area<br>drained<br>sq. ft. | Area of<br>building<br>roofed<br>sq. ft. |
| 2"             | 3.14            | 314                                | 304                                      | 3" x 2"                     | 6               | 600                                | 582                                      |
| 2½"            | 4.9             | 490                                | 475                                      | 4" x 2"                     | 8               | 800                                | 775                                      |
| 3"             | 7.07            | 707                                | 686                                      | 4" x 3"                     | 12              | 1,200                              | 1,165                                    |
| 4"             | 12.56           | 1,256                              | 1,218                                    | 4" x 4"                     | 16              | 1,600                              | 1,555                                    |
| 5"             | 19.63           | 1,963                              | 1,905                                    | 5" x 4"                     | 20              | 2,000                              | 1,940                                    |
| 6"             | 28.27           | 2,827                              | 2,742                                    | 6" x 4"                     | 24              | 2,400                              | 2,315                                    |

**SIZE OF DOWNPIPES.**—For every 100 square feet of actual roof area drained, 1 sq. inch of downpipe is required, whether round or square. This calculation is based on the assumption that the maximum rainfall does not exceed 5" per hour.

It is considered the best practice to drain to different points, using smaller downpipes, rather than to one large outlet. Where possible, downpipes should be spaced at not more than 40' centres.

**FIXING OF DOWNPIPES.**—Downpipes may be secured:—

1. To weatherboards with 16G galvanized or Zincanneal straps.
2. To brickwork joints with galvanized steel wall hooks, one to each length of downpipe, or with 16G iron straps fixed to wall blocks with galvanized screws and washers.  
For additional holding capacity 16G galvanized iron straps can be soldered to the downpipe and fixed to the downpipe together with a self-tapping screw through the middle of the bracket.
3. To corrugated iron wall siding sheets with 16G straps bolted to the sheet with a pair of 3/16" galvanized gutter bolts and washers.

Downpipes should be blocked out 1" clear of all walls and painted prior to fixing.

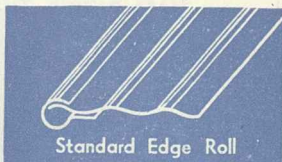
When buildings are erected on the boundary of a street alignment, the lower length of downpipe should be of cast iron, and chased into the outside face of the building for a minimum length of 6 feet.

**SOLDERING.**—Downpipes are fitted so that the lower length fits inside the upper lengths some 1½"-2". Joints are sweated and soldered.

## Finishes — Edge Rolls — Barge Boards

### STANDARD EDGE ROLL:

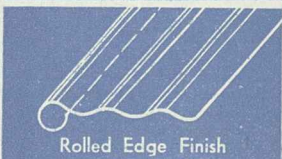
To ensure a perfect finish to the end of a corrugated sheet roof, an **EDGE ROLL** should be used. This may be obtained through any merchant.



Standard Edge Roll

### ROLLED EDGE FINISH:

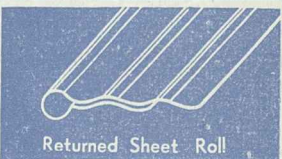
Where an **EDGE ROLL** is unavailable, a suitable finish may be formed by rolling the last corrugation of a sheet around a pipe of suitable diameter.



Rolled Edge Finish

### RETURNED SHEET ROLL:

Where portion of a sheet remains after the roof has been fixed, the simplest edge finish is to return the corrugated sheet upon itself, as shown, to form a returned sheet roll.



Returned Sheet Roll

### BARGE FINISH:

A barge finish, which may be preferred to an edge roll, is a two-piece barge moulding formed from 24 gauge flat sheet as illustrated.



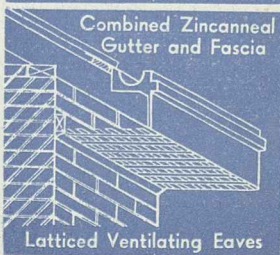
Wood Purlin

Two piece Barge Moulding

### COMBINED EAVES GUTTER AND FASCIA:

The combined eaves gutter and fascia shall be of 24G Queen's Head Galvanized Iron or Zinc-anneal.

The latticed ventilating eaves soffit can be formed from 1" wide strips of 26G Queen's Head, interlaced and riveted or soldered at certain joints.

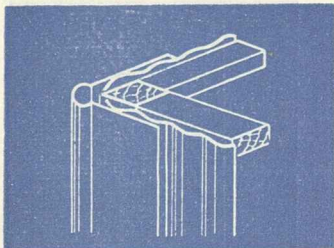
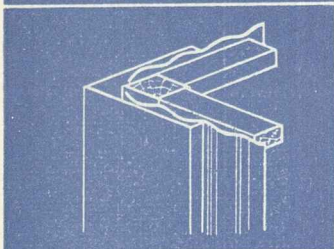
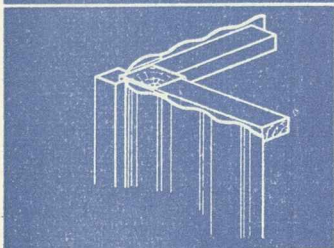
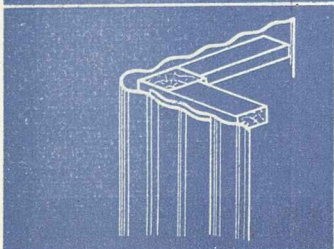


Combined Zincanneal Gutter and Fascia

Latticed Ventilating Eaves



## STANDARD CORNER FINISHES



Walls of Corrugated Galvanized Iron or Zincanneal fixed vertically may be finished at the corners in a variety of ways, as shown in the illustration.

**STANDARD RIDGING.** — When using standard or plain ridging, sheeting need not completely cover the side of the buildings, but may be one or two corrugations short of the length of the building, so that the capping laps over the corrugated sheet at least 3".

**PLAIN RIDGING.** — Plain ridging may be fixed in a similar manner to standard ridging.

**SPECIAL CORNER MOULDS.** — Special corner finish mouldings may be constructed from 24G Queen's Head or Zincanneal R.L. sheets in 6' or 8' lengths. These are fastened to the corner posts in conjunction with corrugated sheets by galvanized roofing nails or screws and washers.

**RETURN SHEET.** — Sheets can be corner finished by taking one corrugated sheet round the corner and over the adjacent sheet to give a minimum of one and a half corrugations side lap.

## ROOF TIMBERS (A.S. No. O-56—1948)

## RAFTERS FOR SHEET ROOFS—SINGLE SPAN

Cross-sectional Dimensions—Inches

| Spacing<br>in. | Span<br>ft. | Cross-sectional Dimensions—Inches |                 |                   |                 |                   |
|----------------|-------------|-----------------------------------|-----------------|-------------------|-----------------|-------------------|
|                |             | Groups A & B                      |                 | Group C           |                 | Group D           |
|                |             | Standard<br>Grade                 | Common<br>Grade | Standard<br>Grade | Common<br>Grade | Standard<br>Grade |
| 18             | 4           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 5           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 6           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 7           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 8           | 3 x 2                             | 3 x 2           | 3 x 2             | 3 x 2           | 4 x 1½            |
|                | 9           | 4 x 1½                            | 4 x 1½          | 4 x 1½            | 4 x 1½          | 4 x 1½            |
|                | 10          | 4 x 1½                            | 4 x 1½          | 4 x 2             | 4 x 2           | 5 x 1½            |
|                | 11          | 5 x 1½                            | 5 x 1½          | 5 x 1½            | 5 x 1½          | 5 x 1½            |
| 24             | 12          | 5 x 1½                            | 5 x 1½          | 5 x 2             | 5 x 2           | 5 x 2             |
|                | 4           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 5           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 6           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 7           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 2           | 3 x 2             |
|                | 8           | 3 x 2                             | 3 x 2           | 4 x 1½            | 4 x 1½          | 4 x 1½            |
|                | 9           | 4 x 1½                            | 4 x 1½          | 4 x 1½            | 4 x 2           | 4 x 2             |
|                | 10          | 4 x 2                             | 4 x 2           | 5 x 1½            | 5 x 1½          | 5 x 1½            |
| 30             | 11          | 5 x 1½                            | 5 x 1½          | 5 x 1½            | 5 x 2           | 5 x 2             |
|                | 12          | 5 x 2                             | 5 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 4           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 5           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 6           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 2           | 3 x 1½            |
|                | 7           | 3 x 1½                            | 3 x 2           | 3 x 2             | 4 x 1½          | 4 x 1½            |
|                | 8           | 4 x 1½                            | 4 x 1½          | 4 x 1½            | 4 x 2           | 4 x 1½            |
|                | 9           | 4 x 1½                            | 4 x 2           | 4 x 2             | 5 x 1½          | 5 x 1½            |
| 36             | 10          | 4 x 2                             | 5 x 1½          | 5 x 1½            | 5 x 1½          | 5 x 2             |
|                | 11          | 5 x 1½                            | 5 x 2           | 5 x 2             | 6 x 2           | 6 x 2             |
|                | 12          | 5 x 2                             | 5 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 4           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 5           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 6           | 4 x 1½                            | 3 x 2           | 3 x 2             | 3 x 2           | 3 x 2             |
|                | 7           | 3 x 2                             | 4 x 1½          | 4 x 1½            | 4 x 2           | 4 x 2             |
|                | 8           | 4 x 1½                            | 4 x 2           | 4 x 1½            | 4 x 2           | 4 x 2             |
| 48             | 9           | 4 x 2                             | 4 x 2           | 5 x 1½            | 5 x 2           | 5 x 2             |
|                | 10          | 5 x 1½                            | 5 x 2           | 5 x 1½            | 6 x 2           | 5 x 2             |
|                | 11          | 5 x 1½                            | 5 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 12          | 6 x 2                             | 6 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 4           | 3 x 1½                            | 3 x 1½          | 3 x 1½            | 3 x 1½          | 3 x 1½            |
|                | 5           | 3 x 1½                            | 3 x 2           | 3 x 1½            | 4 x 1½          | 3 x 2             |
|                | 6           | 3 x 1½                            | 4 x 1½          | 3 x 2             | 5 x 2           | 4 x 1½            |
|                | 7           | 4 x 1½                            | 5 x 2           | 4 x 1½            | 5 x 2           | 4 x 2             |
| 48             | 8           | 4 x 1½                            | 5 x 2           | 4 x 2             | 6 x 2           | 5 x 2             |
|                | 9           | 5 x 2                             | 6 x 2           | 5 x 2             | 6 x 2           | 5 x 2             |
|                | 10          | 5 x 2                             | 6 x 2           | 5 x 2             | —               | 6 x 2             |
|                | 11          | 6 x 2                             | —               | 6 x 2             | —               | 7 x 2             |

## ROOF TIMBERS (A.S. No. O-56—1948)

## PURLINS FOR SHEET ROOFS—SINGLE SPAN

Cross-sectional Dimensions—Inches

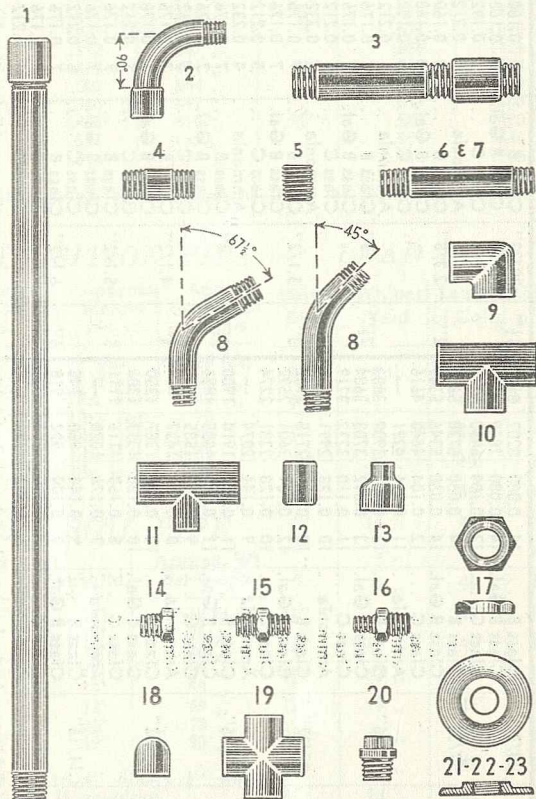
| Spacing<br>in. | Span<br>ft. | Cross-sectional Dimensions—Inches |                 |                   |                 |                   |
|----------------|-------------|-----------------------------------|-----------------|-------------------|-----------------|-------------------|
|                |             | Groups A & B                      |                 | Group C           |                 | Group D           |
|                |             | Standard<br>Grade                 | Common<br>Grade | Standard<br>Grade | Common<br>Grade | Standard<br>Grade |
| 30             | 10          | 4 x 2                             | 5 x 1½          | 5 x 1½            | 5 x 2           | 5 x 1½            |
|                | 11          | 5 x 1½                            | 5 x 2           | 5 x 2             | 6 x 2           | 6 x 2             |
|                | 12          | 5 x 2                             | 5 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 13          | 6 x 2                             | 6 x 2           | 6 x 2             | 6 x 3           | 6 x 3             |
|                | 14          | 6 x 2                             | 6 x 2           | 6 x 3             | 6 x 3           | 7 x 3             |
|                | 15          | 6 x 3                             | 6 x 3           | 7 x 3             | 6 x 3           | 7 x 3             |
|                | 16          | 7 x 3                             | 6 x 3           | 7 x 3             | —               | 8 x 3             |
|                | 17          | 7 x 3                             | —               | 8 x 3             | —               | 8 x 3             |
|                | 18          | 8 x 3                             | —               | 9 x 3             | —               | 9 x 3             |
|                | 19          | 8 x 3                             | —               | 9 x 3             | —               | 9 x 3             |
|                | 20          | 9 x 3                             | —               | 10 x 3            | —               | 10 x 3            |
| 36             | 10          | 5 x 1½                            | 5 x 2           | 5 x 1½            | 6 x 2           | 5 x 2             |
|                | 11          | 5 x 1½                            | 5 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 12          | 6 x 2                             | 6 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 13          | 6 x 2                             | 6 x 2           | 6 x 3             | 6 x 3           | 6 x 3             |
|                | 14          | 6 x 3                             | 6 x 3           | 7 x 3             | 6 x 3           | 7 x 3             |
|                | 15          | 7 x 3                             | 6 x 3           | 7 x 3             | —               | 7 x 3             |
|                | 16          | 7 x 3                             | 6 x 3           | 8 x 3             | —               | 8 x 3             |
|                | 17          | 8 x 3                             | —               | 8 x 3             | —               | 9 x 3             |
|                | 18          | 8 x 3                             | —               | 9 x 3             | —               | 9 x 3             |
|                | 19          | 9 x 3                             | —               | 9 x 3             | —               | 10 x 3            |
|                | 20          | 9 x 3                             | —               | 10 x 3            | —               | 10 x 3            |
| 42             | 10          | 5 x 1½                            | 5 x 2           | 5 x 2             | 6 x 2           | 6 x 2             |
|                | 11          | 5 x 2                             | 6 x 2           | 6 x 2             | 6 x 2           | 6 x 2             |
|                | 12          | 6 x 2                             | 6 x 2           | 6 x 2             | 6 x 3           | 6 x 3             |
|                | 13          | 6 x 2                             | 6 x 3           | 6 x 3             | 6 x 3           | 7 x 3             |
|                | 14          | 6 x 3                             | 6 x 3           | 7 x 3             | —               | 7 x 3             |
|                | 15          | 7 x 3                             | 6 x 3           | 7 x 3             | —               | 8 x 3             |
|                | 16          | 7 x 3                             | —               | 8 x 3             | —               | 8 x 3             |
|                | 17          | 8 x 3                             | —               | 8 x 3             | —               | 9 x 3             |
|                | 18          | 8 x 3                             | —               | 9 x 3             | —               | 9 x 3             |
|                | 19          | 9 x 3                             | —               | 10 x 3            | —               | 10 x 3            |
|                | 20          | 9 x 3                             | —               | 10 x 3            | —               | 10 x 3            |
| 48             | 10          | 5 x 2                             | 6 x 2           | 5 x 2             | 6 x 2           | 6 x 2             |
|                | 11          | 5 x 2                             | 6 x 2           | 6 x 2             | 6 x 3           | 6 x 2             |
|                | 12          | 6 x 2                             | 6 x 3           | 6 x 2             | 6 x 3           | 6 x 3             |
|                | 13          | 6 x 3                             | 6 x 3           | 6 x 3             | —               | 7 x 3             |
|                | 14          | 6 x 3                             | 6 x 3           | 7 x 3             | —               | 7 x 3             |
|                | 15          | 7 x 3                             | —               | 8 x 3             | —               | 8 x 3             |
|                | 16          | 8 x 3                             | —               | 8 x 3             | —               | 8 x 3             |
|                | 17          | 8 x 3                             | —               | 9 x 3             | —               | 9 x 3             |
|                | 18          | 9 x 3                             | —               | 9 x 3             | —               | 10 x 3            |
|                | 19          | 9 x 3                             | —               | 10 x 3            | —               | 10 x 3            |
|                | 20          | 10 x 3                            | —               | 10 x 3            | —               | 11 x 3            |



# STEWARTS & LLOYDS (AUSTRALIA) PTY. LTD.

(INCORPORATED IN VICTORIA)

## S. & L. SCREWED AND SOCKETED STEEL TUBES AND FITTINGS



## PIPE CHARACTERISTICS

## Plain End and Screwed and Socketed Pipes

| Nom. Bore ins.   | Outside Dia. ins. | Quality      | Thickness |       | Ft. per ton |      | Nom. Bore ins.   | Outside Dia. ins. | Quality      | Thickness |       | Ft. per ton |     |
|------------------|-------------------|--------------|-----------|-------|-------------|------|------------------|-------------------|--------------|-----------|-------|-------------|-----|
|                  |                   |              | SWG In.   | P/E   | S & S       | P/E  |                  |                   |              | SWG In.   | P/E   | S & S       |     |
| $\frac{1}{8}$ "  | 13/32"            | Class B ...  | 14        | 0.080 | 8202        | 8146 | $1\frac{1}{2}$ " | 1.29/32"          | Class B ...  | 8         | 0.160 | 750         | 745 |
|                  |                   | Class B Gal. | 14        | 0.080 | 7859        | 7840 |                  |                   | Class B Gal. | 8         | 0.160 | 728         | 724 |
|                  |                   | Class C ...  | 12        | 0.104 | 6830        | 6788 |                  |                   | Class C ...  | 6         | 0.192 | 636         | 634 |
| $\frac{1}{4}$ "  | 17/32"            | Class B ...  | 14        | 0.080 | 5728        | 5684 | 2"               | 2.3/8"            | Ammonia ...  | 5         | 0.212 | 583         | —   |
|                  |                   | Class B Gal. | 14        | 0.080 | 5346        | 5309 |                  |                   | Class B ...  | 8         | 0.160 | 590         | 586 |
|                  |                   | Class C ...  | 12        | 0.104 | 4648        | 4616 |                  |                   | Class B Gal. | 8         | 0.160 | 575         | 571 |
| $\frac{3}{8}$ "  | 11/16"            | Ammonia ...  | 11        | 0.116 | 4291        | —    | $2\frac{1}{2}$ " | 3"                | Class C ...  | 6         | 0.192 | 499         | 497 |
|                  |                   | Class B ...  | 13        | 0.092 | 3909        | 3883 |                  |                   | Ammonia ...  | 5         | 0.212 | 456         | —   |
|                  |                   | Class B Gal. | 13        | 0.092 | 3703        | 3684 |                  |                   | Class B ...  | 7         | 0.176 | 423         | 417 |
| $\frac{1}{2}$ "  | 27/32"            | Class C ...  | 11        | 0.110 | 3232        | 3219 | 3"               | 3.1/2"            | Class B Gal. | 7         | 0.176 | 413         | 408 |
|                  |                   | Ammonia ...  | 10        | 0.128 | 2991        | —    |                  |                   | Class C ...  | 5         | 0.212 | 355         | 352 |
|                  |                   | Class B ...  | 12        | 0.104 | 2715        | 2702 |                  |                   | Ammonia ...  | 4         | 0.232 | 327         | —   |
| $\frac{3}{4}$ "  | 1.1/16"           | Class B Gal. | 12        | 0.104 | 2601        | 2592 | $3\frac{1}{2}$ " | 4"                | Class B ...  | 7         | 0.176 | 359         | 354 |
|                  |                   | Class C ...  | 10        | 0.128 | 2281        | 2274 |                  |                   | Class B Gal. | 7         | 0.176 | 351         | 346 |
|                  |                   | Ammonia ...  | 9         | 0.144 | 2074        | —    |                  |                   | Class C ...  | 5         | 0.212 | 301         | 298 |
| $1\frac{1}{4}$ " | 1.11/32"          | Class B ...  | 11        | 0.116 | 1910        | 1900 | 4"               | 4.1/2"            | Ammonia ...  | 4         | 0.232 | 277         | —   |
|                  |                   | Class B Gal. | 11        | 0.116 | 1835        | 1826 |                  |                   | Class B ...  | 7         | 0.176 | 312         | 308 |
|                  |                   | Class C ...  | 9         | 0.144 | 1585        | 1580 |                  |                   | Class B Gal. | 7         | 0.176 | 302         | 299 |
| $1\frac{1}{2}$ " | 1.11/16"          | Ammonia ...  | 8         | 0.160 | 1437        | —    | 5"               | 5.1/2"            | Class C ...  | 5         | 0.212 | 262         | 260 |
|                  |                   | Class B ...  | 10        | 0.128 | 1357        | 1350 |                  |                   | Class B ...  | 7         | 0.176 | 276         | 272 |
|                  |                   | Class B Gal. | 10        | 0.128 | 1313        | 1306 |                  |                   | Class B Gal. | 7         | 0.176 | 267         | 264 |
| $1\frac{3}{4}$ " | 1.11/16"          | Class C ...  | 8         | 0.160 | 1115        | 1111 | 6"               | 6.1/2"            | Class C ...  | 5         | 0.212 | 231         | 228 |
|                  |                   | Ammonia ...  | 7         | 0.176 | 1028        | —    |                  |                   | Class B ...  | 7         | 0.176 | 224         | 220 |
|                  |                   | Class B ...  | 9         | 0.144 | 950         | 945  |                  |                   | Class B Gal. | 7         | 0.176 | 217         | 213 |
| $2\frac{1}{4}$ " | 1.11/16"          | Class B Gal. | 9         | 0.144 | 922         | 918  | $6\frac{1}{2}$ " | 6.1/2"            | Class C ...  | 5         | 0.212 | 187         | 184 |
|                  |                   | Class C ...  | 7         | 0.176 | 794         | 791  |                  |                   | Class B ...  | 7         | 0.176 | 188         | 184 |
|                  |                   | Ammonia ...  | 6         | 0.192 | 736         | —    |                  |                   | Class B Gal. | 7         | 0.176 | 183         | 179 |
|                  |                   |              |           |       |             |      |                  |                   |              | 5         | 0.212 | 157         | 155 |

Weights per foot of screwed and socketed tubing are based on the overall length of tube plus socket, screwed to basic engagement, and for the following lengths of tube:—  
 $\frac{1}{8}$ " and  $\frac{1}{4}$ ", 15' overall;  $\frac{3}{8}$ ", 19' overall;  $\frac{1}{2}$ " to 6", 21' 6" overall.

# A.I.S. SPUN CAST IRON PIPE

## SPIGOT AND SOCKET—12-FEET LENGTHS

| Dia-<br>meter | Wall<br>Thickness | Weight of<br>12' length | Dia-<br>meter | Wall<br>Thickness | Weight of<br>12' length |
|---------------|-------------------|-------------------------|---------------|-------------------|-------------------------|
| 4"            | .250              | 148 lb.                 |               | .406              | 575 lb.                 |
|               | .312              | 178 "                   |               | .531              | 729 "                   |
|               | .344              | 193 "                   | 12"           | .375              | 640 "                   |
| (Gas)         | .390              | 216 "                   |               | .469              | 780 "                   |
| 6"            | .281              | 249 "                   |               | .594              | 963 "                   |
|               | .344              | 296 "                   | 15"           | .437              | 920 "                   |
|               | .437              | 365 "                   |               | .531              | 1095 "                  |
| 8"            | .312              | 367 "                   |               | .656              | 1323 "                  |
|               | .375              | 431 "                   | 18"           | .468              | 1194 "                  |
|               | .500              | 554 "                   |               | .552              | 1379 "                  |
| 9"            | .344              | 447 "                   |               | .677              | 1660 "                  |
|               | .406              | 516 "                   | 20"           | .500              | 1420 "                  |
|               | .531              | 653 "                   |               | .593              | 1646 "                  |
| 10"           | .344              | 487 "                   |               | .718              | 1965 "                  |

The above can be cement lined by A.I.S. if required.

## COMPOSITION PIPE

## LEAD PIPE

| Size<br>Inside<br>Dia. | Approx.<br>Weight<br>per yd. | Approx.<br>length of<br>Coils | Inside<br>Dia. | Wt. per<br>Yard | Length<br>of Coils | Thickness<br>of Wall |
|------------------------|------------------------------|-------------------------------|----------------|-----------------|--------------------|----------------------|
| 1 1/4"                 | 3 lb.                        | 165 feet                      |                |                 |                    |                      |
| 5/16"                  | 3 3/4 lb.                    | 96 "                          | 1/2"           | 3 lb.           | 45'                | 3/32"                |
| 3/8"                   | 1 lb. 5oz.                   | 70 "                          | 1/2"           | 7 "             | 45'                | 1/4"                 |
| 1/2"                   | 1 lb. 7oz.                   | 70 "                          | 1/2"           | 9 "             | 45'                | 5/16"                |
| 3/4"                   | 2 lb. 1oz.                   | 45 "                          | 3/4"           | 5 "             | 45'                | 7/64"                |
| 1"                     | 2 lb. 13oz.                  | 45 "                          | 3/4"           | 9 "             | 45'                | 3/16"                |
|                        | 3 lb. 11oz.                  | 55 "                          | 1"             | 11 "            | 45'                | 1/4"                 |

## LEAD SOIL PIPE

| Inside<br>Dia.                                | Lengths | Approx. Wt.<br>per length | Inside<br>Dia. | Length<br>of Coils | Thickness<br>of Wall |
|-----------------------------------------------|---------|---------------------------|----------------|--------------------|----------------------|
| 1 1/2"                                        | 10'     | 18 lb.                    | 1"             | 45'                | 1/8"                 |
| 1 1/2"                                        | 10'     | 21 "                      | 1"             | 45'                | 3/16"                |
| 2"                                            | 10'     | 30 "                      | 1 1/4"         | 45'                | 1/8"                 |
| 2"                                            | 12'     | 39 "                      | 1 1/4"         | 45'                | 3/16"                |
| 3"                                            | 10'     | 58 "                      | 1 1/2"         | 45'                | 1/4"                 |
| 3"                                            | 12'     | 69 "                      | 1 1/2"         | 45'                | 1/4"                 |
| 4"                                            | 10'     | 78 "                      | 2"             | 45'                | 3/16"                |
| 4"                                            | 12'     | 90 "                      | 2"             | 45'                | 5/32"                |
| And up to 6" dia. x 3/8" wall<br>if required. |         |                           | 2"             | 45'                | 1/4"                 |



## GENERAL INSTRUCTIONS FOR PAINTING

To obtain the best possible results from paint it is essential that the surface is clean and firm, and that the necessary primer or sealer is applied to ensure durability and adhesion and prevent excessive absorption. Check the instructions on the container of each type of paint.

Ensure all surfaces are free from dirt, grease, oil, rust, and moisture, so that a finish resistant to peeling, cracking, blistering or discolouration is obtained.

Stir all materials thoroughly before use, a good plan being to decant the vehicle off the surface of the pigment, work up the pigment mass, and add the decanted liquid slowly while stirring. Where practicable, place the container upside down for as long as possible before opening.

When painting masonry, cement render, plaster and similar surfaces, allow to age for at least one month to ensure moisture and alkali content is reduced to safe, workable condition. Cement sealers are designed to form an alkali-resistant barrier, and to prevent excessive absorption.

Softwood requires an oil-based undercoat reduced with raw linseed oil. Hardwood requires a similar undercoat thinned with turpentine only.

Iron and steel should be primed with a red-lead primer or other recommended metal primer.

Galvanized iron can be treated in any of three ways:—

- Allow to age for at least six months before painting.
- Apply a coat of galvanized iron zinc dust primer.
- Pre-treat with a commercial preparation to produce a zinc phosphate coating. In each case apply finish without further undercoating.

Always allow ample drying time between successive coats.

Keep brushes and equipment clean. Always clean up immediately job is finished, removing paint spots from glass, etc.

### COVERING CAPACITY OF FIRST QUALITY PAINTS. (Average surface)

|                                      | Sq. ft. per gall. per coat |
|--------------------------------------|----------------------------|
| Exterior Gloss Paints .. .. .        | 800-850                    |
| Flat Enamel and Oil Finishes .. .. . | 600                        |
| Cold Water Paints .. .. .            | 1,000                      |
| Kalsomine .. .. .                    | 400. sq. ft. per 5lb. pkt. |
| Cement Sealer .. .. .                | 500-600                    |
| Galvanized Iron Primer .. .. .       | 900                        |
| Roof Paint .. .. .                   | 800                        |
| Aluminium Paint .. .. .              | 900                        |
| Flat Oil Stain .. .. .               | 800                        |
| Oil Varnish Stain .. .. .            | 800                        |
| Varnishes .. .. .                    | 900                        |

**ZINC DUST-ZINC OXIDE PAINT.**—For painting sheet laps and roofs.

|                         |                                    |
|-------------------------|------------------------------------|
| Zinc Dust .. .. . 6 lb. | Raw Linseed Oil . . . . . 1 gallon |
| Zinc Oxide Paste 12 „   | Liquid Driers .. . . . ¾ pint      |

N.B.—Zinc Oxide Paste is 82% zinc oxide and 18% raw linseed oil.

# HOW TO MAKE GOOD CONCRETE

**PROPORTIONS.**—Correct proportions of cement, aggregate, and water depend on nature of work for which concrete is intended, and character and condition of aggregate. Table of quantities for various classes of work is given below.

| Class of Work                                                                                                            | Proportions of nominal mix (volumes) | Materials required to make 10 cub. yds. of concrete |                |                           | Yield of mixture per paper bag of cement (c. ft.) | Water in gals. per bag of cement |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|----------------|---------------------------|---------------------------------------------------|----------------------------------|
|                                                                                                                          |                                      | Cement (bags)                                       | Sand (c. yds.) | Metal or gravel (c. yds.) |                                                   |                                  |
| High structural strength concrete for thin reinforced walls, slender reinforced columns, fence posts, heavy-duty floors. | 1:1½:3                               | 76                                                  | 4.2            | 8.5                       | 3.55                                              | 4.7                              |
| Commonly adopted mixture for reinforced concrete beams and floor slabs, roads, footpaths, etc., silos, etc.              | 1:2:4                                | 60                                                  | 4.4            | 8.9                       | 4.50                                              | 5.4                              |
| For strong foundations, lean mix roads.                                                                                  | 1:2½:5                               | 49                                                  | 4.5            | 9.1                       | 5.50                                              | 6.1                              |
| Foundations for roads, machinery, buildings, etc., and for concrete in mass walls.                                       | 1:3:6                                | 41                                                  | 4.6            | 9.1                       | 6.60                                              | 6.9                              |
| Watertight plaster coats for cellars, tanks, dairy walls, etc.                                                           | 1:2                                  | 128                                                 | 9.5            | —                         | 2.10                                              | 4.2                              |
| Surface rendering for two-course concrete paths.                                                                         | 1:2½                                 | 110                                                 | 10.1           | —                         | 2.45                                              | 4.5                              |
| Mortar for wall plaster, rough-casting, and stucco.                                                                      | 1:3                                  | 96                                                  | 10.6           | —                         | 2.80                                              | 4.9                              |

Job proportioning may be by volume or weight; volumetric method is usual for small jobs. Water should be carefully measured, allowance being made for moisture content of sand.

## CONCRETE (continued)

### MATERIALS

**PORTLAND CEMENT.**—Normal type suited to all normal work; High-Early Strength and Low-Heat for special applications only.

**Packing.**—Paper bags hold 1 cu. ft. = 94 lb. nett.

**Storage.**—Must be dry; stack away from exterior walls, and in a manner to prevent air circulation through stack.

At time of use, cement should be free-flowing and free from lumps.

**SAND OR FINE AGGREGATE.**—Must be clean and free from earth, clay, humus, etc.; a coarse sand is best for concrete making, but particles should preferably be graded from coarse to fine. A sand containing silt and/or clay should be washed before use.

**COARSE AGGREGATE.**—May be gravel or crushed stone, graded from the largest particles down to the size of the largest sand grains to be used. Particles should be clean, hard, impervious and free from organic matter.

**OTHER AGGREGATE.**—(1) Crushed blast furnace slag may be an economic and satisfactory material. (2) Cinders and coke-breeze should be used only for unimportant work unless previous experience has shown material from the same source to be satisfactory. (3) Lightweight aggregate of the bloated clay or shale type is suitable for structural concretes with strengths up to 4000-5000 p.s.i. The concrete density varies from 90 to 105 p.c.f. (4) Exceptionally lightweight aggregate—vermiculite or perlite—can be used for concretes where no structural strength is required. It has excellent sound-absorbing and heat-resisting properties. It is suitable for use as a fire-proofing medium.

**USES OF CONCRETE.**—Information relating to concrete problems will be given upon request to the Cement and Concrete Association of Australia, 14 Spring Street, Sydney.

**WATER.**—Should be drinkable.

### MIXING

Concrete should preferably be mixed in a concrete mixer, hand or power operated, or may be hand mixed.

Mixers, when used, should revolve at speeds recommended by makers, and a mixing time of  $1\frac{1}{2}$  to 2 minutes after addition of all ingredients is recommended.

**HAND-MIXING** is carried out as follows:—

**Equipment.**—Shovel, mixing board, watering can, measuring box.

**Method.**—(1) Sand measured and spread on mixing board.

(2) Cement spread over sand.

(3) Sand and cement turned over with shovels until thoroughly mixed and uniform colour throughout.

(4) Coarse aggregate measured, spread on top, and mixing process repeated until colour again uniform.

(5) Water added slowly in depression in centre and mixed as added until whole has a quaky, jelly-like consistency.



## CONCRETE (continued)

### PLACING

- (1) When concrete is thoroughly mixed, place without delay; concrete made with ordinary Portland cement should be placed within half an hour of mixing in summer and three-quarters of an hour in winter.
- (2) Place with care, avoiding chuting and dumping, which causes segregation of coarse from fine material.
- (3) Place as near as possible to final position; working concrete along in forms causes segregation.
- (4) Work thoroughly in mass of concrete against forms to ensure good packing.
- (5) When placing against hardened concrete—
  - (a) Thoroughly wire-brush surface and wash to remove all loose particles.
  - (b) Apply layer of mortar of same composition as new concrete (but without coarse aggregate), and of plastic consistency, to surface—preferably brushing in.
  - (c) Immediately place fresh concrete.

**CURING.**—As soon as placed, protect concrete against drying out by shading. When hard enough to resist finger impressions, cover, and keep moist for at least one week.

**WATERTIGHT CONCRETE.**—Essential requirements for watertight concrete are as follows:—

- (1) Suitable design (to prevent cracking).
- (2) Sound, well-graded aggregates of low porosity.
- (3) Limited amount of mixing water.
- (4) Plastic, workable mixes.
- (5) Thorough mixing.
- (6) Proper placing and compacting.
- (7) Favourable curing conditions.

Waterproofing admixtures may provide additional insurance where low hydraulic heads only are to be resisted, but are not a substitute for good concrete.

**COLOURED CONCRETE.**—Colour pigments for use with cement must be—

- (1) Proof against lime, alkali, and action of direct sunlight.
- (2) Very finely ground, insoluble in water, and uniform in shade and quality.

The most suitable pigments are metallic oxides of a high degree of purity; low-grade pigments must be used in larger quantities, thereby reducing strength and quality of the concrete or mortar. A pure white is obtained only by use of white Portland cement with white sand, crushed marble, etc.

For economy, pigment and cement should be ground together; or, failing this, sieved together to a uniform colour throughout. A steel floating trowel gives a darker colour than a wooden float. Concrete cured in sunlight will give a lighter colour than if cured in shade.

Coloured concrete is darker when wet than when dry. Trowelling on partly hardened surfaces causes colour blotches. Amount of pigment depends on a number of factors, and may vary from about 5 to 12 lb. per bag of cement.

**CONCRETE (continued)**

Use of the following pigments is recommended:—

| Colour         | Pigment                                                              |
|----------------|----------------------------------------------------------------------|
| Red .. .. .    | Iron oxide.                                                          |
| Yellow .. .. . | Iron oxide or hydroxide.                                             |
| Brown .. .. .  | Iron oxide.                                                          |
| Black .. .. .  | Iron oxide or manganese dioxide.<br>(Lamp black should NOT be used.) |
| Green .. .. .  | Chromium oxide.                                                      |
| Blue .. .. .   | Cobalt oxide.                                                        |

Pigments may be mixed to give other effects as desired.

Coloured cements with white cement as a base are available.

**FORMWORK.**—The following points must be observed if a good concrete job is to be obtained at lowest cost.

- (1) Shuttering must be strong and rigid.
- (2) It must be designed for removal without excessive damage to concrete or timber.
- (3) It must be carefully made and erected to avoid gaps between boards, panels, etc., which may require filling with clay, putty, or other suitable material.
- (4) It must be treated to prevent concrete from adhering to it.
- (5) It must not be removed until concrete has sufficient strength; this period will be longer in cold than in warm weather.

**REINFORCED CONCRETE.**—Concrete is strong in compression, weak in tension; hence, when tensile stresses are to be carried, steel bars are used to reinforce the concrete. Determination of the amount and placing of the steel require expert knowledge, and are not matters for the layman; once determined, the steel must be accurately placed on the job.**PAVING AND RENDERING.**—Materials required for 1,000 sq. ft. of surface:—

| Paving thickness        | Concrete Mix  |              |               |               |              |               |
|-------------------------|---------------|--------------|---------------|---------------|--------------|---------------|
|                         | 1:2:4         |              |               | 1:2½:5        |              |               |
|                         | Cement (bags) | Sand (c.ft.) | Metal (c.ft.) | Cement (bags) | Sand (c.ft.) | Metal (c.ft.) |
| 2" (Light foot traffic) | 38            | 75           | 150           | 31            | 77           | 154           |
| 3" (Normal footpath)    | 56            | 112          | 224           | 46            | 115          | 230           |
| 4" (Car drives, etc.)   | 76            | 150          | 298           | 62            | 154          | 308           |
| 6" (Heavy trucks, etc.) | 112           | 224          | 448           | 92            | 230          | 460           |

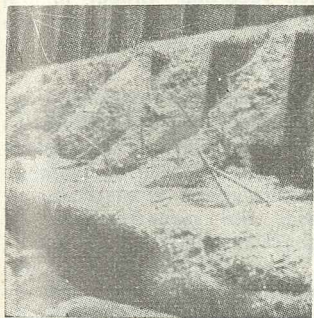
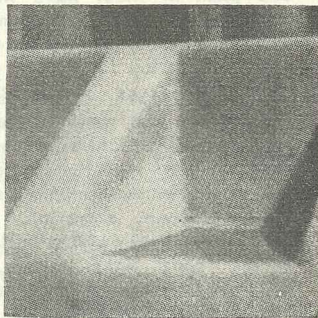
  

| Render thickness | 1:2           |              | 1:2½          |              | 1:3           |              |
|------------------|---------------|--------------|---------------|--------------|---------------|--------------|
|                  | Cement (bags) | Sand (c.ft.) | Cement (bags) | Sand (c.ft.) | Cement (bags) | Sand (c.ft.) |
| ½"               | 20            | 40           | 17            | 43           | 15            | 44           |
| ¾"               | 30            | 60           | 25            | 63           | 22            | 68           |
| 1"               | 40            | 80           | 34            | 85           | 30            | 88           |

FACTS EVERY CONTRACTOR SHOULD KNOW  
ABOUT

# GUNITE

FOR  
WATERPROOF LININGS, REPAIR,  
REINFORCEMENT, PROTECTION



BEFORE AFTER  
GUNITE REPAIRS TO SEAWALL

**WHAT IT IS.**—GUNITE is a registered trade mark, and is a pneumatically placed material SHOT into position at extremely high velocity by the CEMENT GUN process.

**WHAT IT DOES.**—GUNITE achieves the ultimate in concrete construction, being a "no-slump" concrete with perfect compaction. Cement, aggregate and a finely divided spray of water are united under pressure in the nozzle of a Cement Gun, and the resultant mix projected into place at velocities in excess of 500 feet per second. Concrete deposited in this way can be built up in thickness without slump, becomes integral with the surface encased, and results in a material of unparalleled density and strength. It is widely used throughout England and America to give structural strength and protection to a wide variety of engineering and architectural structures.

GUNITE



**SPECIFICATIONS.**—Actual physical tests have proved that a GUNITE can be made to satisfy any of the following:—

**Compression.**—Strengths, with special mix designs, have been recorded in excess of 11,500 lb./sq. inch. Normal first-quality GUNITE is guaranteed in excess of 6,000 p.s.i.

**Impermeability.**—Thin Gunite Slabs have shown no sign of leakage when subjected to heads of water up to 1,600 feet.

**Adhesion.**—With properly prepared surfaces, strengths of 600 p.s.i. in shear have been recorded without failure. Attempts to break the bond between concrete and the parent material invariably result in failure within the parent material.

**SUGGESTED USES.**—GUNITE presents the quickest, most economical and most efficient means of effecting repairs to concrete structures of all types—particularly where a thick layer of material is required on vertical or overhead surfaces—the encasement and protection of steel against fire, abrasives, corrosion, etc., the reconstruction and lining of chimney stacks and bunkers, the lining of tunnels, canals, pipe lines, sewers, reservoirs, and tanks; the grouting of stone embankments, retaining walls, and the like; the protection of piles, the construction of swimming pools, and the placing of refractory materials.

Based on the experience of associate Cement Gun Companies in England and America, a staff of operators has been specially trained for CEMENT-GUN work in Australia. The services of the Company's engineers are always freely available for consultation, and contract estimates will be submitted on application.

**CEMENT-GUN**  
PTY. LTD.

Contractors for GUNITE.

Selling Agents for the CEMENT-GUN.

189 BOTANY ROAD, WATERLOO, N.S.W.

## BRICKS AND BRICKWORK

1,000 common bricks weigh about  $3\frac{1}{2}$  tons.

Standard brick size =  $9'' \times 4\frac{1}{2}'' \times 3''$ .

Standard measure = 1 rod =  $16\frac{1}{2}' \times 16\frac{1}{2}' \times 13\frac{1}{2}''$ .

1 Rod = 272 super feet  $\times 1\frac{1}{2}$  brick thickness.

= 408 " "  $\times 1$  " "

= 816 " "  $\times \frac{1}{2}$  " "

= 306 cubic feet or  $11\text{-}1\frac{1}{3}$  cubic yards.

### QUANTITIES OF MATERIALS REQUIRED FOR ONE UNIT OF BRICKWORK

| Unit<br>Quantity                        | Bricks |         | Mortar:<br>Lime or<br>Cement<br>Cu. Ft. | 2:1 Cement<br>Mortar |         |
|-----------------------------------------|--------|---------|-----------------------------------------|----------------------|---------|
|                                         | No.    | Cu. Ft. |                                         | Cement               | Sand    |
|                                         |        |         |                                         | Bags                 | Cu. Ft. |
| <u><math>\frac{1}{4}</math>" Joints</u> |        |         |                                         |                      |         |
| 1 Rod                                   | 3,703  | 260     | 48                                      | 23                   | 46      |
| 1 Cu. Yd.                               | 327    | 22.97   | 4.03                                    | 2                    | 4       |
| <u><math>\frac{3}{8}</math>" Joints</u> |        |         |                                         |                      |         |
| 1 Rod                                   | 3,429  | 241     | 65                                      | 23.2                 | 70      |
| 1 Cu. Yd.                               | 302    | 21.27   | 5.73                                    | 2.04                 | 6.12    |

Weight of Brickwork.—In lime mortar, about 112 lb. per cu. ft.

—In cement mortar, about 120 lb. per cu. ft.

Paving requires per sq. yd.—32 bricks on flat; 48 bricks on edge.

### MORTAR FOR BRICKWORK.

- Cement mortar should be used where a high degree of impermeability is required, as in walls and piers below dampcourse, or where high strength is required, as in piers or walls carrying heavy loads. Usual proportions are 1 part cement to 3 parts sand, or 1 part cement to 4 parts sand by volume.
- Lime mortar is frequently used where strength is of less importance; it is more workable than cement mortar, resulting in a higher rate of bricklaying. Usual proportions are 3 to 4 parts of sand to 1 part of hydrated lime or lime putty by volume.
- Composition mortars consist of cement, hydrated lime, and sand, and are intermediate between cement and lime mortars in regard to strength and workability. Proportions used vary from a cement mortar with added lime equal to 10% of cement volume (to improve workability) to a lime mortar gauged with 10% cement immediately before use to improve robustness of the job; satisfactory proportions for normal brickwork are 1 part cement to 1 part hydrated lime or lime putty to 6 parts sand by volume.

**LABOUR.**—A good tradesman should lay, per 8-hour day, 600/700 bricks of  $9''$  work in cement-struck joint; 700/1,000 bricks of  $14''$  work in lime or compo. mortar; 500 bricks in selected face work.

# BRICKWORK DIMENSIONS

## N.S.W. STANDARDS

NOTES.— $\frac{1}{4}$ " should be added for bed under sills bearers, etc.  
Openings are  $\frac{3}{4}$ " longer than piers. Four courses equals 1'-1 $\frac{1}{2}$ ".

| Courses<br>or<br>Bricks | Piers         | Openings     | Heights    |
|-------------------------|---------------|--------------|------------|
| 13                      | 10' 1-1/2"    | 10' 2-1/4"   | 3' 7-7/8"  |
| 13½                     | 10' 6-3/16"   | 10' 6-15/16" |            |
| 14                      | 10' 10-7/8"   | 10' 11-5/8"  | 3' 11-1/4" |
| 14½                     | 11' 3-9/16"   | 11' 4-5/16"  |            |
| 15                      | 11' 8-1/4"    | 11' 9"       | 4' 2-5/8"  |
| 15½                     | 12' 0-5/16"   | 12' 1-11/16" |            |
| 16                      | 12' 5-5/8"    | 12' 6-3/8"   | 4' 6"      |
| 16½                     | 12' 10-5/16"  | 12' 11-1/16" |            |
| 17                      | 13' 3"        | 13' 3-3/4"   | 4' 9-3/8"  |
| 17½                     | 13' 7-11/16"  | 13' 8-7/16"  |            |
| 18                      | 14' 0-3/8"    | 14' 1-1/8"   | 5' 0-3/4"  |
| 18½                     | 14' 5-1/16"   | 14' 5-13/16" |            |
| 19                      | 14' 9-3/4"    | 14' 10-1/2"  | 5' 4-1/8"  |
| 19½                     | 15' 2-7/16"   | 15' 3-3/16"  |            |
| 20                      | 15' 7"        | 15' 7-7/8"   | 5' 7-1/2"  |
| 20½                     | 15' 11-13/16" | 16' 0-9/16"  |            |
| 21                      | 16' 4-1/2"    | 16' 5-1/4"   | 5' 10-7/8" |
| 21½                     | 16' 9-3/16"   | 16' 9-15/16" |            |
| 22                      | 17' 1-7/8"    | 17' 1-7/8"   | 6' 2-1/4"  |
| 22½                     | 17' 6-9/16"   | 17' 7-5/16"  |            |
| 23                      | 17' 11-1/4"   | 18' 0"       | 6' 5-5/8"  |
| 23½                     | 18' 3-13/16"  | 18' 4-9/16"  |            |
| 24                      | 18' 8-5/8"    | 18' 9-3/8"   | 6' 9"      |
| 24½                     | 19' 1-5/16"   | 19' 2-1/16"  |            |
| 25                      |               | 10' 6-3/4"   | 7' 0-3/8"  |

| Courses<br>or<br>bricks | Piers       | Openings     | Heights    |
|-------------------------|-------------|--------------|------------|
| 1                       | 4-5/16"     | 5-1/16"      |            |
| 1½                      | 9"          | 9-3/4"       | 3-3/8"     |
| 2                       | 1' 1-11/16" | 1' 2-7/16"   |            |
| 2½                      | 1' 6-3/8"   | 1' 7-1/8"    | 6-3/4"     |
| 3                       | 1' 11-1/8"  | 1' 11-7/8"   |            |
| 3½                      | 2' 3-3/4"   | 2' 4-1/2"    | 10-1/8"    |
| 4                       | 2' 8-7/16"  | 2' 9-3/16"   |            |
| 4½                      | 3' 1-1/8"   | 3' 1-1/8"    | 1' 1-1/2"  |
| 5                       | 3' 5-13/16" | 3' 6-9/16"   |            |
| 5½                      | 3' 10-1/2"  | 3' 11-1/4"   | 1' 4-7/8"  |
| 6                       | 4' 3-3/16"  | 4' 3-15/16"  |            |
| 6½                      | 4' 7-7/8"   | 4' 8-5/8"    | 1' 8-1/4"  |
| 7                       | 5' 0-7/16"  | 5' 0-13/16"  |            |
| 7½                      | 5' 5-1/4"   | 5' 6"        | 1' 11-5/8" |
| 8                       | 5' 9-15/16" | 5' 10-11/16" |            |
| 8½                      | 6' 2-5/8"   | 6' 3-3/8"    | 2' 3"      |
| 9                       | 6' 7-5/16"  | 6' 8-1/16"   |            |
| 9½                      | 7' 0"       | 7' 0-3/4"    | 2' 6-3/8"  |
| 10                      | 7' 4-11/16" | 7' 5-7/16"   |            |
| 10½                     | 7' 9-3/8"   | 7' 0-1/8"    | 2' 9-3/4"  |
| 11                      | 8' 1-15/16" | 8' 2-11/16"  |            |
| 11½                     | 8' 6-3/4"   | 8' 7-1/2"    | 3' 1-1/8"  |
| 12                      | 8' 11-7/16" | 9' 1-3/16"   |            |
| 12½                     | 9' 4-1/8"   | 9' 4-7/8"    |            |
| 13                      | 9' 8-3/16"  | 9' 8-15/16"  |            |



# MILLS

## SCAFFOLDS

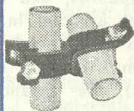
*A Division of G.K.N.-Lysaght Pty. Ltd.*

"Mills" Tubular Scaffolding is erected with Steel or Aluminium Tube and Patented Scaffold Fittings.

"Mills" Fittings are made from hardened and tempered spring steel, with galvanized bolts and nuts. They are subject to severe tests during manufacture, and are proved capable of carrying loads far in excess of normal practice.



**90° CLIP:**  
Standard  
load-bearing  
fitting, cross-  
ing tubes at  
right angles.



**SWIVEL  
CLIP:** Used  
on braces  
and similar  
members.

**END-TO-END  
COUPLER:**  
For butt-  
ing tubes  
together.



**PULL LOG  
CLIP:** For  
light connec-  
tions at right  
angles where  
there is no  
load.

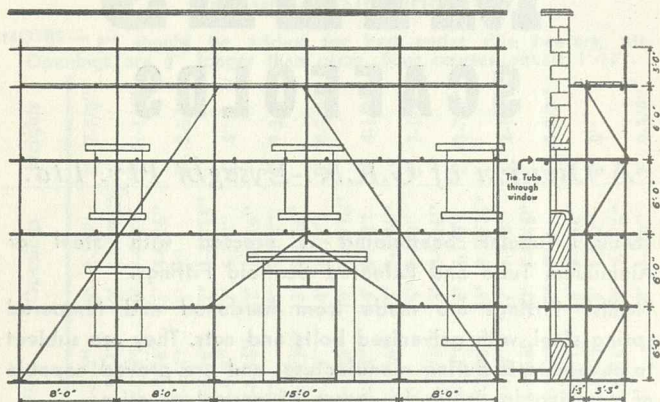


**BASE PLATE:**  
Used at the  
base of  
columns to  
distribute the  
load.



**BLADE-  
ENDED  
PUTLOG  
TUBE:** For  
bricklayers'  
scaffolds.

## INDEPENDENT SCAFFOLD

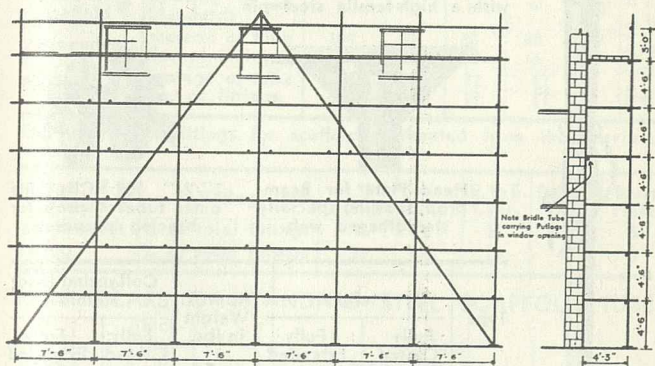


Sometimes called the double scaffold, since it incorporates two rows of uprights or standards, and is not dependent on the building itself in any way as a factor in the carrying of loads. For normal work the standards are placed in pairs 3' 3" or 4' 0" apart (to provide a platform the width of four or five 9" scaffold planks between standards), the distance between pairs being 6' to 10'.

## INTERNAL SCAFFOLD

Such a scaffold may be used for access to the ceiling and walls of a large room, cinema, or theatre auditorium, or any other structure where the construction or maintenance requires access to points which are not available from ground level. The arrangement of the scaffold can be made to suit the particular work in hand, but for normal use, when such a scaffold is required as a working platform only, and not for carrying heavy loads, the uprights or standards are placed at 8' to 10' centres in each direction, and lifts are spaced at 6' intervals. These scaffolds, which are sometimes referred to as "birdcage" scaffolds, require adequate bracing to prevent movement

## PUTLOG SCAFFOLD



Sometimes called the single scaffold, as against the independent or double scaffold. In this construction, one end of the putlog is fixed between the courses of brickwork, the other end to the standard by 90° clip, or else to the ledger by putlog clip. For normal work the standards are placed at intervals of 7' 6", and the lifts or working platforms at intervals to suit the job. A minimum amount of bracing is required, since use is made of the wall itself. The scaffold can be rapidly erected as the work progresses, if provision is made for the putlogs while the brickwork is green.

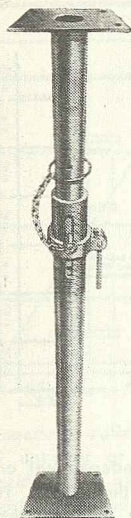
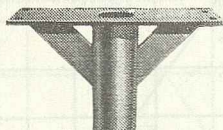
## SPECIAL USES

"Mills" Scaffolding is widely used for supporting concrete slab and wall formwork, and for an endless variety of structures, including stationary and mobile towers, temporary and semi-permanent buildings, storage racks, fun fair units, loading stages, temporary seating, grandstands, workshops, garages, jetties, foot bridges and platforms. "Mills" trained staff will design a tubular structure to suit any purpose.

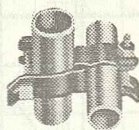


## MILPROP AND BEAMPROP

"Mills" Expanding Props cover a range from 6' 0" to 15' 0", with three types. They are robust and dependable, and are adjusted by nut and handle, with a high-tensile steel pin.



Head Plate for Beamprop, showing specially strengthened web.

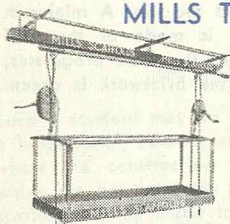


2 1/2" 90° Clip fits outer tube of prop for bracing purposes.

| Type | Height       |                | Approx. Weight in lbs. | Collapsing load in tons |                |
|------|--------------|----------------|------------------------|-------------------------|----------------|
|      | Fully Closed | Fully Extended |                        | Fully Closed            | Fully Extended |
| A    | 6' 0"*       | 10' 6"         | 53                     | 11.40                   | 8.63           |
| B    | 8' 0"        | 12' 6"         | 60                     | 10.15                   | 7.25           |
| C    | 10' 6"       | 15' 0"         | 69                     | 7.87                    | 3.80           |

\* 6' 6" for Beam Prop.

## MILLS TRAVELLING CRADLE



Saves time and cuts rigging costs. The painter can traverse a building horizontally and thus avoid many weary hours of raising and lowering fixed stages.

## AVAILABILITY AND SERVICE

All "Mills" Scaffolding is available ex stock for HIRE OR OUT-RIGHT PURCHASE, and teams of trained scaffolders will erect the simplest or the most difficult jobs at shortest notice. Literature illustrating the wide range of "Mills" equipment, and price lists and estimates for all types of structures, are available from any "MILLS" SCAFFOLDS office.

## ESTIMATING DATA

The approximate quantities of tube and fittings required for standard scaffolds are:—

| Type of Scaffold ↓ | Spacing of Standards → | 6'  | 7' | 8' | 9'      | 10' | Per 100 sq. ft.<br>of wall area |
|--------------------|------------------------|-----|----|----|---------|-----|---------------------------------|
| Independent        | Footage of tube        | 104 | 95 | 86 | 80      | 77  |                                 |
|                    | No. of fittings        | 23  | 20 | 18 | 16      | 15  |                                 |
| Putlog             | Footage of tube        | 79  | 74 | 72 | (7' 6") |     |                                 |
|                    | No. of fittings        | 15  | 14 | 13 | (7' 6") |     |                                 |

The analysis of fittings for scaffolds estimated from the previous table is:—

| Type of Scaffold ↓ | Fittings →          | 90° Clip | Swivel Clip | E. to E. Cplr. | Putlog Clip | Base Plate |
|--------------------|---------------------|----------|-------------|----------------|-------------|------------|
| Independent        | % of total fittings | 46       | 6           | 15             | 28          | 5          |
| Putlog             | % of total fittings | 39       | 4           | 14             | 40          | 3          |

## PARTICULARS OF STANDARD STEEL SCAFFOLD TUBE

| Trade Name | Gge. | Thick-ness of metal | I.D.   | O.D.   | Area sq. in. | Weight per ft. lb. | I      | Z     | K     |
|------------|------|---------------------|--------|--------|--------------|--------------------|--------|-------|-------|
| 2"         | 6    | .192"               | 1.525" | 1.909" | 1.036"       | 3.516              | .3866" | .405" | .611" |

## LOADING DATA FOR TUBULAR STEEL STRUCTURES

### LEDGERS OR TRANSOMS

| Clear Spans in feet | Safe Concentrated Load at centre of Span lbs. | Safe Distributed Load evenly distributed lbs. | Safe Concentrated Load at end of Cantilever lbs. | Safe Distributed Load on Cantilever lbs. |
|---------------------|-----------------------------------------------|-----------------------------------------------|--------------------------------------------------|------------------------------------------|
| 1                   | 2430                                          | 4860                                          | 608                                              | 1216                                     |
| 2                   | 1215                                          | 2430                                          | 304                                              | 608                                      |
| 3                   | 810                                           | 1620                                          | 202                                              | 404                                      |
| 4                   | 607                                           | 1214                                          | 152                                              | 304                                      |
| 5                   | 486                                           | 972                                           | 121                                              | 242                                      |
| 6                   | 405                                           | 810                                           | 101                                              | 202                                      |
| 7                   | 347                                           | 694                                           | 87                                               | 174                                      |
| 8                   | 303                                           | 606                                           | 76                                               | 152                                      |
| 9                   | 270                                           | 540                                           | 67                                               | 134                                      |
| 10                  | 243                                           | 486                                           | —                                                | 121                                      |
| 11                  | 221                                           | 442                                           | —                                                | 110                                      |
| 12                  | 202                                           | 404                                           | —                                                | 101                                      |

### COLUMNS OR STRUTS

| Unsupported Height in ft. | Safe Load for Welded Tube in tons |
|---------------------------|-----------------------------------|
| 1                         | 5.46                              |
| 2                         | 5.27                              |
| 3                         | 4.94                              |
| 4                         | 4.49                              |
| 5                         | 3.91                              |
| 6                         | 3.20                              |
| 7                         | 2.41                              |
| 8                         | 1.84                              |
| 9                         | 1.46                              |
| 10                        | 1.18                              |
| 11                        | .97                               |
| 12                        | .82                               |

Dotted lines indicate practical limit of safety for general use  
Safe Load on "Mills" 90° or Swivel Clip, 2,800 lbs.

# WILLIAMS CONCRETE FORM HARDWARE

*Distributed under Licence by Mills Scaffolds*

The "Williams" system of tying formwork has the following principal applications:—

1. Securing wall forms by the use of two clamps assembled to an expendable high-tensile crimped rod.
2. Securing cantilever forms used on block pours for dam and other mass construction.
3. Securing formwork on foundation pours "off rock."
4. Securing formwork on elevated pours "off rock."

Fig. 1 shows method of tying wall forms with Williams Hex-lock clamps. Positive disconnection leaves crimped rod end  $1\frac{1}{2}$ " back from finished surface. Bonded patch stands hammer test. Fig. 2 illustrates how the Tie-down and Pigtail system secures cantilever forms.

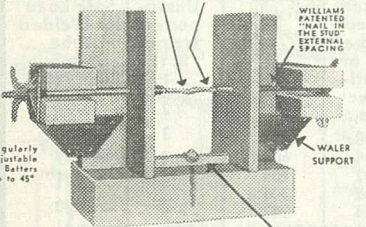
## USE WILLIAMS FORM HARDWARE FOR ECONOMY, SAFETY AND FAST POURING

HIGH TENSILE INNER RODS CRIMPED TO ACT AS JACK-TIES OR PREVENT TURNING OR PULLING

CLAMP HAS POSITIVE  $1\frac{1}{2}$ " OR MORE DISCONNECTION BACK FROM CONCRETE SURFACE

WILLIAMS PATENTED "WALL IN THE STUD" EXTERNAL SPACING

Angularly Adjustable For Batters Up to 45°



FOR RIGID ALIGNMENT USE WILLIAMS FORM ALIGNERS IN YOUR FOOTINGS

Fig. 1

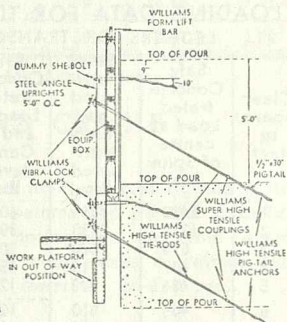


Fig. 2



"VIBRA-LOCK" CLAMP.  
Angle adjustable to 45°.

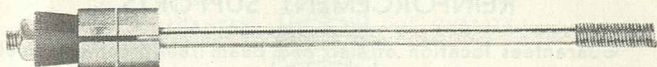


"HICKEY" ROD SPLICER AND ROD COUPLINGS for quick assembly to tie rods and rock anchors.

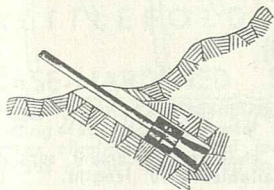


## HIGH TENSILE ROCK ANCHOR

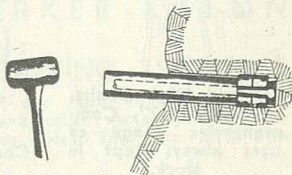
DEVELOPS FULL STRENGTH OF  $\frac{3}{4}$ " RODS — 35,000 LBS.



The latest type anchor for roof-bolting work in tunnels, mines, and heavy construction.



Drill hole  $1\frac{5}{8}$ " bottom size.



Shell expanded by several blows of 8lb. sledge against heavy-bore tube dropped down over anchor rod.

Rock Anchors are equally effective in concrete. Just drill  $1\frac{5}{8}$ " dia. hole, and expand the shell as above. Concrete should be at least two months old to develop full strength of anchor.

## THE WEDGE-LOCK TIE

A RE-USABLE WIRE FORM TIE

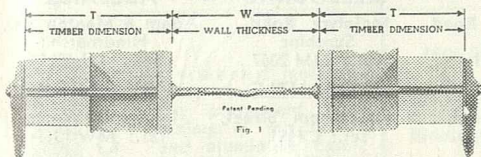


Fig. 1. — Meets all Engineers' and Architects' specifications, and is watertight.

Breaking load .. 6,250 lb.  
Working load .. 5,000 lb.

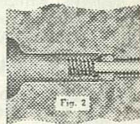


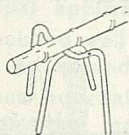
Fig. 2.—Double-lead thread takes only three turns for assembly. Outer unit may be re-attached to secure knee braces for scaffolding, or as a jack tie to eliminate offsets at construction joints.

## CONSTRUCTION ACCESSORIES

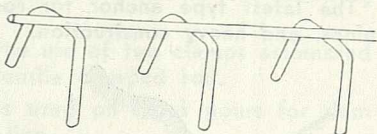
*Distributed by Mills Scaffolds*

### REINFORCEMENT SUPPORTS

Guarantees location of slab and beam reinforcement steel at correct centres.

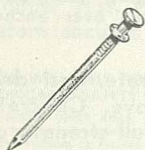


**Bar and High Chairs.**  
Heights to 12". Comprehensive range of sizes always kept in stock.



Continuous chair reinforcement supports available in 10' lengths.

### DUPLEX NAIL



Gives double security for temporary nailing of formwork or other timber which has to be dismantled. Lower head ensures tight joint. Top head enables extraction without damaging timber.

For illustrative literature and technical service, apply to any of the following MILLS SCAFFOLDS offices:—

#### SYDNEY

410-416 Mitchell Road,  
Alexandria  
Tel.: LA 7361

#### MELBOURNE

McIntyre Road,  
Sunshine  
Tel.: MM 2067

#### ADELAIDE

Adam & Manton Sts.,  
Hindmarsh  
Tel.: LU 4808

#### BRISBANE

436-444 Ann Street,  
Tel.: B 9002

#### FREMANTLE

8 Packenham Street,  
Tel.: L 1151

#### NEWCASTLE

Lysaght's Works  
Tel.: MW 1361

#### PORT KEMBLA

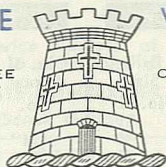
C.R.M. Works — Tel.: J 0422  
and from

G. F. BREWSTER & CO. LTD., HOBART—Tel. B 7365  
JOHN LYSAGHT (N.Z.) LTD., NEW ZEALAND

# NETTLEFOLDS PTY. LTD. SUNSHINE VICTORIA

THE GUARANTEE

OF QUALITY



## NETTLEFOLDS-PARKER-KALON (N.P.K.)

### CASE-HARDENED SELF-TAPPING SCREWS

Case-hardened Self-tapping Screws are used for joining and making fastenings to metal sheets and other metal parts. These screws eliminate the need for tapping holes. They tap their own threads as they are driven in.

#### THREAD TYPES

#### HEAD TYPES



Z

For joining and making fastenings to metal sheets from 28 gauge (.016) up to 6 gauge (.198).



A

For assembling light metal sheets up to 18 gauge (.050).



U

Hardened metallic drive screw for making permanent fastenings to iron, brass and aluminium castings, steel, plastics, etc.

C'sunk Head



Raised Head



Round Head



Mush. Head



Hex. Head



Binding Head



Phillips Recessed Head



NOTE.—For drill hole sizes, see page 94.



# HOLE SIZES FOR NETTLEFOLDS-P.K. SELF-TAPPING SCREWS

## TYPE "Z" N.P.K. SCREWS

| Dia. of Screw   | Steel Sheet Gauge                               | Dia. of Hole                                         | Drill Size                             |
|-----------------|-------------------------------------------------|------------------------------------------------------|----------------------------------------|
| No. 2<br>.088"  | 28-26<br>24<br>22<br>20-18<br>16                | .063<br>.067<br>.070<br>.073<br>.076                 | No. 52<br>51<br>50<br>49<br>48         |
| No. 4<br>.114"  | 28-26<br>24<br>22-20<br>18<br>16<br>14          | .086<br>.089<br>.093<br>.096<br>.099<br>.101         | 44<br>43<br>42<br>41<br>39<br>38       |
| No. 6<br>.139"  | 28-26<br>24-22<br>20<br>18<br>16<br>14<br>12    | .104<br>.106<br>.110<br>.111<br>.116<br>.120<br>.128 | 37<br>36<br>35<br>34<br>32<br>31<br>30 |
| No. 7<br>.154"  | 26-20<br>18<br>16<br>14<br>12                   | .116<br>.120<br>.128<br>.136<br>.140                 | 32<br>31<br>30<br>29<br>28             |
| No. 8<br>.166"  | 24-22-20<br>18<br>16<br>14<br>12<br>10-1/8      | .116<br>.128<br>.136<br>.140<br>.149<br>.152         | 32<br>30<br>29<br>28<br>25<br>24       |
| No. 10<br>.189" | 26-18<br>16<br>14<br>12<br>10-1/8<br>8          | .144<br>.152<br>.157<br>.161<br>.169<br>.173         | 27<br>24<br>22<br>20<br>18<br>17       |
| No. 12<br>.215" | 24-22-20<br>18<br>16<br>14<br>12<br>10-1/8<br>8 | .166<br>.169<br>.177<br>.182<br>.185<br>.196<br>.201 | 19<br>18<br>16<br>14<br>13<br>9<br>7   |
| No. 14<br>.246" | 14<br>12<br>10-1/8<br>8-6-3/16                  | .204<br>.209<br>.228<br>.234                         | 6<br>4<br>1<br>15/64                   |

## TYPE "A" N.P.K. SCREWS

| Dia. of Screw   | Steel Sheet Gauge             | Dia. of Hole                         | Drill Size                 |
|-----------------|-------------------------------|--------------------------------------|----------------------------|
| No. 4<br>.114"  | 28-26<br>24-22<br>20          | .086<br>.093<br>.098                 | No. 44<br>42<br>40         |
| No. 6<br>.141"  | 28-26-24<br>22<br>20          | .099<br>.101<br>.106                 | 39<br>38<br>36             |
| No. 7<br>.158"  | 28-26<br>24<br>22<br>20<br>18 | .104<br>.110<br>.113<br>.116<br>.120 | 37<br>35<br>33<br>32<br>31 |
| No. 8<br>.168"  | 26-24<br>22<br>20<br>18       | .113<br>.116<br>.120<br>.128         | 33<br>32<br>31<br>30       |
| No. 10<br>.194" | 26-24-22<br>20<br>18          | .128<br>.136<br>.149                 | 30<br>29<br>25             |
| No. 12<br>.221" | 24<br>22<br>20<br>18          | .147<br>.149<br>.152<br>.157         | 26<br>25<br>24<br>22       |
| No. 14<br>.254" | 24<br>22<br>20<br>18          | .180<br>.189<br>.191<br>.196         | 15<br>12<br>11<br>9        |

## TYPE "U" N.P.K. SCREWS

| Dia. of Screw                                           |                                                                                        | Dia. of Hole                                                                 | Drill Size                                                  |
|---------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------|
| No. 00<br>0<br>.2<br>4<br>6<br>7<br>8<br>10<br>12<br>14 | .060"<br>.075"<br>.100"<br>.116"<br>.140"<br>.154"<br>.167"<br>.182"<br>.212"<br>.242" | .052<br>.067<br>.086<br>.104<br>.120<br>.136<br>.144<br>.161<br>.191<br>.221 | No. 55<br>51<br>44<br>37<br>31<br>29<br>27<br>20<br>11<br>2 |

**NOTE.**—The recommended hole sizes for all types may be varied slightly if necessary. For hard material, use larger drill. For soft material, use smaller drill.

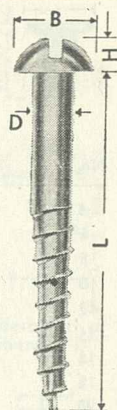
# Galv. Cone-head Roofing Screws

ASSURE  
PERMANENT  
ROOF FIXINGS

Dia. of Head "B" = twice diameter of Shank "D".  
Depth of Head "H" = .7 of the dia. of Shank "D".

APPROXIMATE NUMBER PER CWT.

| Length | Screw Gauge |      |           |      |           |      |
|--------|-------------|------|-----------|------|-----------|------|
|        | 10 (.192)   |      | 12 (.220) |      | 14 (.248) |      |
| "L"    | Gross       | Doz. | Gross     | Doz. | Gross     | Doz. |
| 1½     | 62          | 11   | 48        | 11   | —         | —    |
| 1¾     | —           | —    | 43        | 1    | 31        | 2    |
| 2      | —           | —    | 39        | 5    | 29        | 2    |
| 2¼     | —           | —    | 34        | —    | 27        | —    |
| 2½     | —           | —    | 30        | 9    | 24        | 4    |
| 3      | —           | —    | —         | —    | 20        | 3    |
| 3½     | —           | —    | —         | —    | 17        | —    |
| 4      | —           | —    | —         | —    | 15        | 6    |



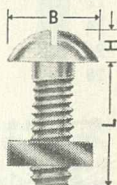
# Galvanized Mushroom-head Bolts and Nuts

## HEAD DIMENSIONS

Dia. of Head "B" = 2.25 dia. of Shank "D".  
Depth of Head "H" = ¾ of dia. of Shank "D".  
Available in 1-gross packets.

## NUT DIMENSIONS

|              |       |       |       |       |       |
|--------------|-------|-------|-------|-------|-------|
| Whit. Thread | 3/16" | 7/32" | 1/4"  | 9/32" | 5/16" |
| Across Flats | 3/8"  | 7/16" | 1/2"  | 1/2"  | 9/16" |
| Thickness    | .112" | .131" | .150" | .150" | .169" |



# Galv. Tank Rivets and Washers

## RIVETS

Packed in 7 lb. packets and ½ cwt. bags.  
Number of gross per cwt.:

Sizes: 5/16" x 3/16" = 157 gross 9 doz. per cwt.

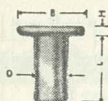
Sizes: 3/8" x 3/16" = 141 gross 9 doz. per cwt.

## WASHER DIMENSIONS

(Weights shown are approx. weights per gross)

| "D"    | "H"   | Gge. | Wgt.    |
|--------|-------|------|---------|
| 11/16" | 3/16" | 16   | .95 lb. |
| 13/16" | 1/4"  | 16   | 1.35 "  |
| 3/4"   | 9/32" | 16   | 1.08 "  |
| 13/16" | 5/16" | 16   | 1.22 "  |





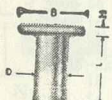
MILD  
STEEL

# COOPERS' RIVETS

Available in sizes No. 4 to 28.  
In  $\frac{1}{2}$  cwt. bags.

## DIMENSIONS AND WEIGHTS

| No. | "D"  | "B"  | "H"  | "L"  | Weight per<br>approx. 1,000 |
|-----|------|------|------|------|-----------------------------|
| 4   | .192 | .384 | .050 | .290 | 4 lb.                       |
| 6   | .220 | .440 | .060 | .320 | 6 "                         |
| 8   | .248 | .496 | .065 | .385 | 8 "                         |
| 10  | .262 | .524 | .075 | .405 | 10 "                        |
| 12  | .276 | .552 | .075 | .455 | 12 "                        |
| 14  | .290 | .580 | .080 | .470 | 14 "                        |
| 16  | .304 | .608 | .080 | .500 | 16 "                        |
| 18  | .318 | .636 | .080 | .520 | 18 "                        |
| 20  | .332 | .664 | .080 | .550 | 20 "                        |
| 22  | .332 | .664 | .085 | .575 | 22 "                        |
| 24  | .346 | .692 | .090 | .570 | 24 "                        |
| 26  | .346 | .692 | .090 | .635 | 26 "                        |
| 28  | .360 | .720 | .100 | .640 | 28 "                        |



MILD  
STEEL

# TINMEN'S RIVETS

Tinned or Black.

Available in sizes No. 4 to 20, in  $\frac{1}{2}$  cwt. bags.

## DIMENSIONS AND WEIGHTS

| No. | "D"  | "B"  | "H"  | "L"  | Weight per<br>approx. 1,000 |
|-----|------|------|------|------|-----------------------------|
| 4   | .094 | .188 | .023 | .180 | 10 oz.                      |
| 6   | .108 | .216 | .027 | .199 | 14 "                        |
| 8   | .122 | .244 | .030 | .230 | 1 $\frac{1}{4}$ lb.         |
| 9   | .136 | .272 | .034 | .246 | 1 $\frac{1}{2}$ "           |
| 10  | .150 | .300 | .037 | .271 | 2 "                         |
| 11  | .150 | .300 | .037 | .297 | 2 $\frac{1}{2}$ "           |
| 12  | .164 | .328 | .041 | .319 | 3 "                         |
| 13  | .187 | .374 | .047 | .338 | 4 "                         |
| 14  | .206 | .412 | .051 | .359 | 5 "                         |
| 16  | .218 | .436 | .055 | .445 | 7 "                         |
| 18  | .250 | .500 | .062 | .502 | 10 "                        |
| 20  | .276 | .552 | .069 | .563 | 14 "                        |



## REAPER RIVETS

### ROUND AND COUNTERSUNK HEAD

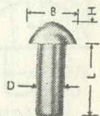
Available in sizes No. 5 and No. 6 Wire Gauge,  $\frac{3}{8}$ " to  $1\frac{1}{4}$ " long, in 7 lb. packets and  $\frac{1}{2}$  cwt. bags.

#### HEAD DIMENSIONS:

Round Head.—Diameter of Head "B" = 1.5 of diameter of Shank "D". Depth of Head "H" = .55 of diameter of Shank "D". "L" = length.

#### APPROXIMATE NUMBER OF RIVETS PER POUND

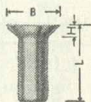
| Length        | $\frac{3}{8}$ " | $\frac{1}{2}$ " | $\frac{5}{8}$ " | $\frac{3}{4}$ " | $\frac{7}{8}$ " | 1"  | $1\frac{1}{4}$ " |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|------------------|
| No. 5 (.212") | 171             | 154             | 137             | 120             | 103             | 86  | 52               |
| No. 6 (.192") | 186             | 169             | 152             | 135             | 118             | 101 | 67               |



Countersunk Head.—Diameter of Head "B" = 1.6 of diameter of Shank "D". Depth of Head = .3 of diameter of Shank "D". Countersunk 90°. "L" = length.

#### APPROXIMATE NUMBER OF RIVETS PER POUND

| Length        | $\frac{3}{8}$ " | $\frac{1}{2}$ " | $\frac{5}{8}$ " | $\frac{3}{4}$ " | $\frac{7}{8}$ " | 1"  | $1\frac{1}{4}$ " |
|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|------------------|
| No. 5 (.212") | 201             | 184             | 167             | 150             | 133             | 116 | 82               |
| No. 6 (.192") | 216             | 199             | 182             | 164             | 148             | 131 | 97               |

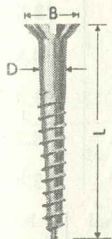


## WOOD SCREWS

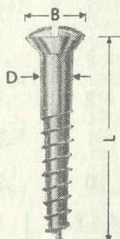
Nettlefold's Wood Screws are machine-turned to ensure perfect heads, concentricity of head with shank, freedom from burrs, and good appearance. Available in mild steel, brass, and other metals, and with Countersunk, Round, Raised or Special Heads.

#### HEAD TYPES AND DIMENSIONS

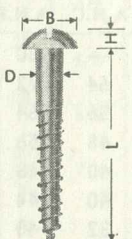
Countersunk Head



Raised Head



Round Head



Phillips Recessed Head



"B" = twice dia. of Shank "D". Included angle C'sink "A", 90°.

"B" = twice dia. of Shank "D". Included angle C'sink "A", 90°.

"B" = twice dia. of Shank "D". "H" =  $\frac{3}{4}$  of dia. "D".

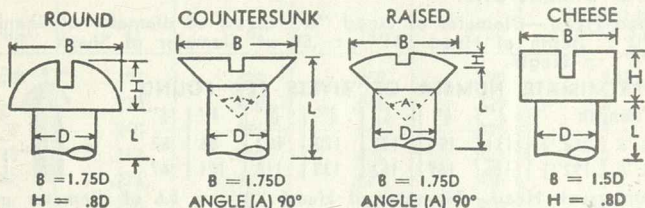
Raised Round or Countersunk

NOTE.—For decimal equivalents of screw gauges, see page 96.

# MACHINE SCREWS

Obtainable in Mild Steel, Brass, or other metals, in Whitworth, B.S.F., B.A., and S.A.E. Threads.

## HEAD TYPES AND DIMENSIONS



## DECIMAL EQUIVALENTS AND THREADS PER INCH

| Whitworth | Decimal | T.P.I. |        | B.A.   | Decimal | T.P.I. |
|-----------|---------|--------|--------|--------|---------|--------|
| 1/8"      | .1250   | 40     |        | 10     | .067    | 72.6   |
| 5/32"     | .1563   | 32     |        | 9      | .075    | 65.1   |
| 3/16"     | .1875   | 24     |        | 8      | .087    | 59.1   |
| 1/4"      | .2500   | 20     |        | 7      | .098    | 52.9   |
| 5/16"     | .3125   | 18     |        | 6      | .110    | 47.9   |
| 3/8"      | .3750   | 16     |        | 5      | .126    | 43.0   |
| 1/2"      | .5000   | 12     |        | 4      | .142    | 38.5   |
| S.A.E.    | Decimal | T.P.I. |        | 3      | .161    | 34.8   |
|           |         | A.N.C. | A.N.F. | 2      | .185    | 31.4   |
| 0         | .060    | —      | 80     | 1      | .209    | 28.2   |
| 1         | .073    | 64     | 72     | 0      | .236    | 25.4   |
| 2         | .086    | 56     | 64     | B.S.F. | Decimal | T.P.I. |
| 3         | .099    | 48     | 56     | 1/4"   | .2500   | 26     |
| 4         | .112    | 40     | 48     | 5/16"  | .3125   | 22     |
| 5         | .125    | 40     | 44     | 3/8"   | .3750   | 20     |
| 6         | .138    | 32     | 40     |        |         |        |
| 8         | .164    | 32     | 36     |        |         |        |
| 10        | .190    | 24     | 32     |        |         |        |
| 12        | .216    | 24     | 28     |        |         |        |
| 1/4"      | .250    | 20     | 28     |        |         |        |

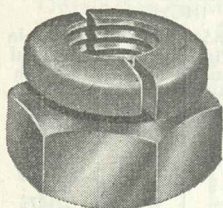
# DECIMAL EQUIVALENTS

WOOD SCREW GAUGE, IMPERIAL STANDARD WIRE GAUGE,  
AND FRACTIONS OF AN INCH

| Screw Gauge (S.G.) | Imp. St. Wire Gauge | Fraction of an Inch | Equiv. in Decimal of Inch | Screw Gauge (S.G.) | Imp. St. Wire Gauge | Fraction of an Inch | Equiv. in Decimal of Inch |
|--------------------|---------------------|---------------------|---------------------------|--------------------|---------------------|---------------------|---------------------------|
|                    | 30                  |                     | .0124                     |                    |                     | 3/16                | .1875                     |
|                    | 29                  |                     | .0136                     | 10.                | 6.                  |                     | .192                      |
|                    | 28                  |                     | .0148                     |                    |                     | 13/64               | .203125                   |
|                    |                     | 1/64                | .015625                   | 11.                |                     |                     | .206                      |
|                    | 27                  |                     | .0164                     |                    | 5                   |                     | .212                      |
|                    | 26                  |                     | .018                      |                    |                     | 7/32                | .21875                    |
|                    | 25                  |                     | .020                      | 12.                |                     |                     | .220                      |
|                    | 24                  |                     | .022                      |                    | 4                   |                     | .232                      |
|                    | 23                  |                     | .024                      | 13.                |                     |                     | .234                      |
|                    | 22                  |                     | .028                      |                    |                     | 15/64               | .234375                   |
|                    |                     | 1/32                | .03125                    | 14.                |                     |                     | .248                      |
|                    | 21                  |                     | .032                      |                    |                     | 1/4                 | .250                      |
|                    | 20                  |                     | .036                      |                    | 3                   |                     | .252                      |
|                    | 19                  |                     | .040                      | 15.                |                     |                     | .262                      |
|                    |                     | 3/64                | .046875                   | 16.                | 2                   |                     | .276                      |
|                    | 18                  |                     | .048                      |                    |                     | 9/32                | .28125                    |
| 4/0                |                     |                     | .054                      | 17.                |                     |                     | .290                      |
|                    | 17                  |                     | .056                      |                    | 1                   |                     | .300                      |
| 3/0                |                     |                     | .057                      | 18.                |                     |                     | .304                      |
| 2/0                |                     |                     | .060                      |                    |                     | 5/16                | .3125                     |
|                    |                     | 1/16                | .0625                     |                    | 0                   |                     | .324                      |
| 0                  | 16                  |                     | .063                      | 20.                |                     |                     | .332                      |
|                    |                     |                     | .064                      |                    |                     | 11/32               | .34375                    |
| 1                  | 15                  |                     | .066                      |                    | 2/0                 |                     | .348                      |
|                    |                     | 5/64                | .072                      | 22.                |                     |                     | .360                      |
|                    |                     |                     | .078125                   |                    | 3/0                 |                     | .372                      |
| 2                  | 14                  |                     | .080                      |                    |                     | 3/8                 | .375                      |
|                    | 13                  |                     | .092                      | 24.                |                     |                     | .388                      |
|                    |                     | 3/32                | .09375                    |                    | 4/0                 |                     | .400                      |
| 3                  |                     |                     | .094                      |                    |                     | 13/32               | .40625                    |
|                    | 12                  |                     | .104                      | 26.                |                     |                     | .416                      |
| 4                  |                     |                     | .108                      |                    | 5/0                 |                     | .432                      |
|                    |                     | 7/64                | .109375                   |                    |                     | 7/16                | .4375                     |
|                    | 11                  |                     | .116                      | 28.                |                     |                     | .444                      |
| 5                  |                     |                     | .122                      |                    | 6/0                 |                     | .464                      |
|                    |                     | 1/8                 | .125                      |                    |                     | 15/32               | .46875                    |
|                    | 10                  |                     | .128                      | 30.                |                     |                     | .472                      |
| 6                  |                     |                     | .136                      | 32.                | 7/0                 | 1/2                 | .500                      |
|                    |                     | 9/64                | .140625                   | 36.                |                     |                     | .556                      |
|                    | 9                   |                     | .144                      |                    |                     | 9/16                | .5625                     |
| 7                  |                     |                     | .150                      | 40.                |                     |                     | .612                      |
|                    |                     | 5/32                | .15625                    |                    |                     | 5/8                 | .625                      |
|                    | 8                   |                     | .160                      |                    |                     | 11/16               | .6875                     |
| 8                  |                     |                     | .164                      |                    |                     | 3/4                 | .750                      |
|                    |                     | 11/64               | .171875                   |                    |                     | 13/16               | .8125                     |
|                    | 7                   |                     | .176                      |                    |                     | 7/8                 | .875                      |
| 9                  |                     |                     | .178                      |                    |                     | 15/16               | .9375                     |



## AEROTIGHT SELF-LOCKING NUTS



Designed for use on:—

Steel Buildings  
Farm and all types of  
machinery  
Automobiles  
Aircraft  
Earth-moving Equipment

and in all cases where vibration  
causes the ordinary type of nut  
to work loose and fall off.

The nut is an all-metal one-piece nut, and is not dependent on any form of auxiliary fastening device. The self-retaining feature of the nut is obtained by frictional grip created between the threads of the bolt and nut.

Fit G.K.N. Aerotight Lock Nuts whenever VIBRATION is encountered, and solve this problem once and for all.

NETTLEFOLDS STOCKS include:—

Sheet Metal Screws and Drive Screws, Roofing Screws  
Mushroom-head Bolts and Nuts, Tank Rivets and Washers  
Tinmen's Rivets, Copper Rivets and Washers, Coopers' Rivets

M.S. Rivets, all types of heads

Metal Thread Screws

Wood Screws, Slotted and Recessed Heads

Screwdrivers and Bits for Phillips Recessed Screws

Cotter Pins, Gate Hooks, Cup Hooks

Screw Eyes, Screw Hooks

Sporting Spikes

Pressed Nuts, Strip Nuts and Cages, etc.

NETTLEFOLDS BRIGHT BOLT AND NUT DIVISION  
manufacture

Bright Steel Bolts and Nuts, Set Screws, Taper Pins, and  
Bright Steel Specials of all descriptions.

NETTLEFOLDS PTY. LTD., 252 Johnston St., Annandale  
'Phone: WB 3418

NETTLEFOLDS PTY. LTD.

BALLARAT ROAD, SUNSHINE, W.20, VICTORIA

'Phone: MM 1261

## BRITISH WEIGHTS AND MEASURES

## LENGTH

|                  |                           |            |             |
|------------------|---------------------------|------------|-------------|
| 12 inches (ins.) | = 1 Foot (ft.)            | 4 Rods     | } = 1 Chain |
| 3 Feet           | } = 1 Yard (yd.)          | 22 Yards   |             |
| 36 Inches        |                           | 100 Links  |             |
| 5½ Yards         | } = 1 Rod, pole, or perch | 8 Furlongs | } = 1 Mile  |
| 16½ Feet         |                           | 80 Chains  |             |
| 40 Rods          |                           | 320 Rods   |             |
|                  | = 1 Furlong               | 1760 Yards |             |

## SQUARE

| Square Inches | Square Feet | Square Yards | Square Rods | Square Chains | Acres |             |
|---------------|-------------|--------------|-------------|---------------|-------|-------------|
| 144           | 1           | —            | —           | —             | —     | 1 Sq. Ft.   |
| 1,296         | 9           | 1            | —           | —             | —     | 1 Sq. Yd.   |
| 39,204        | 272½        | 30½          | 1           | —             | —     | 1 Sq. Rod   |
| 627,264       | 4,356       | 484          | 16          | 1             | —     | 1 sq. chain |
| 6,272,640     | 43,560      | 4,840        | 160         | 10            | 1     | 1 Acre      |
| 4,014,489,600 | 27,878,400  | 3,097,600    | 102,400     | 2,560         | 640   | 1 Sq. Mile  |

## CUBIC

|                |                   |                  |                   |
|----------------|-------------------|------------------|-------------------|
| 1 Cubic Ft.    | = 1728 cubic ins. | 1 Perch of stone | = 24½ cubic ft.   |
| 1 Cubic Yd.    | = 27 cubic ft.    | 1 Bushel         | = 1.284 cubic ft. |
| 1 Cord Ft.     | = 16 cubic ft.    | 1 Gall. of water | = 6.229 cubic ft. |
| 1 Cord of wood | = 128 cubic ft.   | 1 Shipping ton   | = 40 cubic ft.    |

## AVOIRDUPOIS

|              |                                   |                |
|--------------|-----------------------------------|----------------|
| 16 Drams     | = 1 Ounce (oz.)                   | = 437.5 Grains |
| 16 Ounces    | = 1 Pound (lb.)                   | = 7,000 Grains |
| 14 Pounds    | = 1 Stone                         |                |
| 2 Stone      | = 1 Quarter                       | = 28 Pounds    |
| 4 Quarters   | = 1 Hundredweight (cwt.)          | = 112 Pounds   |
| 20 Cwts.     | = 1 Ton                           | = 2,240 Pounds |
| 100 Pounds   | = 1 Hundredweight (cwt.) (U.S.A.) |                |
| 2,000 Pounds | = 1 Short Ton (U.S.A.)            |                |

## CAPACITY

|           |            |            |             |
|-----------|------------|------------|-------------|
| 4 Gills   | = 1 Pint   | 4 Pecks    | = 1 Bushel  |
| 2 Pints   | = 1 Quart  | 8 Bushels  | = 1 Quarter |
| 4 Quarts  | = 1 Gallon | 5 Quarters | = 1 Load    |
| 2 Gallons | = 1 Peck   | 1 Bag      | = 3 Bushels |

## APPROXIMATE EQUIVALENTS

|                |                     |                    |               |
|----------------|---------------------|--------------------|---------------|
| 1 Millimetre   | = 1/25th of inch    | 1 Kilogramme       | = 2½ lbs.     |
| 2½ Centimetres | = 1 inch            | 1,000 Kilogrammes  | = 1 Ton       |
| 1 Metre        | = 39¾ inches        | 6½ Sq. Centimetres | = 1 Sq. inch  |
| 1 Kilometre    | = 5 Furlongs (½ m.) | 1 Sq. Metre        | = 10¾ Sq. ft. |

(See Conversion Table, page 100)

## GENERAL CONVERSION TABLE

| Multiply by            | To Convert             | Into                      |                   |
|------------------------|------------------------|---------------------------|-------------------|
| 14.696                 | Atmospheres .....      | Lb./sq. in. ....          | .068              |
| 1013.3                 | " .....                | Millebars .....           | .000987           |
| 33.9                   | " .....                | Feet of Water .....       | .0295             |
| .556                   | B.Th.U. ....           | C.H.U. ....               | 1.8               |
| 778.3                  | " .....                | Ft. lb. ....              | .00129            |
| $3.929 \times 10^{-4}$ | " .....                | H.P. Hours .....          | 2,525.06          |
| 16.387                 | Cubic inches .....     | Cubic cons. ....          | .061              |
| 28.316                 | Cubic feet .....       | Litres .....              | .0353             |
| 6.229                  | " .....                | Gallons (Imp.) ....       | .161              |
| .765                   | Cubic yards .....      | Cub. metres .....         | 1.308             |
| 50.803                 | Cwt. ....              | Kilogrammes .....         | .0197             |
| .0175                  | Degrees .....          | Radians .....             | 57.296            |
| 30.48                  | Feet .....             | Centimetres .....         | .0328             |
| .138                   | Foot-lb. ....          | K'grammetres .....        | 7.233             |
| .33                    | Foot-tons .....        | Tonne-metres .....        | 3                 |
| 4.546                  | Gallons (Imp.) ....    | Litres .....              | .22               |
| 10                     | Gallons of water ..... | Pounds .....              | .1                |
| 1.201                  | Gallons (Imp.) ....    | Gallons (U.S.A.) .....    | .833              |
| 1.014                  | Horse-power .....      | Force-de-cheval .....     | .986              |
| 745.7                  | " .....                | Watts .....               | .00134            |
| 33,000                 | " .....                | Ft. lb./min. ....         | 1/33,000          |
| 76.04                  | " .....                | Kgm./sec. ....            | .0131             |
| 2.54                   | Inches .....           | Cms. ....                 | .3937             |
| .0736                  | Inches of water .....  | Inches of Mercury .....   | 13.595            |
| .738                   | Joules .....           | Ft. lb. ....              | 1.356             |
| 1.152                  | Knots .....            | Miles/hour .....          | .868              |
| 70.306                 | Lb./sq. in. ....       | Gm./sq. cm. ....          | .0142             |
| 2.306                  | " .....                | Head of Water (ft.) ..... | .434              |
| .7                     | " .....                | " (M.) .....              | 1.429             |
| 4.882                  | Lb./sq. ft. ....       | Kgm./sq. metre .....      | .205              |
| 16.018                 | Lb./cub. ft. ....      | Kgm./cub. metre .....     | .0624             |
| .593                   | Lb./cub. yd. ....      | " .....                   | 1.686             |
| 16,093                 | Miles .....            | Mètres .....              | .000621           |
| .88                    | Miles/Hour .....       | Ft./min. ....             | .0114             |
| 1.462                  | " .....                | Ft./sec. ....             | .682              |
| 196.85                 | Mètres/Sec. ....       | Ft./min. ....             | .00508            |
| 1.152                  | Nautical miles .....   | Statute Miles .....       | .868              |
| 28.35                  | Ounces .....           | Grammes .....             | .0353             |
| .454                   | Pounds (Avoir.) ....   | Kilogrammes .....         | 2.205             |
| .454                   | Pounds of Water .....  | Litres .....              | 2.202             |
| 6.452                  | Square inches .....    | Square cms. ....          | .155              |
| .093                   | square feet .....      | Square metres .....       | 10.764            |
| .836                   | square yards .....     | " .....                   | 1.196             |
| 1.12                   | Tons .....             | Short tons (U.S.A.) ..... | .893              |
| 1016                   | " .....                | Kilogrammes .....         | .000984           |
| 1.575                  | Tons/sq. in. ....      | Kgm./sq. mm. ....         | .625              |
| 44.26                  | Watts .....            | Ft. lb./min. ....         | .0227             |
| .102                   | " .....                | Kgm./sec. ....            | 9.807             |
| 914                    | Yards .....            | Metres .....              | 1.094             |
|                        | To Obtain              | From                      | Multiply by above |



# GEOMETRY AND MENSURATION

**CIRCLE.**—Circumference = diameter  $\times \frac{22}{7}$  (or 3.1416).

Area = diameter<sup>2</sup>  $\times 0.7854$ .

Area of sector of circle = length of arc  $\times$  half radius.

Area of segment of circle = area of sector, less area of triangle.

Side of square of area equal to circle = 0.8852 diameter.

Diameter of circle equal in area to square = 1.1284 side.

**SPHERE.**—Surface area = 3.1416  $\times$  diameter<sup>2</sup>.

Volume = 0.5236 diameter<sup>3</sup>.

**AREAS** generally.

Square, rectangle, rhombus, or rhomboid = base  $\times$  height.

Triangle = half base  $\times$  perpendicular height.

Trapezoid = half sum of two parallel sides  $\times$  height.

Area of any figure of four or more unequal sides is found by dividing it into triangles, finding areas of each, and adding together.

Regular polygon (circumscribe circle) = half radius of circle  $\times$  length of one side  $\times$  number of sides.

Parabola = base  $\times$  height  $\times 2/3$ .

Ellipse = long axis  $\times$  short axis  $\times 0.7854$ .

## SURFACES AND VOLUMES

**CUBES.**— $a$  = length of one side, volume =  $a^3$ , surface area =  $6a^2$ .

**RECTANGULAR PRISM.**—Volume = area of base  $\times$  height =  $bl \times h$ .

Total surface area =  $2(bl + lh + bh)$ .

**REGULAR PRISM.**—Volume =  $\frac{1}{2}n \times r \times a \times h$ , where  $n$  = number of sides,  $r$  = radius of inscribed circle,  $a$  = length of side.

**CYLINDER (Right Circular).**—Volume =  $0.7854 \times$  diameter<sup>2</sup>  $\times$  height.

Lateral surface area,  $3.1416 \times$  diameter  $\times$  height.

Total surface area =  $3.1416$  (diameter  $\times$  height  $+$  diameter).

**ANY PRISM OR CYLINDER.**—Volume =  $h \times$  area of base. Lateral surface area = length of cylinder  $\times$  perimeter of normal sector.

**REGULAR PYRAMID OR CONE.**—Volume =  $1/3$  (area of base  $\times$  height). Lateral area of regular figure = half (perimeter of base  $\times$  slant height).

**ANY PYRAMID OR CONE.**—Volume =  $1/3$  (area of base  $\times$  distance from vertex to plane of base).

**FRUSTUM OF ANY PYRAMID OR CONE.**—Volume =  $h/3 (A_1 + A_2 + \sqrt{A_1 A_2})$ , where  $A_1$  and  $A_2$  are the areas of bases made by parallel planes.

## LOGARITHMS

|    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 1 | 3  | 5  | 7  | 9  |
|----|------|------|------|------|------|------|------|------|------|------|---|----|----|----|----|
| 10 | 0000 | 0043 | 0086 | 0128 | 0170 | 0212 | 0253 | 0294 | 0334 | 0374 | 4 | 12 | 21 | 29 | 37 |
| 11 | 0414 | 0453 | 0492 | 0531 | 0569 | 0607 | 0645 | 0682 | 0719 | 0755 | 4 | 11 | 19 | 26 | 34 |
| 12 | 0792 | 0828 | 0864 | 0899 | 0934 | 0969 | 1004 | 1038 | 1072 | 1106 | 3 | 10 | 17 | 24 | 31 |
| 13 | 1139 | 1173 | 1206 | 1239 | 1271 | 1303 | 1335 | 1367 | 1399 | 1430 | 3 | 10 | 16 | 23 | 29 |
| 14 | 1461 | 1492 | 1523 | 1553 | 1584 | 1614 | 1644 | 1673 | 1703 | 1732 | 3 | 9  | 15 | 21 | 27 |
| 15 | 1761 | 1790 | 1818 | 1847 | 1875 | 1903 | 1931 | 1959 | 1987 | 2014 | 3 | 8  | 14 | 20 | 25 |
| 16 | 2041 | 2068 | 2095 | 2122 | 2148 | 2175 | 2201 | 2227 | 2253 | 2279 | 3 | 8  | 13 | 18 | 24 |
| 17 | 2304 | 2330 | 2355 | 2380 | 2405 | 2430 | 2455 | 2480 | 2504 | 2529 | 2 | 7  | 12 | 17 | 22 |
| 18 | 2553 | 2577 | 2601 | 2625 | 2648 | 2672 | 2695 | 2718 | 2742 | 2765 | 2 | 7  | 12 | 16 | 21 |
| 19 | 2788 | 2810 | 2833 | 2856 | 2878 | 2900 | 2923 | 2945 | 2967 | 2989 | 2 | 7  | 11 | 16 | 20 |
| 20 | 3010 | 3032 | 3054 | 3075 | 3096 | 3118 | 3139 | 3160 | 3181 | 3201 | 2 | 6  | 11 | 15 | 19 |
| 21 | 3222 | 3243 | 3263 | 3284 | 3304 | 3324 | 3345 | 3365 | 3385 | 3404 | 2 | 6  | 10 | 14 | 18 |
| 22 | 3424 | 3444 | 3464 | 3483 | 3502 | 3522 | 3541 | 3560 | 3579 | 3598 | 2 | 6  | 10 | 14 | 17 |
| 23 | 3617 | 3636 | 3655 | 3674 | 3692 | 3711 | 3729 | 3747 | 3766 | 3784 | 2 | 6  | 9  | 13 | 17 |
| 24 | 3802 | 3820 | 3838 | 3856 | 3874 | 3892 | 3909 | 3927 | 3945 | 3962 | 2 | 5  | 9  | 12 | 16 |
| 25 | 3979 | 3997 | 4014 | 4031 | 4048 | 4065 | 4082 | 4099 | 4116 | 4133 | 2 | 5  | 9  | 12 | 15 |
| 26 | 4150 | 4166 | 4183 | 4200 | 4216 | 4232 | 4249 | 4265 | 4281 | 4298 | 2 | 5  | 8  | 11 | 15 |
| 27 | 4314 | 4330 | 4346 | 4362 | 4378 | 4393 | 4409 | 4425 | 4440 | 4456 | 2 | 5  | 8  | 11 | 14 |
| 28 | 4472 | 4487 | 4502 | 4518 | 4533 | 4548 | 4564 | 4579 | 4594 | 4609 | 2 | 5  | 8  | 11 | 14 |
| 29 | 4624 | 4639 | 4654 | 4669 | 4683 | 4698 | 4713 | 4728 | 4742 | 4757 | 1 | 4  | 7  | 10 | 13 |
| 30 | 4771 | 4786 | 4800 | 4814 | 4829 | 4843 | 4857 | 4871 | 4886 | 4900 | 1 | 4  | 7  | 10 | 13 |
| 31 | 4914 | 4928 | 4942 | 4955 | 4969 | 4983 | 4997 | 5011 | 5024 | 5038 | 1 | 4  | 7  | 10 | 12 |
| 32 | 5051 | 5065 | 5079 | 5092 | 5105 | 5119 | 5132 | 5145 | 5159 | 5172 | 1 | 4  | 7  | 9  | 12 |
| 33 | 5185 | 5198 | 5211 | 5224 | 5237 | 5250 | 5263 | 5276 | 5289 | 5302 | 1 | 4  | 6  | 9  | 12 |
| 34 | 5315 | 5328 | 5340 | 5353 | 5366 | 5378 | 5391 | 5403 | 5416 | 5428 | 1 | 4  | 6  | 9  | 11 |
| 35 | 5441 | 5453 | 5465 | 5478 | 5490 | 5502 | 5514 | 5527 | 5539 | 5551 | 1 | 4  | 6  | 9  | 11 |
| 36 | 5563 | 5575 | 5587 | 5599 | 5611 | 5623 | 5635 | 5647 | 5658 | 5670 | 1 | 4  | 6  | 8  | 11 |
| 37 | 5682 | 5694 | 5705 | 5717 | 5729 | 5740 | 5752 | 5763 | 5775 | 5786 | 1 | 3  | 6  | 8  | 11 |
| 38 | 5798 | 5809 | 5821 | 5832 | 5843 | 5855 | 5866 | 5877 | 5888 | 5899 | 1 | 3  | 6  | 8  | 10 |
| 39 | 5911 | 5922 | 5933 | 5944 | 5955 | 5966 | 5977 | 5988 | 5999 | 6010 | 1 | 3  | 5  | 8  | 10 |
| 40 | 6021 | 6031 | 6042 | 6053 | 6064 | 6075 | 6085 | 6096 | 6107 | 6117 | 1 | 3  | 5  | 8  | 10 |
| 41 | 6128 | 6138 | 6149 | 6160 | 6170 | 6180 | 6191 | 6201 | 6212 | 6222 | 1 | 3  | 5  | 7  | 9  |
| 42 | 6232 | 6243 | 6253 | 6263 | 6274 | 6284 | 6294 | 6304 | 6314 | 6325 | 1 | 3  | 5  | 7  | 9  |
| 43 | 6335 | 6345 | 6355 | 6365 | 6375 | 6385 | 6395 | 6405 | 6415 | 6425 | 1 | 3  | 5  | 7  | 9  |
| 44 | 6435 | 6444 | 6454 | 6464 | 6474 | 6484 | 6493 | 6503 | 6513 | 6522 | 1 | 3  | 5  | 7  | 9  |
| 45 | 6532 | 6542 | 6551 | 6561 | 6571 | 6580 | 6590 | 6599 | 6609 | 6618 | 1 | 3  | 5  | 7  | 9  |
| 46 | 6628 | 6637 | 6646 | 6656 | 6665 | 6675 | 6684 | 6693 | 6702 | 6712 | 1 | 3  | 5  | 7  | 8  |
| 47 | 6721 | 6730 | 6739 | 6749 | 6758 | 6767 | 6776 | 6785 | 6794 | 6803 | 1 | 3  | 5  | 6  | 8  |
| 48 | 6812 | 6821 | 6830 | 6839 | 6848 | 6857 | 6866 | 6875 | 6884 | 6893 | 1 | 3  | 4  | 6  | 8  |
| 49 | 6902 | 6911 | 6920 | 6928 | 6937 | 6946 | 6955 | 6964 | 6972 | 6981 | 1 | 3  | 4  | 6  | 8  |
| 50 | 6990 | 6998 | 7007 | 7016 | 7024 | 7033 | 7042 | 7050 | 7059 | 7067 | 1 | 3  | 4  | 6  | 8  |
| 51 | 7076 | 7084 | 7093 | 7101 | 7110 | 7118 | 7126 | 7135 | 7143 | 7152 | 1 | 3  | 4  | 6  | 8  |
| 52 | 7160 | 7168 | 7177 | 7185 | 7193 | 7202 | 7210 | 7218 | 7226 | 7235 | 1 | 2  | 4  | 6  | 7  |
| 53 | 7243 | 7251 | 7259 | 7267 | 7275 | 7284 | 7292 | 7300 | 7308 | 7316 | 1 | 2  | 4  | 6  | 7  |
| 54 | 7324 | 7332 | 7340 | 7348 | 7356 | 7364 | 7372 | 7380 | 7388 | 7396 | 1 | 2  | 4  | 6  | 7  |

Difference 2 4 6 8 obtained by interpolation.

## LOGARITHMS

|    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 1 | 3 | 5 | 7 | 9 |
|----|------|------|------|------|------|------|------|------|------|------|---|---|---|---|---|
| 55 | 7404 | 7412 | 7419 | 7427 | 7435 | 7443 | 7451 | 7459 | 7466 | 7474 | 1 | 2 | 4 | 5 | 7 |
| 56 | 7482 | 7490 | 7497 | 7505 | 7513 | 7520 | 7528 | 7536 | 7543 | 7551 | 1 | 2 | 4 | 5 | 7 |
| 57 | 7559 | 7566 | 7574 | 7582 | 7589 | 7597 | 7604 | 7612 | 7619 | 7627 | 1 | 2 | 4 | 5 | 7 |
| 58 | 7634 | 7642 | 7649 | 7657 | 7664 | 7672 | 7679 | 7686 | 7694 | 7701 | 1 | 2 | 4 | 5 | 7 |
| 59 | 7709 | 7716 | 7723 | 7731 | 7738 | 7745 | 7752 | 7760 | 7767 | 7774 | 1 | 2 | 4 | 5 | 7 |
| 60 | 7782 | 7789 | 7796 | 7803 | 7810 | 7818 | 7825 | 7832 | 7839 | 7846 | 1 | 2 | 4 | 5 | 6 |
| 61 | 7853 | 7860 | 7868 | 7875 | 7882 | 7889 | 7896 | 7903 | 7910 | 7917 | 1 | 2 | 4 | 5 | 6 |
| 62 | 7924 | 7931 | 7938 | 7945 | 7952 | 7959 | 7966 | 7973 | 7980 | 7987 | 1 | 2 | 3 | 5 | 6 |
| 63 | 7993 | 8000 | 8007 | 8014 | 8021 | 8028 | 8035 | 8041 | 8048 | 8055 | 1 | 2 | 3 | 5 | 6 |
| 64 | 8062 | 8069 | 8075 | 8082 | 8089 | 8096 | 8102 | 8109 | 8116 | 8122 | 1 | 2 | 3 | 5 | 6 |
| 65 | 8129 | 8136 | 8142 | 8149 | 8156 | 8162 | 8169 | 8176 | 8182 | 8189 | 1 | 2 | 3 | 5 | 6 |
| 66 | 8195 | 8202 | 8209 | 8215 | 8222 | 8228 | 8235 | 8241 | 8248 | 8254 | 1 | 2 | 3 | 5 | 6 |
| 67 | 8261 | 8267 | 8274 | 8280 | 8287 | 8293 | 8299 | 8306 | 8312 | 8319 | 1 | 2 | 3 | 5 | 6 |
| 68 | 8325 | 8331 | 8338 | 8344 | 8351 | 8357 | 8363 | 8370 | 8376 | 8382 | 1 | 2 | 3 | 4 | 6 |
| 69 | 8388 | 8395 | 8401 | 8407 | 8414 | 8420 | 8426 | 8432 | 8439 | 8445 | 1 | 2 | 3 | 4 | 6 |
| 70 | 8451 | 8457 | 8463 | 8470 | 8476 | 8482 | 8488 | 8494 | 8500 | 8506 | 1 | 2 | 3 | 4 | 6 |
| 71 | 8513 | 8519 | 8525 | 8531 | 8537 | 8543 | 8549 | 8555 | 8561 | 8567 | 1 | 2 | 3 | 4 | 5 |
| 72 | 8573 | 8579 | 8585 | 8591 | 8597 | 8603 | 8609 | 8615 | 8621 | 8627 | 1 | 2 | 3 | 4 | 5 |
| 73 | 8633 | 8639 | 8645 | 8651 | 8657 | 8663 | 8669 | 8675 | 8681 | 8686 | 1 | 2 | 3 | 4 | 5 |
| 74 | 8692 | 8698 | 8704 | 8710 | 8716 | 8722 | 8727 | 8733 | 8739 | 8745 | 1 | 2 | 3 | 4 | 5 |
| 75 | 8751 | 8756 | 8762 | 8768 | 8774 | 8779 | 8785 | 8791 | 8797 | 8802 | 1 | 2 | 3 | 4 | 5 |
| 76 | 8808 | 8814 | 8820 | 8825 | 8831 | 8837 | 8842 | 8848 | 8854 | 8859 | 1 | 2 | 3 | 4 | 5 |
| 77 | 8865 | 8871 | 8876 | 8882 | 8887 | 8893 | 8899 | 8904 | 8910 | 8915 | 1 | 2 | 3 | 4 | 5 |
| 78 | 8921 | 8927 | 8932 | 8938 | 8943 | 8949 | 8954 | 8960 | 8965 | 8971 | 1 | 2 | 3 | 4 | 5 |
| 79 | 8976 | 8982 | 8987 | 8993 | 8998 | 9004 | 9009 | 9015 | 9020 | 9025 | 1 | 2 | 3 | 4 | 5 |
| 80 | 9031 | 9036 | 9042 | 9047 | 9053 | 9058 | 9063 | 9069 | 9074 | 9079 | 1 | 2 | 3 | 4 | 5 |
| 81 | 9085 | 9090 | 9096 | 9101 | 9106 | 9112 | 9117 | 9122 | 9128 | 9133 | 1 | 2 | 3 | 4 | 5 |
| 82 | 9138 | 9143 | 9149 | 9154 | 9159 | 9165 | 9170 | 9175 | 9180 | 9186 | 1 | 2 | 3 | 4 | 5 |
| 83 | 9191 | 9196 | 9201 | 9206 | 9212 | 9217 | 9222 | 9227 | 9232 | 9238 | 1 | 2 | 3 | 4 | 5 |
| 84 | 9243 | 9248 | 9253 | 9258 | 9263 | 9269 | 9274 | 9279 | 9284 | 9289 | 1 | 2 | 3 | 4 | 5 |
| 85 | 9294 | 9299 | 9304 | 9309 | 9315 | 9320 | 9325 | 9330 | 9335 | 9340 | 1 | 2 | 3 | 4 | 5 |
| 86 | 9345 | 9350 | 9355 | 9360 | 9365 | 9370 | 9375 | 9380 | 9385 | 9390 | 1 | 2 | 3 | 4 | 5 |
| 87 | 9395 | 9400 | 9405 | 9410 | 9415 | 9420 | 9425 | 9430 | 9435 | 9440 | 0 | 1 | 2 | 3 | 4 |
| 88 | 9445 | 9450 | 9455 | 9460 | 9465 | 9469 | 9474 | 9479 | 9484 | 9489 | 0 | 1 | 2 | 3 | 4 |
| 89 | 9494 | 9499 | 9504 | 9509 | 9513 | 9518 | 9523 | 9528 | 9533 | 9538 | 0 | 1 | 2 | 3 | 4 |
| 90 | 9542 | 9547 | 9552 | 9557 | 9562 | 9566 | 9571 | 9576 | 9581 | 9586 | 0 | 1 | 2 | 3 | 4 |
| 91 | 9590 | 9595 | 9600 | 9605 | 9609 | 9614 | 9619 | 9624 | 9628 | 9633 | 0 | 1 | 2 | 3 | 4 |
| 92 | 9638 | 9643 | 9647 | 9652 | 9657 | 9661 | 9666 | 9671 | 9675 | 9680 | 0 | 1 | 2 | 3 | 4 |
| 93 | 9685 | 9689 | 9694 | 9699 | 9703 | 9708 | 9713 | 9717 | 9722 | 9727 | 0 | 1 | 2 | 3 | 4 |
| 94 | 9731 | 9736 | 9741 | 9745 | 9750 | 9754 | 9759 | 9763 | 9768 | 9773 | 0 | 1 | 2 | 3 | 4 |
| 95 | 9777 | 9782 | 9786 | 9791 | 9795 | 9800 | 9805 | 9809 | 9814 | 9818 | 0 | 1 | 2 | 3 | 4 |
| 96 | 9823 | 9827 | 9832 | 9836 | 9841 | 9845 | 9850 | 9854 | 9859 | 9863 | 0 | 1 | 2 | 3 | 4 |
| 97 | 9868 | 9872 | 9877 | 9881 | 9886 | 9890 | 9894 | 9899 | 9903 | 9908 | 0 | 1 | 2 | 3 | 4 |
| 98 | 9912 | 9917 | 9921 | 9926 | 9930 | 9934 | 9939 | 9943 | 9948 | 9952 | 0 | 1 | 2 | 3 | 4 |
| 99 | 9956 | 9961 | 9965 | 9969 | 9974 | 9978 | 9983 | 9987 | 9991 | 9996 | 0 | 1 | 2 | 3 | 4 |

Common Logarithms = Hyperbolic Logarithms x 0.43429.



## ANTILOGARITHMS

|     | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 1 | 3 | 5 | 7 | 9 |
|-----|------|------|------|------|------|------|------|------|------|------|---|---|---|---|---|
| .00 | 1000 | 1002 | 1005 | 1007 | 1009 | 1012 | 1014 | 1016 | 1019 | 1021 | 0 | 1 | 1 | 2 | 2 |
| .01 | 1023 | 1026 | 1028 | 1030 | 1033 | 1035 | 1038 | 1040 | 1042 | 1045 | 0 | 1 | 1 | 2 | 2 |
| .02 | 1047 | 1050 | 1052 | 1054 | 1057 | 1059 | 1062 | 1064 | 1067 | 1069 | 0 | 1 | 1 | 2 | 2 |
| .03 | 1072 | 1074 | 1076 | 1079 | 1081 | 1084 | 1086 | 1089 | 1091 | 1094 | 0 | 1 | 1 | 2 | 2 |
| .04 | 1096 | 1099 | 1102 | 1104 | 1107 | 1109 | 1112 | 1114 | 1117 | 1119 | 0 | 1 | 2 | 2 | 2 |
| .05 | 1122 | 1125 | 1127 | 1130 | 1132 | 1135 | 1138 | 1140 | 1143 | 1146 | 0 | 1 | 1 | 2 | 2 |
| .06 | 1148 | 1151 | 1153 | 1156 | 1159 | 1161 | 1164 | 1167 | 1169 | 1172 | 0 | 1 | 1 | 2 | 2 |
| .07 | 1175 | 1178 | 1180 | 1183 | 1186 | 1189 | 1191 | 1194 | 1197 | 1199 | 0 | 1 | 1 | 2 | 2 |
| .08 | 1202 | 1205 | 1208 | 1211 | 1213 | 1216 | 1219 | 1222 | 1225 | 1227 | 0 | 1 | 1 | 2 | 3 |
| .09 | 1230 | 1233 | 1236 | 1239 | 1242 | 1245 | 1247 | 1250 | 1253 | 1256 | 0 | 1 | 1 | 2 | 3 |
| .10 | 1259 | 1262 | 1265 | 1268 | 1271 | 1274 | 1276 | 1279 | 1282 | 1285 | 0 | 1 | 1 | 2 | 3 |
| .11 | 1288 | 1291 | 1294 | 1297 | 1300 | 1303 | 1306 | 1309 | 1312 | 1315 | 0 | 1 | 2 | 2 | 3 |
| .12 | 1318 | 1321 | 1324 | 1327 | 1330 | 1334 | 1337 | 1340 | 1343 | 1346 | 0 | 1 | 2 | 2 | 3 |
| .13 | 1349 | 1352 | 1355 | 1358 | 1361 | 1365 | 1368 | 1371 | 1374 | 1377 | 0 | 1 | 2 | 2 | 3 |
| .14 | 1380 | 1384 | 1387 | 1390 | 1393 | 1396 | 1400 | 1403 | 1406 | 1409 | 0 | 1 | 2 | 2 | 3 |
| .15 | 1413 | 1416 | 1419 | 1422 | 1426 | 1429 | 1432 | 1435 | 1439 | 1442 | 0 | 1 | 2 | 2 | 3 |
| .16 | 1445 | 1449 | 1452 | 1455 | 1459 | 1462 | 1466 | 1469 | 1472 | 1476 | 0 | 1 | 2 | 2 | 3 |
| .17 | 1479 | 1483 | 1486 | 1489 | 1493 | 1496 | 1500 | 1503 | 1507 | 1510 | 0 | 1 | 2 | 2 | 3 |
| .18 | 1514 | 1517 | 1521 | 1524 | 1528 | 1531 | 1535 | 1538 | 1542 | 1545 | 0 | 1 | 2 | 2 | 3 |
| .19 | 1549 | 1552 | 1556 | 1560 | 1563 | 1567 | 1570 | 1574 | 1578 | 1581 | 0 | 1 | 2 | 3 | 3 |
| .20 | 1585 | 1589 | 1592 | 1596 | 1600 | 1603 | 1607 | 1611 | 1614 | 1618 | 0 | 1 | 2 | 3 | 3 |
| .21 | 1622 | 1626 | 1629 | 1633 | 1637 | 1641 | 1644 | 1648 | 1652 | 1656 | 0 | 1 | 2 | 3 | 3 |
| .22 | 1660 | 1663 | 1667 | 1671 | 1675 | 1679 | 1683 | 1687 | 1690 | 1694 | 0 | 1 | 2 | 3 | 3 |
| .23 | 1698 | 1702 | 1706 | 1710 | 1714 | 1718 | 1722 | 1726 | 1730 | 1734 | 0 | 1 | 2 | 3 | 4 |
| .24 | 1738 | 1742 | 1746 | 1750 | 1754 | 1758 | 1762 | 1766 | 1770 | 1774 | 0 | 1 | 2 | 3 | 4 |
| .25 | 1778 | 1782 | 1786 | 1791 | 1795 | 1799 | 1803 | 1807 | 1811 | 1816 | 0 | 1 | 2 | 3 | 4 |
| .26 | 1820 | 1824 | 1828 | 1832 | 1837 | 1841 | 1845 | 1849 | 1854 | 1858 | 0 | 1 | 2 | 3 | 4 |
| .27 | 1862 | 1866 | 1871 | 1875 | 1879 | 1884 | 1888 | 1892 | 1897 | 1901 | 0 | 1 | 2 | 3 | 4 |
| .28 | 1905 | 1910 | 1914 | 1919 | 1923 | 1928 | 1932 | 1936 | 1941 | 1945 | 0 | 1 | 2 | 3 | 4 |
| .29 | 1950 | 1954 | 1959 | 1963 | 1968 | 1972 | 1977 | 1982 | 1986 | 1991 | 0 | 1 | 2 | 3 | 4 |
| .30 | 1995 | 2000 | 2004 | 2009 | 2014 | 2018 | 2023 | 2028 | 2032 | 2037 | 0 | 1 | 2 | 3 | 4 |
| .31 | 2042 | 2046 | 2051 | 2056 | 2061 | 2065 | 2070 | 2075 | 2080 | 2084 | 0 | 1 | 2 | 3 | 4 |
| .32 | 2089 | 2094 | 2099 | 2104 | 2109 | 2113 | 2118 | 2123 | 2128 | 2133 | 0 | 1 | 2 | 3 | 4 |
| .33 | 2138 | 2143 | 2148 | 2153 | 2158 | 2163 | 2168 | 2173 | 2178 | 2183 | 0 | 1 | 2 | 3 | 4 |
| .34 | 2188 | 2193 | 2198 | 2203 | 2208 | 2213 | 2218 | 2223 | 2228 | 2234 | 1 | 2 | 3 | 4 | 5 |
| .35 | 2239 | 2244 | 2249 | 2254 | 2259 | 2265 | 2270 | 2275 | 2280 | 2286 | 1 | 2 | 3 | 4 | 5 |
| .36 | 2291 | 2296 | 2301 | 2307 | 2312 | 2317 | 2323 | 2328 | 2333 | 2339 | 1 | 2 | 3 | 4 | 5 |
| .37 | 2344 | 2350 | 2355 | 2360 | 2366 | 2371 | 2377 | 2382 | 2388 | 2393 | 1 | 2 | 3 | 4 | 5 |
| .38 | 2399 | 2404 | 2410 | 2415 | 2421 | 2427 | 2432 | 2438 | 2443 | 2449 | 1 | 2 | 3 | 4 | 5 |
| .39 | 2455 | 2460 | 2466 | 2472 | 2477 | 2483 | 2489 | 2495 | 2500 | 2506 | 1 | 2 | 3 | 4 | 5 |
| .40 | 2512 | 2518 | 2523 | 2529 | 2535 | 2541 | 2547 | 2553 | 2559 | 2564 | 1 | 2 | 3 | 4 | 5 |
| .41 | 2570 | 2576 | 2582 | 2588 | 2594 | 2600 | 2606 | 2612 | 2618 | 2624 | 1 | 2 | 3 | 4 | 5 |
| .42 | 2630 | 2636 | 2642 | 2649 | 2655 | 2661 | 2667 | 2673 | 2679 | 2685 | 1 | 2 | 3 | 4 | 6 |
| .43 | 2692 | 2698 | 2704 | 2710 | 2716 | 2723 | 2729 | 2735 | 2742 | 2748 | 1 | 2 | 3 | 4 | 6 |
| .44 | 2754 | 2761 | 2767 | 2773 | 2780 | 2786 | 2793 | 2799 | 2805 | 2812 | 1 | 2 | 3 | 4 | 6 |
| .45 | 2818 | 2825 | 2831 | 2838 | 2844 | 2851 | 2858 | 2864 | 2871 | 2877 | 1 | 2 | 3 | 5 | 6 |
| .46 | 2884 | 2891 | 2897 | 2904 | 2911 | 2917 | 2924 | 2931 | 2938 | 2944 | 1 | 2 | 3 | 5 | 6 |
| .47 | 2951 | 2958 | 2965 | 2972 | 2979 | 2985 | 2992 | 2999 | 3006 | 3013 | 1 | 2 | 3 | 5 | 6 |
| .48 | 3020 | 3027 | 3031 | 3041 | 3048 | 3055 | 3062 | 3069 | 3076 | 3083 | 1 | 2 | 4 | 5 | 6 |
| .49 | 3090 | 3097 | 3105 | 3112 | 3119 | 3126 | 3133 | 3141 | 3148 | 3155 | 1 | 2 | 4 | 5 | 6 |

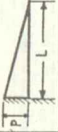
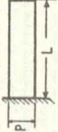
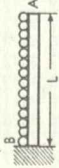
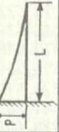
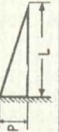
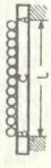
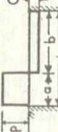
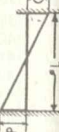
Difference 2 4 6 8 obtained by interpolation.

## ANTILOGARITHMS

|     | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 1 | 3 | 5  | 7  | 9  |
|-----|------|------|------|------|------|------|------|------|------|------|---|---|----|----|----|
| .50 | 3162 | 3170 | 3177 | 3184 | 3192 | 3199 | 3206 | 3214 | 3221 | 3228 | 1 | 2 | 4  | 5  | 7  |
| .51 | 3236 | 3243 | 3251 | 3258 | 3266 | 3273 | 3281 | 3289 | 3296 | 3304 | 1 | 2 | 4  | 5  | 7  |
| .52 | 3311 | 3319 | 3327 | 3334 | 3342 | 3350 | 3357 | 3365 | 3373 | 3381 | 1 | 2 | 4  | 5  | 7  |
| .53 | 3388 | 3396 | 3404 | 3412 | 3420 | 3428 | 3436 | 3443 | 3451 | 3459 | 1 | 2 | 4  | 6  | 7  |
| .54 | 3467 | 3475 | 3483 | 3491 | 3499 | 3508 | 3516 | 3524 | 3532 | 3540 | 1 | 2 | 4  | 6  | 7  |
| .55 | 3548 | 3556 | 3565 | 3573 | 3581 | 3589 | 3597 | 3606 | 3614 | 3622 | 1 | 2 | 4  | 6  | 7  |
| .56 | 3631 | 3639 | 3648 | 3656 | 3664 | 3673 | 3681 | 3690 | 3698 | 3707 | 1 | 3 | 4  | 6  | 8  |
| .57 | 3715 | 3724 | 3733 | 3741 | 3750 | 3758 | 3767 | 3776 | 3784 | 3793 | 1 | 3 | 4  | 6  | 8  |
| .58 | 3802 | 3811 | 3819 | 3828 | 3837 | 3846 | 3855 | 3864 | 3873 | 3882 | 1 | 3 | 4  | 6  | 8  |
| .59 | 3890 | 3899 | 3908 | 3917 | 3926 | 3936 | 3945 | 3954 | 3963 | 3972 | 1 | 3 | 5  | 6  | 8  |
| .60 | 3981 | 3990 | 3999 | 4009 | 4018 | 4027 | 4036 | 4046 | 4055 | 4064 | 1 | 3 | 5  | 6  | 8  |
| .61 | 4074 | 4083 | 4093 | 4102 | 4111 | 4121 | 4130 | 4140 | 4150 | 4159 | 1 | 3 | 5  | 7  | 9  |
| .62 | 4169 | 4178 | 4188 | 4198 | 4207 | 4217 | 4227 | 4236 | 4246 | 4256 | 1 | 3 | 5  | 7  | 9  |
| .63 | 4266 | 4276 | 4285 | 4295 | 4305 | 4315 | 4325 | 4335 | 4345 | 4355 | 1 | 3 | 5  | 7  | 9  |
| .64 | 4365 | 4375 | 4385 | 4395 | 4406 | 4416 | 4426 | 4436 | 4446 | 4457 | 1 | 3 | 5  | 7  | 9  |
| .65 | 4467 | 4477 | 4487 | 4498 | 4508 | 4519 | 4529 | 4539 | 4550 | 4560 | 1 | 3 | 5  | 7  | 9  |
| .66 | 4571 | 4581 | 4592 | 4603 | 4613 | 4624 | 4634 | 4645 | 4656 | 4667 | 1 | 3 | 5  | 7  | 10 |
| .67 | 4677 | 4688 | 4699 | 4710 | 4721 | 4732 | 4742 | 4753 | 4764 | 4775 | 1 | 3 | 5  | 8  | 10 |
| .68 | 4786 | 4797 | 4808 | 4819 | 4831 | 4842 | 4853 | 4864 | 4875 | 4887 | 1 | 3 | 6  | 8  | 10 |
| .69 | 4898 | 4909 | 4920 | 4932 | 4943 | 4955 | 4966 | 4977 | 4989 | 5000 | 1 | 3 | 6  | 8  | 10 |
| .70 | 5012 | 5023 | 5035 | 5047 | 5058 | 5070 | 5082 | 5093 | 5105 | 5117 | 1 | 4 | 6  | 8  | 11 |
| .71 | 5129 | 5140 | 5152 | 5164 | 5176 | 5188 | 5200 | 5212 | 5224 | 5236 | 1 | 4 | 6  | 8  | 11 |
| .72 | 5248 | 5260 | 5272 | 5284 | 5297 | 5309 | 5321 | 5333 | 5346 | 5358 | 1 | 4 | 6  | 9  | 11 |
| .73 | 5370 | 5383 | 5395 | 5408 | 5420 | 5433 | 5445 | 5458 | 5470 | 5483 | 1 | 4 | 6  | 9  | 11 |
| .74 | 5495 | 5508 | 5521 | 5534 | 5546 | 5559 | 5572 | 5585 | 5598 | 5610 | 1 | 4 | 6  | 9  | 12 |
| .75 | 5623 | 5636 | 5649 | 5662 | 5675 | 5689 | 5702 | 5715 | 5728 | 5741 | 1 | 4 | 7  | 9  | 12 |
| .76 | 5754 | 5768 | 5781 | 5794 | 5808 | 5821 | 5834 | 5848 | 5861 | 5875 | 1 | 4 | 7  | 9  | 12 |
| .77 | 5888 | 5902 | 5916 | 5929 | 5943 | 5957 | 5970 | 5984 | 5998 | 6012 | 1 | 4 | 7  | 10 | 12 |
| .78 | 6026 | 6039 | 6053 | 6067 | 6081 | 6095 | 6109 | 6124 | 6138 | 6152 | 1 | 4 | 7  | 10 | 13 |
| .79 | 6166 | 6180 | 6194 | 6209 | 6223 | 6237 | 6252 | 6266 | 6281 | 6295 | 1 | 4 | 7  | 10 | 13 |
| .80 | 6310 | 6324 | 6339 | 6353 | 6368 | 6383 | 6397 | 6412 | 6427 | 6442 | 1 | 4 | 7  | 10 | 13 |
| .81 | 6457 | 6471 | 6486 | 6501 | 6516 | 6531 | 6546 | 6561 | 6577 | 6592 | 2 | 5 | 8  | 11 | 14 |
| .82 | 6607 | 6622 | 6637 | 6653 | 6668 | 6683 | 6699 | 6714 | 6730 | 6745 | 2 | 5 | 8  | 11 | 14 |
| .83 | 6761 | 6776 | 6792 | 6808 | 6823 | 6839 | 6855 | 6871 | 6887 | 6902 | 2 | 5 | 8  | 11 | 14 |
| .84 | 6918 | 6934 | 6950 | 6966 | 6982 | 6998 | 7015 | 7031 | 7047 | 7063 | 2 | 5 | 8  | 11 | 15 |
| .85 | 7079 | 7096 | 7112 | 7129 | 7145 | 7161 | 7178 | 7194 | 7211 | 7228 | 2 | 5 | 8  | 12 | 15 |
| .86 | 7244 | 7261 | 7278 | 7295 | 7311 | 7328 | 7345 | 7362 | 7379 | 7396 | 2 | 5 | 8  | 12 | 15 |
| .87 | 7413 | 7430 | 7447 | 7464 | 7482 | 7499 | 7516 | 7534 | 7551 | 7468 | 2 | 5 | 9  | 12 | 16 |
| .88 | 7586 | 7603 | 7621 | 7638 | 7656 | 7674 | 7691 | 7709 | 7727 | 7745 | 2 | 5 | 9  | 12 | 16 |
| .89 | 7762 | 7780 | 7798 | 7816 | 7834 | 7852 | 7870 | 7889 | 7907 | 7925 | 2 | 5 | 9  | 13 | 16 |
| .90 | 7943 | 7962 | 7980 | 7998 | 8017 | 8035 | 8054 | 8072 | 8091 | 8110 | 2 | 6 | 9  | 13 | 17 |
| .91 | 8128 | 8147 | 8166 | 8185 | 8204 | 8222 | 8241 | 8260 | 8279 | 8299 | 2 | 6 | 9  | 13 | 17 |
| .92 | 8318 | 8337 | 8356 | 8375 | 8395 | 8414 | 8433 | 8453 | 8472 | 8492 | 2 | 6 | 10 | 14 | 17 |
| .93 | 8511 | 8531 | 8551 | 8570 | 8590 | 8610 | 8630 | 8650 | 8670 | 8690 | 2 | 6 | 10 | 14 | 18 |
| .94 | 8710 | 8730 | 8750 | 8770 | 8790 | 8810 | 8831 | 8851 | 8872 | 8892 | 2 | 6 | 10 | 14 | 18 |
| .95 | 8913 | 8933 | 8954 | 8974 | 8995 | 9016 | 9036 | 9057 | 9078 | 9099 | 2 | 6 | 10 | 15 | 19 |
| .96 | 9120 | 9141 | 9162 | 9183 | 9204 | 9226 | 9247 | 9268 | 9290 | 9311 | 2 | 6 | 11 | 15 | 19 |
| .97 | 9333 | 9354 | 9376 | 9397 | 9419 | 9441 | 9462 | 9484 | 9506 | 9528 | 2 | 7 | 11 | 15 | 20 |
| .98 | 9550 | 9572 | 9594 | 9616 | 9638 | 9661 | 9683 | 9705 | 9727 | 9750 | 2 | 7 | 11 | 16 | 20 |
| .99 | 9772 | 9795 | 9817 | 9840 | 9863 | 9886 | 9908 | 9931 | 9954 | 9977 | 2 | 7 | 11 | 16 | 20 |

Difference 2 4 6 8 obtained by interpolation.

## BEAM LOADING

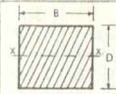
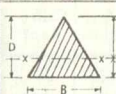
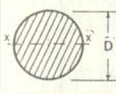
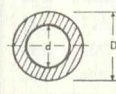
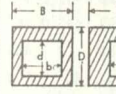
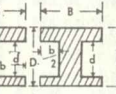
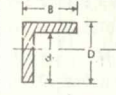
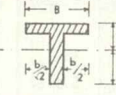
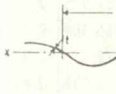
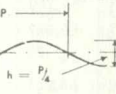
| Method of Loading                                                                   | Location of Maximum |                       | Bending Moment                            |                                                                                    | Shearing Forces                         |                                                                                    | Maximum Deflection                         |
|-------------------------------------------------------------------------------------|---------------------|-----------------------|-------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------|
|                                                                                     | Bending             | Deflection            | Maximum                                   | Diagram                                                                            | Maximum                                 | Diagram                                                                            |                                            |
|  | B                   | A                     | $P = WL$                                  |   | $P = W$                                 |   | $\frac{WL^3}{3EI}$                         |
|  | B                   | A                     | $P = \frac{WL}{2}$                        |   | $P = W$                                 |   | $\frac{WL^3}{8EI}$                         |
|  | C                   | C                     | $P = \frac{WL}{4}$                        |   | $P = \frac{W}{2}$<br>$Q = \frac{W}{2}$  |   | $\frac{WL^3}{48EI}$                        |
|  | C                   | C                     | $P = \frac{WL}{8}$                        |   | $P = \frac{W}{2}$<br>$Q = \frac{W}{2}$  |   | $\frac{5WL^3}{384EI}$                      |
|  | C                   | D<br>not max.<br>at C | $P = \frac{Wab}{L}$                       |   | $P = \frac{Wb}{L}$<br>$Q = \frac{W}{L}$ |   | $\frac{Wab}{9EI} \sqrt{\frac{b(2L-b)}{3}}$ |
|  | at<br>A and C       | C                     | $P = \frac{WL}{4}$<br>$Q = \frac{WL}{8}$  |   | $P = \frac{W}{2}$<br>$Q = \frac{W}{2}$  |   | $\frac{WL^3}{192EI}$                       |
|  | A or B<br>C         | C                     | $P = \frac{WL}{8}$<br>$Q = \frac{WL}{12}$ |  | $P = \frac{W}{2}$<br>$Q = \frac{W}{2}$  |  | $\frac{WL^3}{384EI}$                       |



# Properties of Sections

I = Moment of Inertia.

Z = Modulus of Section.

|                                                                                   |                                                                         |                                                                                   |                                                                               |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
|  | $I_{xx} = \frac{B D^3}{12}$ $Z_{xx} = \frac{B D^2}{6}$                  |  | $I_{xx} = \frac{B D^3}{36}$ $Z_{xx} = \frac{B D^2}{24}$                       |
|  | $I = \frac{\pi D^4}{64} = .049 D^4$ $Z = \frac{\pi D^3}{32} = .098 D^3$ |  | $I_{xx} = \frac{\pi (D^4 - d^4)}{64}$ $Z_{xx} = \frac{\pi (D^4 - d^4)}{32 D}$ |
|  | $I_{xx} = \frac{B D^3}{12}$ $Z_{xx} = \frac{(B D^3 - b d^3)}{6 D}$      |  |                                                                               |
|  | $A = B D - b d$ $I_{xx} = \frac{B D^3 - b d^3}{12} - A y^2$             |  | $A = B D - b d$ $I_{xx} = \frac{B D^3 - b d^3}{12} - A y^2$                   |
|  | $I_{xx} = \frac{P^3 t}{106}$ $Z = \frac{P^3 t}{13.2}$                   |  |                                                                               |

## Strength of Corrugated Sheets

In calculations involving corrugated Galvanized or Zincanneal sheets, use the values of thickness for uncoated sheet as given by the Birmingham Gauge Table, with the exception of 26G. For 26G—thickness is .0162.

t = Thickness of sheet in inches.

P = Pitch of corrugations, e.g., 5", 3", 1".

S = Safe pressure lb. per sq. inch distributed load.

L = Unsupported length of sheet in inches, simply supported beam.

$$S = 9,000 \frac{P t}{L^2}$$

Example: 3" corrugations, 22G sheet—t = 1/32", P = 3".

$$S = \frac{9,000 \times 3}{32 \times L^2} = \frac{845}{L^2} \text{ lb./sq. in.}$$

26G Red Orb sheets have the same strength as 24G Blue Orb.

# Squares, Cubes, Square Roots and Cube Roots

| No.            | Square | Cube   | Sq. Root | Cube Root | No.             | Square  | Cube     | Sq. Root | Cube Root |
|----------------|--------|--------|----------|-----------|-----------------|---------|----------|----------|-----------|
| $\frac{1}{8}$  | .015   | .0019  | .353     | .5        | $4\frac{1}{4}$  | 18.062  | 76.765   | 2.061    | 1.61      |
| $\frac{1}{4}$  | .062   | .0156  | .500     | .620      | $4\frac{1}{2}$  | 20.250  | 91.125   | 2.121    | 1.65      |
| $\frac{3}{8}$  | .140   | .0527  | .612     | .721      | $4\frac{3}{4}$  | 22.562  | 107.171  | 2.179    | 1.68      |
| $\frac{1}{2}$  | .250   | .1250  | .707     | .793      | 5               | 25      | 125      | 2.236    | 1.71      |
| $\frac{5}{8}$  | .390   | .244   | .790     | .855      | $5\frac{1}{4}$  | 27.562  | 144.703  | 2.291    | 1.73      |
| $\frac{3}{4}$  | .562   | .421   | .866     | .908      | $5\frac{1}{2}$  | 30.250  | 166.375  | 2.345    | 1.76      |
| $\frac{7}{8}$  | .765   | .670   | .935     | .956      | $5\frac{3}{4}$  | 33.062  | 190.109  | 2.397    | 1.79      |
| 1              | 1      | 1      | 1.000    | 1         | 6               | 36      | 216      | 2.449    | 1.81      |
| $1\frac{1}{8}$ | 1.265  | 1.423  | 1.060    | 1.04      | $6\frac{1}{4}$  | 39.062  | 244.140  | 2.500    | 1.84      |
| $1\frac{1}{4}$ | 1.562  | 1.953  | 1.118    | 1.07      | $6\frac{1}{2}$  | 42.250  | 274.625  | 2.549    | 1.86      |
| $1\frac{3}{8}$ | 1.890  | 2.599  | 1.172    | 1.11      | $6\frac{3}{4}$  | 45.562  | 307.546  | 2.598    | 1.88      |
| $1\frac{1}{2}$ | 2.250  | 3.375  | 1.224    | 1.14      | 7               | 49      | 343      | 2.645    | 1.91      |
| $1\frac{5}{8}$ | 2.610  | 4.291  | 1.274    | 1.17      | $7\frac{1}{4}$  | 52.562  | 381.078  | 2.692    | 1.93      |
| $1\frac{3}{4}$ | 3.062  | 5.359  | 1.322    | 1.20      | $7\frac{1}{2}$  | 56.250  | 421.875  | 2.738    | 1.95      |
| $1\frac{7}{8}$ | 3.515  | 6.591  | 1.369    | 1.23      | $7\frac{3}{4}$  | 60.062  | 465.484  | 2.783    | 1.97      |
| 2              | 4      | 8      | 1.414    | 1.26      | 8               | 64      | 512      | 2.828    | 2         |
| $2\frac{1}{8}$ | 4.515  | 9.595  | 1.457    | 1.28      | $8\frac{1}{4}$  | 68.062  | 561.515  | 2.872    | 2.02      |
| $2\frac{1}{4}$ | 5.062  | 11.390 | 1.500    | 1.30      | $8\frac{1}{2}$  | 72.250  | 614.125  | 2.915    | 2.04      |
| $2\frac{3}{8}$ | 5.640  | 13.396 | 1.541    | 1.33      | $8\frac{3}{4}$  | 76.562  | 669.921  | 2.958    | 2.06      |
| $2\frac{1}{2}$ | 6.250  | 15.625 | 1.581    | 1.35      | 9               | 81      | 729      | 3        | 2.08      |
| $2\frac{5}{8}$ | 6.890  | 18.088 | 1.620    | 1.37      | $9\frac{1}{4}$  | 85.562  | 791.453  | 3.041    | 2.09      |
| $2\frac{3}{4}$ | 7.562  | 20.796 | 1.658    | 1.40      | $9\frac{1}{2}$  | 90.25   | 857.375  | 3.082    | 2.11      |
| $2\frac{7}{8}$ | 8.265  | 23.763 | 1.695    | 1.42      | $9\frac{3}{4}$  | 95.062  | 926.859  | 3.122    | 2.13      |
| 3              | 9      | 27     | 1.732    | 1.44      | 10              | 100     | 1000     | 3.162    | 2.15      |
| $3\frac{1}{8}$ | 9.765  | 30.517 | 1.767    | 1.46      | $10\frac{1}{4}$ | 105.062 | 1076.89  | 3.201    | 2.17      |
| $3\frac{1}{4}$ | 10.562 | 34.328 | 1.802    | 1.48      | $10\frac{1}{2}$ | 110.250 | 1157.625 | 3.240    | 2.18      |
| $3\frac{3}{8}$ | 11.390 | 38.443 | 1.837    | 1.50      | $10\frac{3}{4}$ | 115.562 | 1242.296 | 3.278    | 2.20      |
| $3\frac{1}{2}$ | 12.250 | 42.875 | 1.870    | 1.51      | 11              | 121     | 1331     | 3.316    | 2.22      |
| $3\frac{5}{8}$ | 13.140 | 47.634 | 1.903    | 1.53      | $11\frac{1}{4}$ | 126.562 | 1423.828 | 3.354    | 2.24      |
| $3\frac{3}{4}$ | 14.062 | 52.734 | 1.936    | 1.55      | $11\frac{1}{2}$ | 132.250 | 1520.875 | 3.391    | 2.25      |
| $3\frac{7}{8}$ | 15.015 | 58.185 | 1.968    | 1.57      | $11\frac{3}{4}$ | 138.062 | 1622.234 | 3.427    | 2.27      |
| 4              | 16     | 64     | 2        | 1.58      | 12              | 144     | 1728     | 3.464    | 2.29      |

## TRIGONOMETRICAL RATIOS, ETC.

| Angle |       | Chord | Sine        | Tan-<br>gent        | Co-<br>tan-<br>gent | Co-<br>sine |       |        |       |
|-------|-------|-------|-------------|---------------------|---------------------|-------------|-------|--------|-------|
| Deg.  | Rad.  |       |             |                     |                     |             |       |        |       |
| 0°    | 0     | 0     | 0           | 0                   | ∞                   | 1           | 1.414 | 1.5708 | 90°   |
| .5    | .0087 | .009  | .0087       | .0087               | 114.6               | 1           | 1.408 | 1.5621 | 89.5  |
| 1     | .0175 | .017  | .0175       | .0175               | 57.2900             | .9998       | 1.402 | 1.5533 | 89    |
| 1.5   | .0262 | .025  | .0262       | .0262               | 38.19               | .9997       | 1.396 | 1.5446 | 88.5  |
| 2     | .0349 | .035  | .0349       | .0349               | 28.6363             | .9994       | 1.389 | 1.5359 | 88    |
| 2.5   | .0436 | .044  | .0436       | .0437               | 22.90               | .9990       | 1.383 | 1.5272 | 87.5  |
| 3     | .0524 | .052  | .0523       | .0524               | 19.0811             | .9986       | 1.377 | 1.5184 | 87    |
| 3.5   | .0611 | .061  | .0610       | .0612               | 16.35               | .9981       | 1.370 | 1.5097 | 86.5  |
| 4     | .0698 | .070  | .0698       | .0699               | 14.3006             | .9976       | 1.364 | 1.5010 | 86    |
| 4.5   | .0785 | .079  | .0785       | .0787               | 12.71               | .9969       | 1.358 | 1.4923 | 85.5  |
| 5     | .0873 | .087  | .0872       | .0875               | 11.4301             | .9962       | 1.351 | 1.4835 | 85    |
| 5.5   | .0960 | .096  | .0958       | .0963               | 10.39               | .9954       | 1.345 | 1.4748 | 84.5  |
| 6     | .1047 | .105  | .1045       | .1051               | 9.5144              | .9945       | 1.338 | 1.4661 | 84    |
| 6.5   | .1134 | .113  | .1132       | .1139               | 8.7769              | .9936       | 1.332 | 1.4573 | 83.5  |
| 7     | .1222 | .122  | .1219       | .1228               | 8.1443              | .9925       | 1.325 | 1.4486 | 83    |
| 7.5   | .1309 | .131  | .1305       | .1317               | 7.5958              | .9914       | 1.319 | 1.4399 | 82.5  |
| 8     | .1396 | .139  | .1392       | .1405               | 7.1154              | .9903       | 1.312 | 1.4312 | 82    |
| 8.5   | .1484 | .148  | .1478       | .1495               | 6.6912              | .9890       | 1.306 | 1.4224 | 81.5  |
| 9     | .1571 | .157  | .1564       | .1584               | 6.3138              | .9877       | 1.299 | 1.4137 | 81    |
| 9.5   | .1658 | .166  | .1650       | .1673               | 5.9758              | .9863       | 1.292 | 1.4050 | 80.5  |
| 10    | .1745 | .174  | .1736       | .1763               | 5.6713              | .9848       | 1.286 | 1.3963 | 80    |
| 10.5  | .1833 | .183  | .1822       | .1853               | 5.3955              | .9833       | 1.279 | 1.3875 | 79.5  |
| 11    | .1920 | .192  | .1908       | .1944               | 5.1446              | .9816       | 1.272 | 1.3788 | 79    |
| 11.5  | .2007 | .200  | .1994       | .2035               | 4.9152              | .9799       | 1.265 | 1.3701 | 78.5  |
| 12    | .2094 | .209  | .2079       | .2126               | 4.7046              | .9781       | 1.259 | 1.3614 | 78    |
| 12.5  | .2182 | .218  | .2164       | .2217               | 4.5107              | .9763       | 1.252 | 1.3526 | 77.5  |
| 13    | .2269 | .226  | .2250       | .2309               | 4.3315              | .9744       | 1.245 | 1.3439 | 77    |
| 13.5  | .2356 | .235  | .2334       | .2401               | 4.1653              | .9724       | 1.238 | 1.3352 | 76.5  |
| 14    | .2443 | .244  | .2419       | .2493               | 4.0108              | .9703       | 1.231 | 1.3265 | 76    |
| 14.5  | .2531 | .252  | .2504       | .2586               | 3.8667              | .9681       | 1.224 | 1.3177 | 75.5  |
| 15    | .2618 | .261  | .2588       | .2679               | 3.7321              | .9659       | 1.217 | 1.3090 | 75    |
| 15.5  | .2705 | .270  | .2672       | .2773               | 3.6059              | .9636       | 1.211 | 1.3003 | 74.5  |
| 16    | .2793 | .278  | .2756       | .2867               | 3.4874              | .9613       | 1.204 | 1.2915 | 74    |
| 16.5  | .2880 | .287  | .2840       | .2962               | 3.3759              | .9588       | 1.197 | 1.2828 | 73.5  |
| 17    | .2967 | .296  | .2924       | .3057               | 3.2709              | .9563       | 1.190 | 1.2741 | 73    |
| 17.5  | .3054 | .304  | .3007       | .3153               | 3.1716              | .9537       | 1.183 | 1.2654 | 72.5  |
| 18    | .3142 | .313  | .3090       | .3249               | 3.0777              | .9511       | 1.176 | 1.2566 | 72    |
| 18.5  | .3229 | .322  | .3173       | .3346               | 2.9887              | .9483       | 1.168 | 1.2479 | 71.5  |
| 19    | .3316 | .330  | .3256       | .3443               | 2.9042              | .9455       | 1.161 | 1.2392 | 71    |
| 19.5  | .3403 | .339  | .3338       | .3541               | 2.8239              | .9426       | 1.154 | 1.2305 | 70.5  |
| 20    | .3491 | .347  | .3420       | .3640               | 2.7475              | .9397       | 1.147 | 1.2217 | 70    |
| 20.5  | .3578 | .356  | .3502       | .3739               | 2.6746              | .9367       | 1.140 | 1.2130 | 69.5  |
| 21    | .3665 | .364  | .3584       | .3839               | 2.6051              | .9336       | 1.133 | 1.2043 | 69    |
| 21.5  | .3752 | .373  | .3665       | .3939               | 2.5836              | .9304       | 1.126 | 1.1956 | 68.5  |
| 22    | .3840 | .382  | .3746       | .4040               | 2.4751              | .9272       | 1.118 | 1.1868 | 68    |
|       |       |       | Co-<br>sine | Co-<br>tan-<br>gent | Tan-<br>gent        | Sine        | Chord | Rad.   | Deg.  |
|       |       |       |             |                     |                     |             |       |        | Angle |



## TRIGONOMETRICAL RATIOS, ETC.

| Angle |       | Chord | Sine        | Tan-<br>gent        | Co-<br>tan-<br>gent | Co-<br>sine |       |        |       |
|-------|-------|-------|-------------|---------------------|---------------------|-------------|-------|--------|-------|
| Deq.  | Rad.  |       |             |                     |                     |             |       |        |       |
| 22.5° | .3927 | .390  | .3827       | .4142               | 2.4142              | .9239       | 1.111 | 1.1781 | 67.5  |
| 23    | .4014 | .399  | .3907       | .4245               | 2.3559              | .9205       | 1.104 | 1.1694 | 67    |
| 23.5  | .4102 | .407  | .3987       | .4348               | 2.2998              | .9171       | 1.097 | 1.1606 | 66.5  |
| 24    | .4189 | .416  | .4067       | .4452               | 2.2460              | .9135       | 1.089 | 1.1519 | 66    |
| 24.5  | .4276 | .424  | .4147       | .4557               | 2.1943              | .9100       | 1.082 | 1.1432 | 65.5  |
| 25    | .4363 | .433  | .4226       | .4663               | 2.1445              | .9063       | 1.075 | 1.1345 | 65    |
| 25.5  | .4451 | .441  | .4305       | .4770               | 2.0965              | .9026       | 1.067 | 1.1257 | 64.5  |
| 26    | .4538 | .450  | .4384       | .4877               | 2.0503              | .8988       | 1.060 | 1.1170 | 64    |
| 26.5  | .4625 | .458  | .4462       | .4986               | 2.0057              | .8949       | 1.052 | 1.1083 | 63.5  |
| 27    | .4712 | .467  | .4540       | .5095               | 1.9626              | .8910       | 1.045 | 1.0996 | 63    |
| 27.5  | .4800 | .475  | .4617       | .5206               | 1.9210              | .8870       | 1.037 | 1.0908 | 62.5  |
| 28    | .4887 | .484  | .4695       | .5317               | 1.8807              | .8829       | 1.030 | 1.0821 | 62    |
| 28.5  | .4974 | .492  | .4772       | .5430               | 1.8418              | .8788       | 1.023 | 1.0734 | 61.5  |
| 29    | .5061 | .501  | .4848       | .5543               | 1.8040              | .8746       | 1.015 | 1.0647 | 61    |
| 29.5  | .5149 | .509  | .4924       | .5658               | 1.7675              | .8704       | 1.008 | 1.0559 | 60.5  |
| 30    | .5236 | .518  | .5000       | .5774               | 1.7321              | .8660       | 1.000 | 1.0472 | 60    |
| 30.5  | .5323 | .526  | .5075       | .5890               | 1.6977              | .8616       | .993  | 1.0385 | 59.5  |
| 31    | .5411 | .534  | .5150       | .6009               | 1.6643              | .8572       | .985  | 1.0297 | 59    |
| 31.5  | .5498 | .543  | .5225       | .6128               | 1.6319              | .8526       | .977  | 1.0210 | 58.5  |
| 32    | .5585 | .551  | .5299       | .6249               | 1.6003              | .8480       | .970  | 1.0123 | 58    |
| 32.5  | .5672 | .560  | .5373       | .6371               | 1.5697              | .8434       | .962  | 1.0036 | 57.5  |
| 33    | .5760 | .568  | .5446       | .6494               | 1.5399              | .8387       | .954  | .9948  | 57    |
| 33.5  | .5847 | .576  | .5519       | .6619               | 1.5108              | .8339       | .947  | .9861  | 56.5  |
| 34    | .5934 | .585  | .5592       | .6745               | 1.4826              | .8290       | .939  | .9774  | 56    |
| 34.5  | .6021 | .593  | .5664       | .6873               | 1.4550              | .8241       | .931  | .9687  | 55.5  |
| 35    | .6109 | .601  | .5736       | .7002               | 1.4281              | .8192       | .923  | .9599  | 55    |
| 35.5  | .6196 | .609  | .5807       | .7133               | 1.4019              | .8141       | .916  | .9512  | 54.5  |
| 36    | .6283 | .618  | .5878       | .7265               | 1.3764              | .8090       | .908  | .9425  | 54    |
| 36.5  | .6370 | .626  | .5948       | .7400               | 1.3514              | .8039       | .900  | .9338  | 53.5  |
| 37    | .6458 | .635  | .6018       | .7536               | 1.3270              | .7986       | .892  | .9250  | 53    |
| 37.5  | .6545 | .643  | .6088       | .7673               | 1.3032              | .7934       | .885  | .9163  | 52.5  |
| 38    | .6632 | .651  | .6157       | .7813               | 1.2799              | .7880       | .877  | .9076  | 52    |
| 38.5  | .6720 | .659  | .6225       | .7954               | 1.2572              | .7826       | .871  | .8988  | 51.5  |
| 39    | .6807 | .668  | .6293       | .8098               | 1.2349              | .7771       | .861  | .8901  | 51    |
| 39.5  | .6894 | .676  | .6361       | .8243               | 1.2131              | .7716       | .853  | .8814  | 50.5  |
| 40    | .6981 | .684  | .6428       | .8391               | 1.1918              | .7660       | .845  | .8727  | 50    |
| 40.5  | .7069 | .692  | .6494       | .8541               | 1.1708              | .7604       | .837  | .8639  | 49.5  |
| 41    | .7156 | .700  | .6561       | .8693               | 1.1504              | .7547       | .829  | .8552  | 49    |
| 41.5  | .7243 | .709  | .6626       | .8847               | 1.1308              | .7490       | .821  | .8465  | 48.5  |
| 42    | .7330 | .717  | .6691       | .9004               | 1.1106              | .7431       | .813  | .8378  | 48    |
| 42.5  | .7418 | .725  | .6756       | .9163               | 1.0913              | .7373       | .805  | .8290  | 47.5  |
| 43    | .7505 | .733  | .6820       | .9325               | 1.0724              | .7314       | .796  | .8203  | 47    |
| 43.5  | .7592 | .741  | .6884       | .9490               | 1.0538              | .7254       | .789  | .8116  | 46.5  |
| 44    | .7679 | .749  | .6947       | .9657               | 1.0355              | .7193       | .781  | .8029  | 46    |
| 44.5  | .7767 | .757  | .7009       | .9827               | 1.0176              | .7133       | .773  | .7941  | 45.5  |
| 45    | .7854 | .765  | .7071       | 1.0000              | 1.0000              | .7071       | .765  | .7854  | 45    |
|       |       |       | Co-<br>sine | Co-<br>tan-<br>gent | Tan-<br>gent        | Sine        | Chord | Rad.   | Deg.  |
|       |       |       |             |                     |                     |             |       |        | Angle |

# Temperature Conversion Table

## FAHRENHEIT — CENTIGRADE

| °F.    | °C.   | °F. | °C.  | °F. | °C.  | °F. | °C.  | °F. | °C.  |
|--------|-------|-----|------|-----|------|-----|------|-----|------|
| -459.4 | -273  | 66  | 18.9 | 110 | 43.3 | 154 | 67.8 | 198 | 92.2 |
| -50    | -45.6 | 67  | 19.4 | 111 | 43.9 | 155 | 68.3 | 199 | 92.8 |
| -40    | -40   | 68  | 20   | 112 | 44.4 | 156 | 68.9 | 200 | 93.3 |
| -30    | -34.4 | 69  | 20.6 | 113 | 45   | 157 | 69.4 | 201 | 93.9 |
| -20    | -28.9 | 70  | 21.1 | 114 | 45.6 | 158 | 70   | 202 | 94.4 |
| -10    | -23.3 | 71  | 21.7 | 115 | 46.1 | 159 | 70.6 | 203 | 95   |
| 0      | -17.8 | 72  | 22.2 | 116 | 46.7 | 160 | 71.1 | 204 | 95.6 |
| 10     | -12.2 | 73  | 22.8 | 117 | 47.2 | 161 | 71.7 | 205 | 96.1 |
| 20     | -6.7  | 74  | 23.3 | 118 | 47.8 | 162 | 72.2 | 206 | 96.7 |
| 30     | -1.1  | 75  | 23.9 | 119 | 48.3 | 163 | 72.8 | 207 | 97.2 |
| 32     | 0     | 76  | 24.4 | 120 | 48.9 | 164 | 73.3 | 208 | 97.8 |
| 33     | 0.6   | 77  | 25   | 121 | 49.4 | 165 | 73.9 | 209 | 98.3 |
| 34     | 1.1   | 78  | 25.6 | 122 | 50   | 166 | 74.4 | 210 | 98.9 |
| 35     | 1.7   | 79  | 26.1 | 123 | 50.6 | 167 | 75   | 211 | 99.4 |
| 36     | 2.2   | 80  | 26.7 | 124 | 51.1 | 168 | 75.6 | 212 | 100  |
| 37     | 2.8   | 81  | 27.2 | 125 | 51.7 | 169 | 76.1 |     |      |
| 38     | 3.3   | 82  | 27.8 | 126 | 52.2 | 170 | 76.7 |     |      |
| 39     | 3.9   | 83  | 28.3 | 127 | 52.8 | 171 | 77.2 |     |      |
| 40     | 4.4   | 84  | 28.9 | 128 | 53.3 | 172 | 77.8 |     |      |
| 41     | 5     | 85  | 29.4 | 129 | 53.9 | 173 | 78.3 |     |      |
| 42     | 5.6   | 86  | 30   | 130 | 54.4 | 174 | 78.9 |     |      |
| 43     | 6.1   | 87  | 30.6 | 131 | 55   | 175 | 79.4 |     |      |
| 44     | 6.7   | 88  | 31.1 | 132 | 55.6 | 176 | 80   |     |      |
| 45     | 7.2   | 89  | 31.7 | 133 | 56.1 | 177 | 80.6 |     |      |
| 46     | 7.8   | 90  | 32.2 | 134 | 56.7 | 178 | 81.1 |     |      |
| 47     | 8.3   | 91  | 32.8 | 135 | 57.2 | 179 | 81.7 |     |      |
| 48     | 8.9   | 92  | 33.3 | 136 | 57.8 | 180 | 82.2 |     |      |
| 49     | 9.4   | 93  | 33.9 | 137 | 58.3 | 181 | 82.8 |     |      |
| 50     | 10    | 94  | 34.4 | 138 | 58.9 | 182 | 83.3 |     |      |
| 51     | 10.6  | 95  | 35   | 139 | 59.4 | 183 | 83.9 |     |      |
| 52     | 11.1  | 96  | 35.6 | 140 | 60   | 184 | 84.4 |     |      |
| 53     | 11.7  | 97  | 36.1 | 141 | 60.6 | 185 | 85   |     |      |
| 54     | 12.2  | 98  | 36.7 | 142 | 61.1 | 186 | 85.6 |     |      |
| 55     | 12.8  | 99  | 37.2 | 143 | 61.7 | 187 | 86.1 |     |      |
| 56     | 13.3  | 100 | 37.8 | 144 | 62.2 | 188 | 86.7 |     |      |
| 57     | 13.9  | 101 | 38.3 | 145 | 62.8 | 189 | 87.2 |     |      |
| 58     | 14.4  | 102 | 38.9 | 146 | 63.3 | 190 | 87.8 |     |      |
| 59     | 15    | 103 | 39.4 | 147 | 63.9 | 191 | 88.3 |     |      |
| 60     | 15.6  | 104 | 40   | 148 | 64.4 | 192 | 88.9 |     |      |
| 61     | 16.1  | 105 | 40.6 | 149 | 65   | 193 | 89.4 |     |      |
| 62     | 16.7  | 106 | 41.1 | 150 | 65.6 | 194 | 90   |     |      |
| 63     | 17.2  | 107 | 41.7 | 151 | 66.1 | 195 | 90.6 |     |      |
| 64     | 17.8  | 108 | 42.2 | 152 | 66.7 | 196 | 91.1 |     |      |
| 65     | 18.3  | 109 | 42.8 | 153 | 67.2 | 197 | 91.7 |     |      |

C. to F.  
Multiply by 9, divide by 5, add 32.

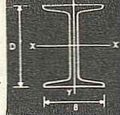
F. to C.  
Subtract 32, multiply by 5, divide by 9.

## WEIGHTS OF STEEL PLATES

POUNDS PER LINEAL FOOT

| Width<br>Inches | Thickness in inches |       |       |       |       |       |       |       |
|-----------------|---------------------|-------|-------|-------|-------|-------|-------|-------|
|                 | 1/16                | 1/8   | 3/16  | 1/4   | 5/16  | 3/8   | 7/16  | 1/2   |
| 12              | 2.55                | 5.10  | 7.65  | 10.20 | 12.75 | 15.30 | 17.85 | 20.40 |
| 13              | 2.76                | 5.53  | 8.29  | 11.05 | 13.81 | 16.58 | 19.34 | 22.10 |
| 14              | 2.98                | 5.95  | 8.93  | 11.90 | 14.88 | 17.85 | 20.83 | 23.80 |
| 15              | 3.19                | 6.38  | 9.56  | 12.75 | 15.94 | 19.13 | 22.31 | 25.50 |
| 16              | 3.40                | 6.80  | 10.20 | 13.60 | 17.00 | 20.40 | 23.80 | 27.20 |
| 17              | 3.61                | 7.23  | 10.84 | 14.45 | 18.06 | 21.68 | 25.29 | 28.90 |
| 18              | 3.83                | 7.65  | 11.48 | 15.30 | 19.13 | 22.95 | 26.78 | 30.60 |
| 19              | 4.04                | 8.08  | 12.11 | 16.15 | 20.19 | 24.23 | 28.26 | 32.30 |
| 20              | 4.25                | 8.50  | 12.75 | 17.00 | 21.25 | 25.50 | 29.75 | 34.00 |
| 21              | 4.46                | 8.93  | 13.39 | 17.85 | 22.31 | 26.78 | 31.24 | 35.70 |
| 22              | 4.68                | 9.35  | 14.03 | 18.70 | 23.38 | 28.05 | 32.73 | 37.40 |
| 23              | 4.89                | 9.78  | 14.66 | 19.55 | 24.44 | 29.33 | 34.21 | 39.10 |
| 24              | 5.10                | 10.20 | 15.30 | 20.40 | 25.50 | 30.60 | 35.70 | 40.80 |
| 26              | 5.53                | 11.05 | 16.58 | 22.10 | 27.63 | 33.15 | 38.68 | 44.20 |
| 28              | 5.95                | 11.90 | 17.85 | 23.80 | 29.75 | 35.70 | 41.65 | 47.60 |
| 30              | 6.38                | 12.75 | 19.13 | 25.50 | 31.88 | 38.25 | 44.63 | 51.00 |
| 32              | 6.80                | 13.60 | 20.40 | 27.20 | 34.00 | 40.80 | 47.60 | 54.40 |
| 34              | 7.23                | 14.45 | 21.68 | 28.90 | 36.13 | 43.35 | 50.58 | 57.80 |
| 36              | 7.65                | 15.30 | 22.95 | 30.60 | 38.25 | 45.90 | 53.55 | 61.20 |
| 38              | 8.08                | 16.15 | 24.23 | 32.30 | 40.38 | 48.45 | 56.53 | 64.60 |
| 40              | 8.50                | 17.00 | 25.50 | 34.00 | 42.50 | 51.00 | 59.50 | 68.00 |
| 42              | 8.93                | 17.85 | 26.78 | 35.70 | 44.63 | 53.55 | 62.48 | 71.40 |
| 44              | 9.35                | 18.70 | 28.05 | 37.40 | 46.75 | 56.10 | 65.45 | 74.80 |
| 46              | 9.78                | 19.55 | 29.33 | 39.10 | 48.88 | 58.65 | 68.43 | 78.20 |
| 48              | 10.20               | 20.40 | 30.60 | 40.80 | 51.00 | 61.20 | 71.40 | 81.60 |
| 50              | 10.6                | 21.3  | 31.9  | 42.5  | 53.1  | 63.8  | 74.40 | 85.0  |
| 52              | 11.1                | 22.1  | 33.2  | 44.2  | 55.3  | 66.3  | 77.4  | 88.4  |
| 54              | 11.5                | 23.0  | 34.4  | 45.9  | 57.4  | 68.9  | 80.3  | 91.8  |
| 56              | 11.9                | 23.8  | 35.7  | 47.6  | 59.5  | 71.4  | 83.3  | 95.2  |
| 58              | 12.3                | 24.7  | 37.0  | 49.3  | 61.6  | 74.0  | 86.3  | 98.6  |
| 60              | 12.8                | 25.5  | 38.3  | 51.0  | 63.8  | 76.5  | 89.3  | 102.0 |
| 62              | 13.2                | 26.4  | 39.5  | 52.7  | 65.9  | 79.1  | 92.2  | 105.4 |
| 64              | 13.6                | 27.2  | 40.8  | 54.4  | 68.0  | 81.6  | 95.2  | 108.8 |
| 66              | 14.0                | 28.1  | 42.1  | 56.1  | 70.1  | 84.2  | 98.2  | 112.2 |
| 68              | 14.5                | 28.9  | 43.4  | 57.8  | 72.3  | 86.7  | 101.2 | 115.6 |
| 70              | 14.9                | 29.8  | 44.6  | 59.5  | 74.4  | 89.3  | 104.1 | 119.0 |
| 72              | 15.3                | 30.6  | 45.9  | 61.2  | 76.5  | 91.8  | 107.1 | 122.4 |
| 74              | 15.7                | 31.5  | 47.2  | 62.9  | 78.6  | 94.4  | 110.1 | 125.8 |
| 76              | 16.2                | 32.3  | 48.5  | 64.6  | 80.8  | 96.9  | 113.1 | 129.2 |
| 78              | 16.6                | 33.2  | 49.7  | 66.3  | 82.9  | 99.5  | 116.0 | 132.6 |
| 80              | 17.0                | 34.0  | 51.0  | 68.0  | 85.0  | 102.0 | 119.0 | 136.0 |
| 82              | 17.4                | 34.9  | 52.3  | 69.7  | 87.1  | 104.6 | 122.0 | 139.4 |
| 84              | 17.9                | 35.7  | 53.6  | 71.4  | 89.3  | 107.1 | 125.0 | 142.8 |





# Properties of Australian "I" Beams

| Reference Marks | Size ins. D x B | Wgt. per ft. | Sect. Area sq. in. | Moment of Inertia |          | Modulus of Section |          |
|-----------------|-----------------|--------------|--------------------|-------------------|----------|--------------------|----------|
|                 |                 |              |                    | About XX          | About YY | About XX           | About YY |
| ASB126          | *24 x 7½        | 100          | 29.4               | 2581              | 63.55    | 215.1              | 16.68    |
|                 | 24 x 7½         | 95           | 27.9               | 2533              | 62.54    | 211.1              | 16.68    |
|                 | 24 x 7½         | 90           | 26.5               | 2443              | 60.44    | 203.6              | 16.12    |
| ASB125          | 22 x 7          | 75           | 22.1               | 1677              | 41.07    | 152.4              | 11.73    |
| ASB124          | 20 x 6½         | 65           | 19.1               | 1226              | 32.56    | 122.6              | 10.02    |
| ASB123          | 18 x 6          | 55           | 16.2               | 842               | 23.64    | 93.5               | 7.88     |
|                 | †16 x 8         | 75           | 22.1               | 973               | 68.30    | 121.7              | 17.08    |
| ASB121          | 16 x 6          | 50           | 14.7               | 618               | 22.47    | 77.3               | 7.49     |
| ASB120          | 15 x 6          | 45           | 13.2               | 492               | 19.87    | 65.6               | 6.62     |
| ASB119          | 14 x 5½         | 40           | 11.8               | 377               | 14.79    | 53.9               | 5.38     |
| ASB118          | 13 x 5          | 35           | 10.3               | 283               | 10.82    | 43.6               | 4.33     |
| ASB117          | 12 x 8          | 65           | 19.1               | 488               | 65.18    | 81.3               | 16.30    |
| ASB116          | 12 x 5          | 30           | 8.8                | 207               | 8.77     | 34.5               | 3.51     |
| ASB115          | 10 x 8          | 70           | 20.6               | 345               | 71.61    | 69.0               | 17.90    |
| ASB114          | 10 x 8          | 55           | 16.2               | 289               | 54.74    | 57.7               | 13.69    |
| ASB113          | 10 x 6          | 40           | 11.8               | 205               | 21.76    | 41.0               | 7.25     |
| ASB112          | 10 x 4½         | 25           | 7.4                | 122               | 6.49     | 24.5               | 2.88     |
| ASB111          | 9 x 7           | 50           | 14.7               | 208               | 40.17    | 46.3               | 11.48    |
| ASB110          | 9 x 4           | 21           | 6.2                | 81                | 4.15     | 18.0               | 2.07     |
| ASB109          | 8 x 6           | 35           | 10.3               | 115               | 19.54    | 28.8               | 6.51     |
| ASB108          | 8 x 4           | 18           | 5.30               | 55.6              | 3.506    | 13.91              | 1.753    |
| ASB107          | 7 x 3½          | 15           | 4.42               | 35.9              | 2.408    | 10.26              | 1.376    |
| ASB106          | 6 x 5           | 25           | 7.35               | 45.2              | 9.876    | 15.05              | 3.951    |
| ASB105          | 6 x 3           | 12           | 3.53               | 20.99             | 1.461    | 7.00               | .974     |
| ASB104          | 5 x 2½          | 9            | 2.65               | 10.91             | .789     | 4.36               | .631     |
| ASB103          | 4 x 3           | 10           | 2.94               | 7.79              | 1.326    | 3.89               | .884     |
| ASB102          | 4 x 1½          | 5            | 1.47               | 3.66              | .186     | 1.80               | .210     |
|                 | 3 x 2½          | 5.7          | 1.69               | 2.55              | .418     | 1.70               | .358     |

\* Nominal size, width about 7½ in.

† Not at present available.

## Allowable Stresses in Steel

| Material              | Tensile       | Bending | Shearing | Bearing |
|-----------------------|---------------|---------|----------|---------|
| Rolled sections .. .. | 20,200        | 22,400  | 14,600   | 26,900  |
| Shop rivets .. ..     | 11,200        | —       | 13,400   | 26,900  |
| Field rivets .. ..    | 9,000         | —       | 11,200   | 22,400  |
| Fitted bolts .. ..    | 11,200 (min.) | —       | 13,400   | 26,900  |
| Black bolts .. ..     | 11,200 (min.) | —       | 9,000    | 17,900  |
| Cast steel .. ..      | 20,200        | 22,400  | 14,600   | 26,900  |
| Cast iron .. ..       | 2,500         | 3,000   | 1,500    | 12,000  |

| Lysaght Steel Sheets          | Sunstar | Deep Drawing | C30   | C60, C80 |
|-------------------------------|---------|--------------|-------|----------|
| Ultimate Tensile tons/sq. in. | 20-25   | 20-22        | 30-40 | 50-60    |
| Yield point .. ..             | 14-18   | 12-14        | 20-28 | 30-40    |
| % Elongation on 2 inches ..   | 20-25   | 36-44        | 10-15 | 10-15    |

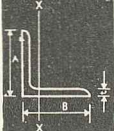
# ROLLED STEEL "I" BEAMS AS GIRDERS

SAFE DISTRIBUTED LOAD IN TONS, ABOUT AXIS XX

JOHN LYSAGHT (AUST.) PTY. LTD.

| Size<br>Inches | Weight<br>per ft.<br>lb | SPAN IN FEET |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      | Size<br>Inches |
|----------------|-------------------------|--------------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|----------------|
|                |                         | 4            | 6     | 8     | 10    | 12    | 14    | 16   | 18   | 20   | 22   | 24   | 26   | 28   | 30   | 32   | 36   | 40   |                |
| 24 x 7½        | 100                     |              | 205.0 | 178.5 | 142.5 | 119.0 | 102.0 | 89.2 | 79.2 | 71.4 | 64.8 | 59.5 | 54.8 | 51.0 | 47.5 | 44.6 | 39.7 | 35.7 | 24 x 7½        |
| 24 x 7½        | 95                      |              | 182.0 | 175.0 | 140.0 | 117.0 | 100.0 | 87.6 | 78.0 | 70.2 | 63.3 | 58.5 | 54.0 | 50.2 | 46.8 | 43.9 | 39.1 | 35.1 | 24 x 7½        |
| 24 x 7½        | 90                      |              |       | 165.3 | 135.3 | 112.6 | 96.4  | 84.4 | 75.0 | 67.4 | 61.5 | 56.2 | 51.9 | 48.1 | 45.0 | 42.2 | 37.4 | 33.7 | 24 x 7½        |
| 22 x 7         | 75                      |              | 147.0 | 127.0 | 101.6 | 84.6  | 72.5  | 63.4 | 56.4 | 50.8 | 46.2 | 42.3 | 39.1 | 36.3 | 33.8 | 31.7 | 28.2 | 25.4 | 22 x 7         |
| 20 x 6½        | 65                      |              | 120.0 | 101.8 | 81.4  | 67.8  | 58.1  | 50.8 | 45.1 | 41.7 | 37.0 | 33.8 | 31.2 | 29.0 | 27.1 | 25.4 | 22.6 | 20.3 | 20 x 6½        |
| 18 x 6         | 55                      |              | 101.0 | 77.6  | 62.0  | 51.8  | 44.3  | 38.8 | 34.3 | 31.0 | 28.2 | 25.9 | 23.9 | 22.1 | 20.6 | 19.4 | 17.2 | 15.4 | 18 x 6         |
| 16 x 8         | 75                      |              | 102.4 | 101.1 | 81.0  | 67.4  | 57.8  | 50.5 | 44.9 | 40.4 | 36.8 | 33.5 | 31.1 | 28.9 | 27.0 | 25.2 | 22.5 | 20.3 | 16 x 8         |
| 16 x 6         | 50                      |              | 85.4  | 64.0  | 51.2  | 42.6  | 36.6  | 32.0 | 28.4 | 25.6 | 23.3 | 21.4 | 19.6 | 18.3 | 17.1 | 16.1 | 14.2 | 12.8 | 16 x 6         |
| 15 x 6         | 45                      |              | 72.5  | 54.4  | 43.5  | 36.2  | 31.1  | 27.1 | 24.1 | 21.6 | 19.9 | 18.1 | 16.7 | 15.6 | 14.4 | 13.5 | 12.1 | 10.8 | 15 x 6         |
| 14 x 5½        | 40                      | 69.1         | 59.3  | 44.6  | 35.6  | 29.7  | 25.5  | 22.3 | 19.8 | 17.8 | 16.2 | 14.8 | 13.7 | 12.7 | 11.8 | 11.1 | 9.8  | 8.8  | 14 x 5½        |
| 13 x 5         | 35                      | 60.6         | 48.1  | 36.2  | 29.0  | 24.0  | 20.6  | 18.0 | 16.1 | 14.4 | 13.1 | 12.0 | 11.1 | 10.3 | 9.7  | 9.0  | 8.0  | 7.2  | 13 x 5         |
| 12 x 8         | 65                      |              | 68.6  | 67.4  | 54.0  | 44.9  | 38.4  | 33.7 | 30.0 | 27.0 | 24.5 | 22.5 | 20.8 | 19.3 | 18.1 | 16.8 | 14.9 | 13.6 | 12 x 8         |
| 12 x 5         | 30                      | 52.7         | 38.1  | 28.5  | 22.9  | 19.1  | 16.3  | 14.3 | 12.7 | 11.5 | 10.3 | 9.6  | 8.8  | 8.1  | 7.6  | 7.1  | 6.3  | 5.7  | 12 x 5         |
| 10 x 8         | 70                      | 79.9         | 76.5  | 57.5  | 45.9  | 38.3  | 32.8  | 28.7 | 25.5 | 23.0 | 20.9 | 19.2 | 17.7 | 16.4 | 15.3 | 14.3 |      |      | 10 x 8         |
| 10 x 8         | 55                      |              | 53.2  | 47.9  | 38.3  | 31.8  | 27.2  | 23.9 | 21.3 | 19.2 | 17.4 | 15.9 | 14.7 | 13.6 | 12.7 | 11.9 |      |      | 10 x 8         |
| 10 x 6         | 40                      | 48.0         | 45.4  | 34.1  | 27.2  | 22.8  | 19.4  | 17.1 | 15.2 | 13.6 | 12.4 | 11.3 | 10.4 | 9.7  | 9.1  | 8.6  |      |      | 10 x 6         |
| 10 x 4½        | 25                      | 40.4         | 27.0  | 20.3  | 16.2  | 13.6  | 11.6  | 10.1 | 9.0  | 8.1  | 7.5  | 6.7  | 6.2  | 5.7  | 5.4  | 5.1  |      |      | 10 x 4½        |
| 9 x 7          | 50                      |              | 48.0  | 38.4  | 30.7  | 25.6  | 21.9  | 19.2 | 17.1 | 15.5 | 13.9 | 12.8 | 11.8 | 10.9 | 10.2 |      |      |      | 9 x 7          |
| 9 x 4          | 21                      | 29.9         | 19.9  | 14.9  | 12.0  | 10.0  | 8.5   | 7.5  | 6.6  | 6.0  | 5.4  | 5.0  | 4.6  | 4.2  |      |      |      |      | 9 x 4          |
| 8 x 6          | 35                      | 37.3         | 31.7  | 23.9  | 19.0  | 15.9  | 13.6  | 12.0 | 10.6 | 9.6  | 8.6  | 8.0  | 7.3  | 6.8  |      |      |      |      | 8 x 6          |
| 8 x 4          | 18                      | 23.0         | 15.4  | 11.6  | 9.2   | 7.7   | 6.6   | 5.7  | 5.1  | 4.6  | 4.2  | 3.9  | 3.5  | 3.2  |      |      |      |      | 8 x 4          |
| 7 x 3½         | 15                      | 17.1         | 11.3  | 8.5   | 6.8   | 5.7   | 4.9   | 4.2  | 3.7  | 3.4  | 3.1  | 2.9  | 2.6  |      |      |      |      |      | 7 x 3½         |
| 6 x 5          | 25                      | 24.9         | 16.7  | 12.4  | 10.0  | 8.4   | 7.1   | 6.1  | 5.6  | 5.0  | 4.5  |      |      |      |      |      |      |      | 6 x 5          |
| 6 x 3          | 12                      | 11.6         | 7.7   | 5.9   | 4.6   | 3.9   | 3.4   | 2.9  | 2.6  | 2.4  |      |      |      |      |      |      |      |      | 6 x 3          |
| 5 x 2½         | 9                       | 7.2          | 4.9   | 3.6   | 2.9   | 2.4   | 2.0   | 1.7  |      |      |      |      |      |      |      |      |      |      | 5 x 2½         |
| 4 x 3          | 10                      | 6.5          | 4.4   | 3.2   | 2.6   | 2.1   | 1.9   | 1.6  |      |      |      |      |      |      |      |      |      |      | 4 x 3          |
| 4 x 1½         | 5                       | 3.0          | 2.0   | 1.5   | 1.2   | 1.0   | .9    | .7   |      |      |      |      |      |      |      |      |      |      | 4 x 1½         |

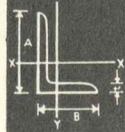
## Equal Angles Properties



The tabulated values of section moduli for single angles, when used for the determination of bending stresses in angles, apply only to sections consisting of two angles back to back or toe to toe, for which twice the tabulated values are the section moduli.

| Reference Number | Size<br>A x B x t<br>inches | Weight<br>per ft.<br>lb. | Min. mod.<br>about<br>X X | Min. mod.<br>about<br>X X | Reference Number | Size<br>A x B x t<br>inches | Weight<br>per ft.<br>lb. | Min. mod.<br>about<br>X X | Min. mod.<br>about<br>X X |
|------------------|-----------------------------|--------------------------|---------------------------|---------------------------|------------------|-----------------------------|--------------------------|---------------------------|---------------------------|
| ASEA 143         | 8 x 8 x 5/8                 | 32.68                    | 9.61                      | 58.26                     | 10.05            | 21 x 21 x 3/16              | 3.10                     | 0.92                      | 0.53                      |
| " 144            | 8 x 8 x 3/4                 | 38.89                    | 11.44                     | 68.58                     | 11.94            | 21 x 21 x 1/4               | 4.04                     | 1.19                      | 0.68                      |
| " 145            | 8 x 8 x 7/8                 | 45.00                    | 13.24                     | 78.44                     | 13.77            | 21 x 21 x 5/16              | 4.98                     | 1.46                      | 0.83                      |
| " 146            | 8 x 8 x 1                   | 51.01                    | 15.00                     | 87.85                     | 15.55            | 21 x 21 x 3/8               | 5.90                     | 1.73                      | 0.96                      |
| ASEA 139         | 6 x 6 x 3/8                 | 14.82                    | 4.36                      | 14.95                     | 3.40             | 21 x 21 x 1/2               | 7.65                     | 2.25                      | 1.21                      |
| BSEA 113         | 6 x 6 x 7/16                | 17.19                    | 5.05                      | 17.22                     | 3.95             | 21 x 21 x 3/16              | 2.77                     | 0.81                      | 0.39                      |
| ASEA 140         | 6 x 6 x 1/2                 | 19.55                    | 5.75                      | 19.48                     | 4.49             | 21 x 21 x 1/4               | 3.61                     | 1.06                      | 0.49                      |
| BSEA 113         | 6 x 6 x 9/16                | 21.86                    | 6.43                      | 21.60                     | 5.01             | 21 x 21 x 5/16              | 4.45                     | 1.31                      | 0.59                      |
| ASEA 141         | 6 x 6 x 5/8                 | 24.17                    | 7.11                      | 23.73                     | 5.54             | 21 x 21 x 3/8               | 5.26                     | 1.55                      | 0.69                      |
| " 142            | 6 x 6 x 3/4                 | 28.69                    | 8.44                      | 27.74                     | 6.54             | 21 x 21 x 1/2               | 7.65                     | 2.25                      | 1.21                      |
| BSEA 113         | 6 x 6 x 7/8                 | 33.04                    | 9.72                      | 31.40                     | 7.50             | 21 x 21 x 3/16              | 2.77                     | 0.81                      | 0.39                      |
| " 143            | 6 x 6 x 1                   | 37.40                    | 11.00                     | 35.06                     | 8.45             | 21 x 21 x 1/4               | 3.61                     | 1.06                      | 0.49                      |
| ASEA 135         | 5 x 5 x 5/16                | 10.30                    | 3.03                      | 7.20                      | 1.97             | 21 x 21 x 5/16              | 4.45                     | 1.31                      | 0.59                      |
| " 136            | 5 x 5 x 3/8                 | 12.28                    | 3.61                      | 8.53                      | 2.35             | 21 x 21 x 3/8               | 5.26                     | 1.55                      | 0.69                      |
| " 137            | 5 x 5 x 1/2                 | 16.16                    | 4.75                      | 11.04                     | 3.08             | 21 x 21 x 1/2               | 7.65                     | 2.25                      | 1.21                      |
| " 138            | 5 x 5 x 5/8                 | 19.93                    | 5.86                      | 13.37                     | 3.78             | 21 x 21 x 3/4               | 9.40                     | 2.85                      | 1.51                      |
| ASEA 132         | 4 x 4 x 5/16                | 8.17                     | 2.40                      | 3.61                      | 1.24             | 21 x 21 x 1/2               | 7.65                     | 2.25                      | 1.21                      |
| " 133            | 4 x 4 x 3/8                 | 9.72                     | 2.86                      | 4.26                      | 1.48             | 21 x 21 x 3/4               | 9.40                     | 2.85                      | 1.51                      |
| " 134            | 4 x 4 x 1/2                 | 12.75                    | 3.75                      | 5.46                      | 1.93             | 21 x 21 x 1                 | 11.15                    | 3.40                      | 1.85                      |
| BSEA 110         | 4 x 4 x 5/8                 | 15.67                    | 4.61                      | 6.56                      | 2.36             | 21 x 21 x 1 1/4             | 12.90                    | 3.95                      | 2.10                      |
| BSEA 109         | 3 x 3 x 1/4                 | 5.74                     | 1.70                      | 1.96                      | 0.76             | 21 x 21 x 1 1/2             | 14.65                    | 4.40                      | 2.35                      |
| ASEA 129         | 3 x 3 x 5/16                | 7.11                     | 2.09                      | 2.38                      | 0.94             | 21 x 21 x 1 3/4             | 16.40                    | 4.95                      | 2.60                      |
| ASEA 130         | 3 x 3 x 3/8                 | 8.45                     | 2.48                      | 2.80                      | 1.12             | 21 x 21 x 1 1/2             | 14.65                    | 4.40                      | 2.35                      |
| " 131            | 3 x 3 x 1/2                 | 11.05                    | 3.25                      | 3.57                      | 1.46             | 21 x 21 x 1 1/4             | 12.90                    | 3.95                      | 2.10                      |
| BSEA 109         | 3 x 3 x 5/8                 | 13.55                    | 3.98                      | 4.27                      | 1.77             | 21 x 21 x 1 1/2             | 14.65                    | 4.40                      | 2.35                      |
| ASEA 125         | 3 x 3 x 3/16                | 3.73                     | 1.10                      | 0.93                      | 0.42             | 21 x 21 x 1 3/4             | 16.40                    | 4.95                      | 2.60                      |
| " 126            | 3 x 3 x 1/4                 | 4.89                     | 1.44                      | 1.20                      | 0.55             | 21 x 21 x 1 1/2             | 14.65                    | 4.40                      | 2.35                      |
| " 127            | 3 x 3 x 5/16                | 6.05                     | 1.78                      | 1.47                      | 0.68             | 21 x 21 x 1 1/4             | 12.90                    | 3.95                      | 2.10                      |
| " 128            | 3 x 3 x 3/8                 | 7.17                     | 2.11                      | 1.72                      | 0.81             | 21 x 21 x 1 1/2             | 14.65                    | 4.40                      | 2.35                      |
| " 129            | 3 x 3 x 1/2                 | 9.35                     | 2.75                      | 2.18                      | 1.05             | 21 x 21 x 1 3/4             | 16.40                    | 4.95                      | 2.60                      |
| " 130            | 3 x 3 x 5/8                 | 11.42                    | 3.36                      | 2.59                      | 1.27             | 21 x 21 x 1 1/2             | 14.65                    | 4.40                      | 2.35                      |





# Unequal Angles Properties

The tabulated values of section moduli for single angles, when used for the determination of bending stresses in angles, apply only to sections consisting of two angles back to back or toe to toe, for which twice the tabulated values are the section moduli.

| Reference Number | Size<br>A x B x t<br>inches | Wgt.<br>per ft.<br>lb. | Sect.<br>Area<br>inches | Min. mod. of<br>Section |         | Reference<br>Number | Size<br>A x B x t<br>inches | Wgt.<br>per ft.<br>lb. | Sect.<br>Area<br>inches | Min. mod. of<br>Section |         |
|------------------|-----------------------------|------------------------|-------------------------|-------------------------|---------|---------------------|-----------------------------|------------------------|-------------------------|-------------------------|---------|
|                  |                             |                        |                         | Abt. XX                 | Abt. YY |                     |                             |                        |                         | Abt. XX                 | Abt. YY |
| ASUA 124         | 6 x 4 x 3/8                 | 13.54                  | 3.98                    | 3.82                    | 1.95    | BSUA 109            | 4 x 3 x 1/4                 | 5.75                   | 1.67                    | 0.98                    | 0.58    |
| " 125            | 6 x 4 x 1/2                 | 17.84                  | 5.25                    | 5.03                    | 2.56    | ASUA 114            | 4 x 3 x 5/16                | 7.11                   | 2.09                    | 1.20                    | 0.71    |
| " 126            | 6 x 4 x 5/8                 | 22.04                  | 6.48                    | 6.21                    | 3.16    | BSUA 109            | 4 x 3 x 3/8                 | 8.45                   | 2.48                    | 1.42                    | 0.84    |
| " 127            | 6 x 4 x 3/4                 | 26.13                  | 7.69                    | 7.33                    | 3.72    | ASUA 115            | 4 x 3 x 1/2                 | 11.05                  | 3.25                    | 1.85                    | 1.09    |
| ASUA 128         | 6 x 4 x 3/8                 | 12.28                  | 3.61                    | 3.23                    | 1.54    | ASUA 111            | 3 x 3 x 1/4                 | 5.32                   | 1.56                    | 0.74                    | 0.56    |
| " 129            | 6 x 4 x 1/2                 | 16.16                  | 4.75                    | 4.25                    | 2.02    | BSUA 107            | 3 x 3 x 5/16                | 6.58                   | 1.93                    | 0.92                    | 0.63    |
| " 130            | 6 x 4 x 5/8                 | 19.93                  | 5.86                    | 5.23                    | 2.48    | ASUA 112            | 3 x 3 x 3/8                 | 7.81                   | 2.30                    | 1.10                    | 0.83    |
| " 131            | 6 x 4 x 3/4                 | 23.59                  | 6.94                    | 6.16                    | 2.91    | ASUA 113            | 3 x 3 x 1/2                 | 10.20                  | 3.00                    | 1.42                    | 1.07    |
| ASUA 132         | 6 x 4 x 7/8                 | 27.10                  | 7.98                    | 7.10                    | 3.38    | "                   | 3 x 3 x 5/8                 | 12.49                  | 3.67                    | 1.73                    | 1.30    |
| ASUA 133         | 6 x 4 x 1                   | 30.60                  | 9.00                    | 8.03                    | 3.86    | ASUA 109            | 3 x 2 x 3/16                | 3.74                   | 1.10                    | 0.56                    | 0.30    |
| BSUA 116         | 6 x 3 x 5/16                | 9.32                   | 2.74                    | 2.65                    | 1.00    | BSUA 105            | 3 x 2 x 5/16                | 6.05                   | 1.78                    | 0.90                    | 0.49    |
| ASUA 121         | 6 x 3 x 3/8                 | 11.63                  | 3.42                    | 3.16                    | 1.18    | ASUA 110            | 3 x 2 x 3/8                 | 7.17                   | 2.11                    | 1.07                    | 0.58    |
| BSUA 116         | 6 x 3 x 7/16                | 13.54                  | 3.99                    | 3.65                    | 1.36    | "                   | 3 x 2 x 1/2                 | 9.35                   | 2.75                    | 1.39                    | 0.73    |
| ASUA 122         | 6 x 3 x 1/2                 | 15.30                  | 4.50                    | 4.15                    | 1.54    | ASUA 107            | 3 x 2 x 3/16                | 3.40                   | 1.00                    | 0.42                    | 0.30    |
| " 123            | 6 x 3 x 5/8                 | 18.86                  | 5.55                    | 5.11                    | 1.89    | BSUA 105            | 3 x 2 x 5/16                | 4.46                   | 1.31                    | 0.54                    | 0.39    |
| ASUA 124         | 6 x 3 x 3/4                 | 22.31                  | 6.56                    | 6.02                    | 2.22    | ASUA 108            | 3 x 2 x 3/8                 | 5.51                   | 1.62                    | 0.67                    | 0.48    |
| ASUA 125         | 6 x 3 x 1                   | 25.86                  | 7.57                    | 6.92                    | 2.66    | "                   | 3 x 2 x 1/2                 | 7.65                   | 2.25                    | 1.02                    | 0.72    |
| BSUA 117         | 6 x 3 x 5/8                 | 14.45                  | 4.25                    | 4.06                    | 1.14    | BSUA 104            | 3 x 2 x 3/16                | 3.03                   | 0.90                    | 0.41                    | 0.19    |
| ASUA 126         | 6 x 3 x 1/2                 | 17.80                  | 5.24                    | 5.02                    | 1.41    | ASUA 105            | 3 x 2 x 1/4                 | 4.04                   | 1.19                    | 0.52                    | 0.25    |
| " 127            | 6 x 3 x 3/4                 | 21.05                  | 6.19                    | 5.90                    | 1.66    | BSUA 104            | 3 x 2 x 5/16                | 4.98                   | 1.47                    | 0.65                    | 0.30    |
| ASUA 128         | 5 x 4 x 5/16                | 9.15                   | 2.69                    | 1.92                    | 1.30    | ASUA 106            | 3 x 2 x 3/8                 | 5.90                   | 1.74                    | 0.76                    | 0.36    |
| " 129            | 5 x 4 x 3/8                 | 11.00                  | 3.24                    | 2.28                    | 1.52    | "                   | 3 x 2 x 1/2                 | 7.65                   | 2.25                    | 0.99                    | 0.46    |
| " 130            | 5 x 4 x 1/2                 | 14.45                  | 4.25                    | 2.99                    | 1.98    | BSUA 101            | 2 x 2 x 3/16                | 2.75                   | 0.81                    | 0.29                    | 0.19    |
| " 131            | 5 x 4 x 5/8                 | 17.80                  | 5.24                    | 3.67                    | 2.43    | ASUA 102            | 2 x 2 x 1/4                 | 3.61                   | 1.06                    | 0.37                    | 0.24    |
| " 132            | 5 x 4 x 3/4                 | 21.05                  | 6.19                    | 4.35                    | 2.88    | ASUA 103            | 2 x 2 x 5/16                | 4.45                   | 1.31                    | 0.46                    | 0.30    |
| ASUA 133         | 5 x 3 x 1/4                 | 6.60                   | 1.94                    | 1.48                    | 0.59    | ASUA 104            | 2 x 2 x 3/8                 | 5.26                   | 1.55                    | 0.54                    | 0.35    |
| BSUA 112         | 5 x 3 x 5/16                | 8.17                   | 2.40                    | 1.83                    | 0.72    | "                   | "                           | "                      | "                       | "                       | "       |
| ASUA 116         | 5 x 3 x 3/8                 | 9.72                   | 2.86                    | 2.18                    | 0.85    | "                   | "                           | "                      | "                       | "                       | "       |
| BSUA 112         | 5 x 3 x 7/16                | 11.30                  | 3.33                    | 2.52                    | 0.98    | "                   | "                           | "                      | "                       | "                       | "       |
| ASUA 117         | 5 x 3 x 1/2                 | 12.75                  | 3.75                    | 2.86                    | 1.11    | "                   | "                           | "                      | "                       | "                       | "       |
| "                | 5 x 3 x 5/8                 | 15.67                  | 4.61                    | 3.50                    | 1.36    | "                   | "                           | "                      | "                       | "                       | "       |

# WEIGHTS AND AREAS OF SQUARE AND ROUND STEEL BARS

| Thickness<br>or diam.<br>in<br>inches | Weight<br>in lb. of<br>Square bar<br>one foot<br>long | Weight<br>in lb. of<br>Round bar<br>one foot<br>long | Area of<br>Square<br>Bar in<br>inches | Area of<br>Round<br>Bar in<br>inches | Circumfer-<br>ence of<br>Round bar<br>in inches |
|---------------------------------------|-------------------------------------------------------|------------------------------------------------------|---------------------------------------|--------------------------------------|-------------------------------------------------|
| 3/16                                  | .120                                                  | .094                                                 | .0352                                 | .0276                                | .5891                                           |
| 1/4                                   | .212                                                  | .167                                                 | .0625                                 | .0491                                | .7854                                           |
| 5/16                                  | .332                                                  | .261                                                 | .0977                                 | .0767                                | .9818                                           |
| 3/8                                   | .478                                                  | .376                                                 | .1406                                 | .1104                                | 1.1781                                          |
| 7/16                                  | .651                                                  | .511                                                 | .1914                                 | .1503                                | 1.3745                                          |
| 1/2                                   | .850                                                  | .668                                                 | .2500                                 | .1963                                | 1.5708                                          |
| 9/16                                  | 1.076                                                 | .945                                                 | .3164                                 | .2485                                | 1.7672                                          |
| 5/8                                   | 1.328                                                 | 1.043                                                | .3906                                 | .3068                                | 1.9635                                          |
| 11/16                                 | 1.607                                                 | 1.262                                                | .4727                                 | .3712                                | 2.1599                                          |
| 3/4                                   | 1.913                                                 | 1.502                                                | .5625                                 | .4418                                | 2.3562                                          |
| 13/16                                 | 2.245                                                 | 1.763                                                | .6602                                 | .5185                                | 2.5526                                          |
| 7/8                                   | 2.603                                                 | 2.044                                                | .7656                                 | .6013                                | 2.7489                                          |
| 15/16                                 | 2.988                                                 | 2.347                                                | .8789                                 | .6903                                | 2.9453                                          |
| 1                                     | 3.400                                                 | 2.670                                                | 1.0000                                | .7854                                | 3.1416                                          |
| 1 1/8                                 | 4.303                                                 | 3.380                                                | 1.2656                                | .9940                                | 3.5343                                          |
| 1 1/4                                 | 5.313                                                 | 4.172                                                | 1.5625                                | 1.2272                               | 3.9270                                          |
| 1 3/8                                 | 6.428                                                 | 5.049                                                | 1.8906                                | 1.4849                               | 4.3197                                          |
| 1 1/2                                 | 7.650                                                 | 6.008                                                | 2.2500                                | 1.7671                               | 4.7124                                          |
| 1 5/8                                 | 8.978                                                 | 7.051                                                | 2.6406                                | 2.0739                               | 5.1051                                          |
| 1 3/4                                 | 10.41                                                 | 8.178                                                | 3.0625                                | 2.4053                               | 5.4978                                          |
| 1 7/8                                 | 11.95                                                 | 9.388                                                | 3.5156                                | 2.7612                               | 5.8905                                          |
| 2                                     | 13.60                                                 | 10.68                                                | 4.0000                                | 3.1416                               | 6.2832                                          |
| 2 1/8                                 | 15.35                                                 | 12.06                                                | 4.5156                                | 3.5466                               | 6.6759                                          |
| 2 1/4                                 | 17.21                                                 | 13.52                                                | 5.0625                                | 3.9761                               | 7.0686                                          |
| 2 3/8                                 | 19.18                                                 | 15.06                                                | 5.6406                                | 4.4301                               | 7.4613                                          |
| 2 1/2                                 | 21.25                                                 | 16.69                                                | 6.2500                                | 4.9087                               | 7.8540                                          |
| 2 5/8                                 | 23.43                                                 | 18.40                                                | 6.8906                                | 5.4119                               | 8.2467                                          |
| 2 3/4                                 | 25.71                                                 | 20.19                                                | 7.5625                                | 5.9396                               | 8.6394                                          |
| 2 7/8                                 | 28.10                                                 | 22.07                                                | 8.2656                                | 6.4918                               | 9.0321                                          |
| 3                                     | 30.60                                                 | 24.03                                                | 9.0000                                | 7.0686                               | 9.4248                                          |
| 3 1/4                                 | 35.92                                                 | 28.21                                                | 10.563                                | 8.2958                               | 10.210                                          |
| 3 1/2                                 | 41.65                                                 | 32.71                                                | 12.250                                | 9.6211                               | 10.996                                          |
| 3 3/4                                 | 47.82                                                 | 37.55                                                | 14.063                                | 11.045                               | 11.781                                          |
| 4                                     | 54.40                                                 | 42.73                                                | 16.000                                | 12.566                               | 12.566                                          |
| 4 1/4                                 | 61.41                                                 | 48.24                                                | 18.063                                | 14.186                               | 13.352                                          |
| 4 1/2                                 | 68.85                                                 | 54.07                                                | 20.250                                | 15.904                               | 14.137                                          |
| 4 3/4                                 | 76.71                                                 | 60.25                                                | 22.563                                | 17.721                               | 14.923                                          |
| 5                                     | 85.00                                                 | 66.76                                                | 25.000                                | 19.635                               | 15.708                                          |
| 5 1/2                                 | 102.9                                                 | 80.78                                                | 30.250                                | 23.758                               | 17.279                                          |
| 6                                     | 122.4                                                 | 96.13                                                | 36.000                                | 28.274                               | 18.850                                          |

One cubic foot of steel weighs 489.6 lb.

# Areas and Circumferences of Circles in Inches

| Dia.<br>in<br>ins. | Areas  |                   |                   |                   | Dia.<br>in<br>ins. | Circumferences |                   |                   |                   |
|--------------------|--------|-------------------|-------------------|-------------------|--------------------|----------------|-------------------|-------------------|-------------------|
|                    | 0 in.  | $\frac{1}{4}$ in. | $\frac{1}{2}$ in. | $\frac{3}{4}$ in. |                    | 0 in.          | $\frac{1}{4}$ in. | $\frac{1}{2}$ in. | $\frac{3}{4}$ in. |
| 0                  | .0     | .0490             | .1963             | .4417             | 0                  | .0             | .7854             | 1.570             | 2.356             |
| 1                  | .7854  | 1.227             | 1.767             | 2.405             | 1                  | 3.141          | 3.927             | 4.712             | 5.497             |
| 2                  | 3.141  | 3.976             | 4.908             | 5.939             | 2                  | 6.283          | 7.063             | 7.854             | 8.639             |
| 3                  | 7.068  | 8.295             | 9.621             | 11.04             | 3                  | 9.424          | 10.21             | 10.99             | 11.78             |
| 4                  | 12.56  | 14.18             | 15.90             | 17.72             | 4                  | 12.56          | 13.35             | 14.13             | 14.92             |
| 5                  | 19.63  | 21.64             | 23.76             | 25.96             | 5                  | 15.70          | 16.49             | 17.27             | 18.06             |
| 6                  | 28.27  | 30.68             | 33.18             | 35.78             | 6                  | 18.84          | 19.63             | 20.42             | 21.20             |
| 7                  | 38.48  | 41.28             | 44.18             | 47.17             | 7                  | 21.99          | 22.77             | 23.56             | 24.34             |
| 8                  | 50.26  | 53.45             | 56.74             | 60.13             | 8                  | 25.13          | 25.91             | 26.70             | 27.48             |
| 9                  | 63.61  | 67.20             | 70.88             | 74.66             | 9                  | 28.27          | 29.05             | 29.84             | 30.63             |
| 10                 | 78.54  | 82.51             | 86.59             | 90.76             | 10                 | 31.41          | 32.20             | 32.98             | 33.77             |
| 11                 | 95.03  | 99.40             | 103.8             | 108.4             | 11                 | 34.55          | 35.34             | 36.12             | 36.91             |
| 12                 | 113.1  | 117.8             | 122.7             | 127.6             | 12                 | 37.69          | 38.48             | 39.27             | 40.05             |
| 13                 | 132.7  | 137.8             | 143.1             | 148.4             | 13                 | 40.84          | 41.62             | 42.41             | 43.19             |
| 14                 | 153.0  | 159.4             | 165.1             | 170.8             | 14                 | 43.98          | 44.76             | 45.55             | 46.33             |
| 15                 | 176.7  | 182.6             | 188.6             | 194.8             | 15                 | 47.12          | 47.90             | 48.69             | 49.48             |
| 16                 | 201.0  | 207.3             | 213.8             | 220.3             | 16                 | 50.26          | 51.05             | 51.83             | 52.62             |
| 17                 | 226.9  | 233.7             | 240.5             | 247.4             | 17                 | 53.40          | 54.19             | 54.97             | 55.76             |
| 18                 | 254.4  | 261.5             | 268.8             | 276.1             | 18                 | 56.54          | 57.33             | 58.11             | 58.90             |
| 19                 | 283.5  | 291.0             | 298.6             | 306.3             | 19                 | 59.69          | 60.47             | 61.26             | 62.04             |
| 20                 | 314.1  | 322.0             | 330.0             | 338.1             | 20                 | 62.83          | 63.61             | 64.40             | 65.18             |
| 21                 | 346.3  | 354.6             | 363.0             | 371.5             | 21                 | 65.97          | 66.75             | 67.54             | 68.32             |
| 22                 | 380.1  | 388.8             | 397.6             | 406.4             | 22                 | 69.11          | 69.90             | 70.68             | 71.47             |
| 23                 | 415.4  | 424.5             | 433.7             | 443.0             | 23                 | 72.25          | 73.04             | 73.82             | 74.61             |
| 24                 | 452.3  | 461.8             | 471.4             | 481.1             | 24                 | 75.39          | 76.18             | 76.96             | 77.75             |
| 25                 | 490.8  | 500.7             | 510.7             | 520.7             | 25                 | 78.54          | 79.32             | 80.11             | 80.89             |
| 26                 | 530.9  | 541.1             | 551.5             | 562.0             | 26                 | 81.68          | 82.46             | 83.25             | 84.03             |
| 27                 | 572.5  | 583.2             | 593.9             | 604.8             | 27                 | 84.82          | 85.60             | 86.39             | 87.17             |
| 28                 | 615.7  | 626.8             | 637.9             | 649.1             | 28                 | 87.96          | 88.75             | 89.53             | 90.32             |
| 29                 | 660.5  | 671.9             | 683.3             | 695.1             | 29                 | 91.10          | 91.89             | 92.67             | 93.46             |
| 30                 | 706.8  | 718.6             | 730.6             | 742.6             | 30                 | 94.24          | 95.03             | 95.81             | 96.60             |
| 31                 | 754.8  | 767.0             | 779.3             | 791.7             | 31                 | 97.40          | 98.20             | 98.90             | 99.70             |
| 32                 | 804.2  | 816.9             | 829.6             | 842.4             | 32                 | 100.5          | 101.3             | 102.1             | 102.9             |
| 33                 | 855.3  | 868.3             | 881.4             | 894.6             | 33                 | 103.7          | 104.5             | 105.2             | 106.0             |
| 34                 | 908.0  | 921.3             | 934.8             | 948.4             | 34                 | 106.8          | 107.6             | 108.4             | 109.2             |
| 35                 | 962.1  | 975.9             | 989.8             | 1003.8            | 35                 | 110.0          | 110.7             | 111.5             | 112.3             |
| 36                 | 1017.9 | 1032.1            | 1046.4            | 1060.7            | 36                 | 113.1          | 113.8             | 114.6             | 115.5             |
| 37                 | 1075.2 | 1089.8            | 1104.5            | 1119.2            | 37                 | 116.2          | 117.0             | 117.8             | 118.6             |
| 38                 | 1134.1 | 1149.3            | 1164.2            | 1179.3            | 38                 | 119.4          | 120.2             | 121.0             | 121.7             |
| 39                 | 1194.6 | 1210.0            | 1225.4            | 1241.0            | 39                 | 122.5          | 123.3             | 124.1             | 124.8             |
| 40                 | 1256.6 | 1272.4            | 1288.3            | 1304.2            | 40                 | 125.7          | 126.4             | 127.2             | 128.0             |



## POUNDS PER LINEAL FOOT

| Width<br>Inches | Thickness in Inches              |                                  |                                  |                                  |                              |                              |                              |                               |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
|-----------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
|                 | 1/16                             | 1/8                              | 3/16                             | 1/4                              | 5/16                         | 3/8                          | 7/16                         | 1/2                           | 9/16                             | 5/8                              | 11/16                            | 3/4                              | 13/16                            | 7/8                              | 5/16                             | 1                                |
| 1               | .053<br>.106<br>.159<br>.213     | .106<br>.213<br>.319<br>.425     | .159<br>.319<br>.478<br>.638     | .213<br>.425<br>.638<br>.850     | .27<br>.53<br>.80<br>1.06    | .32<br>.64<br>.96<br>1.28    | .37<br>.74<br>1.12<br>1.49   | .43<br>.85<br>1.28<br>1.70    | .48<br>.96<br>1.43<br>1.91       | .53<br>1.06<br>1.59<br>2.13      | .58<br>1.17<br>1.75<br>2.34      | .64<br>1.28<br>1.91<br>2.55      | .69<br>1.38<br>2.07<br>2.76      | .74<br>1.49<br>2.23<br>2.98      | .80<br>1.59<br>2.39<br>3.19      | .85<br>1.70<br>2.55<br>3.40      |
| 2               | .266<br>.319<br>.372<br>.425     | .531<br>.638<br>.744<br>.850     | .797<br>.956<br>1.116<br>1.275   | 1.063<br>1.275<br>1.488<br>1.700 | 1.33<br>1.59<br>1.86<br>2.13 | 1.59<br>1.91<br>2.23<br>2.55 | 1.86<br>2.23<br>2.60<br>2.98 | 2.13<br>2.55<br>2.98<br>3.40  | 2.39<br>2.87<br>3.35<br>3.83     | 2.66<br>3.19<br>3.72<br>4.25     | 2.92<br>3.51<br>4.09<br>4.68     | 3.19<br>3.83<br>4.46<br>5.10     | 3.45<br>4.14<br>4.83<br>5.53     | 3.72<br>4.46<br>5.21<br>5.95     | 3.98<br>4.78<br>5.58<br>6.38     | 4.25<br>5.10<br>5.95<br>6.80     |
| 3               | .478<br>.531<br>.584<br>.638     | .956<br>1.063<br>1.169<br>1.275  | 1.434<br>1.594<br>1.753<br>1.913 | 1.913<br>2.125<br>2.338<br>2.550 | 2.39<br>2.66<br>2.92<br>3.19 | 2.87<br>3.19<br>3.51<br>3.83 | 3.35<br>3.72<br>4.09<br>4.46 | 3.83<br>4.25<br>4.68<br>5.10  | 4.30<br>4.78<br>5.26<br>5.74     | 4.78<br>5.31<br>5.84<br>6.38     | 5.26<br>5.84<br>6.43<br>7.01     | 5.74<br>6.38<br>7.01<br>7.65     | 6.22<br>6.91<br>7.60<br>8.29     | 6.69<br>7.44<br>8.18<br>8.93     | 7.17<br>7.97<br>8.77<br>9.56     | 7.65<br>8.50<br>9.35<br>10.20    |
| 4               | .691<br>.744<br>.797<br>.850     | 1.381<br>1.488<br>1.594<br>1.700 | 2.072<br>2.231<br>2.391<br>2.550 | 2.763<br>2.975<br>3.188<br>3.400 | 3.45<br>3.72<br>3.98<br>4.25 | 4.14<br>4.46<br>4.78<br>5.10 | 4.83<br>5.21<br>5.58<br>5.95 | 5.53<br>5.95<br>6.38<br>6.80  | 6.22<br>6.69<br>7.17<br>7.65     | 6.91<br>7.44<br>7.97<br>8.50     | 7.60<br>8.18<br>8.77<br>9.35     | 8.29<br>8.93<br>9.56<br>10.20    | 8.98<br>9.67<br>10.36<br>11.05   | 9.67<br>10.41<br>11.16<br>11.90  | 10.36<br>11.16<br>11.95<br>12.75 | 11.05<br>11.90<br>12.75<br>13.60 |
| 5               | .903<br>.956<br>1.009<br>1.063   | 1.806<br>1.913<br>2.019<br>2.125 | 2.709<br>2.869<br>3.028<br>3.188 | 3.613<br>3.825<br>4.038<br>4.250 | 4.52<br>4.78<br>5.05<br>5.31 | 5.42<br>5.74<br>6.06<br>6.38 | 6.32<br>6.69<br>7.07<br>7.44 | 7.23<br>7.65<br>8.08<br>8.50  | 8.13<br>8.61<br>9.08<br>9.56     | 9.03<br>9.56<br>10.09<br>10.63   | 9.93<br>10.52<br>11.10<br>11.69  | 10.84<br>11.48<br>12.11<br>12.75 | 11.74<br>12.43<br>13.12<br>13.81 | 12.64<br>13.39<br>14.13<br>14.88 | 13.55<br>14.34<br>15.14<br>15.94 | 14.45<br>15.30<br>16.15<br>17.00 |
| 6               | 1.116<br>1.169<br>1.222<br>1.275 | 2.231<br>2.338<br>2.444<br>2.550 | 3.347<br>3.506<br>3.666<br>3.825 | 4.463<br>4.675<br>4.888<br>5.100 | 5.58<br>5.84<br>6.11<br>6.38 | 6.69<br>7.01<br>7.33<br>7.65 | 7.81<br>8.18<br>8.55<br>8.93 | 8.93<br>9.35<br>9.78<br>10.20 | 10.04<br>10.52<br>11.00<br>11.48 | 11.16<br>11.69<br>12.22<br>12.75 | 12.27<br>12.86<br>13.44<br>14.03 | 13.39<br>14.03<br>14.66<br>15.30 | 14.50<br>15.19<br>15.88<br>16.58 | 15.62<br>16.36<br>17.11<br>17.85 | 16.73<br>17.53<br>18.33<br>19.13 | 17.85<br>18.70<br>19.55<br>20.40 |

## STRENGTH OF STEEL WIRE ROPES

Commercial ropes are made in the following qualities, breaking strains being quoted as percentage of the 100-110-ton rope list.

|                                                    |      |
|----------------------------------------------------|------|
| Black Best Patent (80/90 tons sq. in.) .. .. .     | 80%  |
| Galvanized Hawser (80/95 tons sq. in.) .. .. .     | 85%  |
| Black Special Patent (90/100 tons sq. in.) .. .. . | 90%  |
| Special Plough (110/120 tons sq. in.) .. .. .      | 110% |

Other special qualities are available in both black and galvanized wire for mining, aircraft work, etc. When ropes are fitted with an independent wire rope core (I.W.R.C.), add 10% to the weight of rope shown and 7½% to the list breaking strains.

## FACTORS OF SAFETY

|                                                                       |             |
|-----------------------------------------------------------------------|-------------|
| Cranes (Hook Hoist, Grab Hoist, Derrick Fall, and Boom Lines) .. .. . | 6           |
| Service Winch or Block Ropes .. .. .                                  | 6           |
| Shovels and Excavating Equipment .. .. .                              | 5 to 6 min. |
| Derrick Crane Guys .. .. .                                            | 5           |
| Logging Skylines, Main Cableways .. .. .                              | 4           |
| Logging Spar Tree Guys and Stack Guys .. .. .                         | 3 to 4 min. |
| Incline Haulages .. .. .                                              | 6 to 8 min. |

## ORDERING OF WIRE ROPES

When in doubt, the following rope characteristics should be provided to the ropemaker, accompanied, if possible, by a simple line sketch of the rope rigging, showing the size of sheaves, drums, and type of attachments.

| Description of Rope                                   | Example                       |
|-------------------------------------------------------|-------------------------------|
| 1. Dimensions:                                        |                               |
| (a) Length .. .. .                                    | 3,000 ft.                     |
| (b) Circumference or diameter .. .. .                 | 3½" circ.                     |
| 2. Construction:                                      |                               |
| Number of strands .. .. .                             | 6                             |
| Number of wires per strand .. .. .                    | x 19                          |
| Arrangement of wires in each strand .. .. .           | 9/9/1                         |
| Lay: Direction and type .. .. .                       | R.H.O.L.                      |
| Core: Steel or hemp .. .. .                           | Hemp                          |
| Kind of fabrication .. .. .                           | Preformed                     |
| 3. Grade:                                             |                               |
| Quality of steel (acid or basic) .. .. .              | Basic                         |
| Tensile strength of wire .. .. .                      | Best Plough or 100/110 t.s.i. |
| 4. Lubrication:                                       |                               |
| Petroleum jelly, graphite, etc. .. .. .               | Graphite                      |
| 5. Service:                                           |                               |
| Type of equipment on which rope is to be used .. .. . | Caterpillar<br>Logging Winch  |

## POINTS IN ROPE USAGE

1. Where conditions are very abrasive, use the coarsest rope construction compatible with reasonable flexibility over the sheaves and drums used, and in plough steel or special plough steel wire. Such ropes should be preformed.
2. Where the rope can be anchored at both ends to prevent rotation of the load, Langs Laid ropes are more capable of withstanding increased wear and bending life than Ordinary Lay ropes. These ropes also should be preformed.
3. Use ropes fitted with an I.W.R.C. when they are subjected to heavy loading over small sheaves and drums.
4. When working conditions are corrosive or are not conducive to ready and regular maintenance, use galvanized wire ropes.
5. Always seize ropes before cutting.
6. To obtain maximum life from ropes they should be kept well lubricated from the time they are installed.

## SHEAVES AND DRUMS

Small sheaves and drums with bad-fitting grooves are responsible for considerable rope abuse, and care should be taken to check and true up sheave and drum grooving regularly.

The compactness of much modern rope-using equipment has resulted in the use of very small sheaves and drums, which produce heavy bending stresses and compression loads in the rope, and where possible the sheave sizes shown below should be used. The "critical" sheave size is accepted by ropemakers as being that below which long economical rope life cannot be expected.

### SHEAVE AND DRUM DIAMETERS (D = dia. of rope)

| Rope<br>Constructions | Sheave diameter |      |       | Rope<br>Constructions | Sheave diameter |      |       |
|-----------------------|-----------------|------|-------|-----------------------|-----------------|------|-------|
|                       | Rec.            | Min. | Crit. |                       | Rec.            | Min. | Crit. |
| 6 x 7 (6/1)           | 72D             | 42D  | 28D   | 6 x 37 Seale          | 30D             | 19D  | 14D   |
| 6 x 9/9/1 Seale       | 54D             | 34D  | 22D   | 6 x 37 Filler         | 27D             | 18D  | 14D   |
| 6 x 19 Warr.          | 48D             | 27D  | 20D   | 6 x 41                |                 |      |       |
| 6 x 19 Filler         | 45D             | 24D  | 18D   | 8 x 9/9/1             | 36D             | 22D  | 16D   |
| x 19 (12/6/1)         | 45D             | 24D  | 18D   | 6 x 7/3               | 72D             | 42D  | 28D   |
| 6 x 24 (15/9/J)       | 36D             | 22D  | 16D   | Flattened             |                 |      |       |
| x 37                  | 30D             | 19D  | 14D   | 6 x 12/12/3           | 48D             | 32D  | 21D   |
| (18/12/6/1)           |                 |      |       | Flat. Strand          |                 |      |       |

### SHEAVE GROOVE SIZES

| Rope dia.<br>inches | Groove dia. Tolce. |        | Rope dia.<br>inches | Groove dia. Tolce. |        |
|---------------------|--------------------|--------|---------------------|--------------------|--------|
|                     | min.               | max.   |                     | min.               | max.   |
| 1/4 to 5/16         | +1/64"             | +1/32" | 1-3/16 to 1 1/2     | +1/16"             | +1/8"  |
| 3/8 to 7/8          | +1/32"             | +1/16" | 1-9/16 to 2 1/4     | +3/32"             | +3/16" |
| 1 1/8 to 1 1/2      | +3/64"             | +3/32" | 2-5/16 & larger     | +1/8"              | +1/4"  |

Example: Groove diameter for 1" diameter rope should be 1-3/64" minimum and 1-3/32" maximum.



## GALVANIZED WIRE NETTING

## STANDARD QUALITY

| RABBIT                    |                                | SHEEP AND DOG |                                | POULTRY                 |                                |
|---------------------------|--------------------------------|---------------|--------------------------------|-------------------------|--------------------------------|
| Size                      | Weight<br>per 100<br>yds., lb. | Size          | Weight<br>per 100<br>yds., lb. | Size                    | Weight<br>per 100<br>yds., lb. |
| 12 x 1 $\frac{1}{4}$ x 17 | 63                             | 30 x 3 x 17   | 59                             | 36 x $\frac{1}{2}$ x 22 | 110                            |
| 36 x 1 $\frac{1}{4}$ x 17 | 165                            | 36 x 3 x 17   | 67                             | 36 x 1 x 20             | 86                             |
| 42 x 1 $\frac{1}{4}$ x 17 | 183                            | 36 x 3 x 16   | 89                             | 36 x 2 x 19             | 60                             |
| 12 x 1 $\frac{1}{2}$ x 17 | 55                             | 30 x 4 x 17   | 48                             | 72 x 2 x 19             | 114                            |
| 36 x 1 $\frac{1}{2}$ x 17 | 138                            | 36 x 4 x 17   | 57                             | —                       | —                              |
| 42 x 1 $\frac{1}{2}$ x 17 | 160                            | 36 x 4 x 16   | 73                             | —                       | —                              |

## DRIED FRUIT RACK AND FISH NETTING

|             |     |             |     |             |     |
|-------------|-----|-------------|-----|-------------|-----|
| 36 x 2 x 17 | 106 | 60 x 2 x 17 | 158 | 36 x 2 x 16 | 136 |
| 48 x 2 x 17 | 138 | 72 x 2 x 17 | 190 | 72 x 2 x 16 | 252 |

## NAILS

## APPROXIMATE NUMBER PER LB.

| Size                    | No. per lb. | Size                    | No. per lb. | Size                   | No. per lb. |
|-------------------------|-------------|-------------------------|-------------|------------------------|-------------|
| 1" x 16G                | 1080        | 2" x 11G                | 158         | 3" x 9G                | 67          |
| 1" x 15G                | 840         | 2" x 10G                | 120         | 3" x 8G                | 60          |
| 1" x 14G                | 723         | 2" x 9G                 | 100         | 3" x 7G                | 48          |
| 1 $\frac{1}{2}$ " x 14G | 460         | 2 $\frac{1}{2}$ " x 13G | 200         | 3" x 6G                | 39          |
| 1 $\frac{1}{2}$ " x 13G | 340         | 2 $\frac{1}{2}$ " x 12G | 150         | 3 $\frac{1}{2}$ " x 8G | 44          |
| 1 $\frac{1}{2}$ " x 12G | 240         | 2 $\frac{1}{2}$ " x 11G | 130         | 3 $\frac{1}{2}$ " x 7G | 40          |
| 1" x 11G                | 206         | 2 $\frac{1}{2}$ " x 10G | 100         | 4" x 7G                | 35          |
| 2" x 14G                | 280         | 2 $\frac{1}{2}$ " x 9G  | 80          | 4" x 6G                | 30          |
| 2" x 13G                | 230         | 2 $\frac{1}{2}$ " x 8G  | 65          | 5" x 5G                | 21          |
| 2" x 12G                | 190         | 3" x 10G                | 81          | 6" x 4G                | 13          |

## FENCE AND BALING WIRES

## LENGTH PER CWT. — BREAKING STRAIN

| Gauge | Length per cwt. (yds.) | Approx. weight in lb. (per mile) | Approx. Breaking Strain in lb. |                      |
|-------|------------------------|----------------------------------|--------------------------------|----------------------|
|       |                        |                                  | Fence Std. Galv.               | Baling Self-coloured |
| 8     | 564                    | 360                              | 15.76                          | —                    |
| 9     | 675                    | 292                              | —                              | 912                  |
| 10    | 854                    | 231                              | 1008                           | —                    |
| 12    | 1293                   | 152                              | —                              | 475                  |
| 14    | 2186                   | 90                               | —                              | 281                  |
| 12½   | 1500                   | High Tensile 135                 | 850                            | Standard             |

## QUANTITY OF WIRE PER MILE OF FENCING

| No. of Wires | Gauge |     |     |      |     |     |                  |     |     |
|--------------|-------|-----|-----|------|-----|-----|------------------|-----|-----|
|              | 8     |     |     | 10   |     |     | 12½ High-tensile |     |     |
|              | Cwt.  | Qr. | Lb. | Cwt. | Qr. | Lb. | Cwt.             | Qr. | Lb. |
| 1            | 3     | 1   | 0   | 2    | 0   | 14  | 1                | 0   | 14  |
| 2            | 6     | 1   | 14  | 4    | 0   | 14  | 2                | 1   | 14  |
| 3            | 2     | 2   | 14  | 6    | 1   | 0   | 3                | 2   | 0   |
| 4            | 12    | 3   | 14  | 8    | 1   | 0   | 4                | 2   | 14  |
| 5            | 16    | 0   | 14  | 10   | 1   | 14  | 5                | 3   | 14  |
| 6            | 19    | 1   | 0   | 12   | 1   | 14  | 7                | 0   | 0   |

## STEEL POSTS — "STAR" PATTERN

| Spacings of Posts in feet | No. of Posts per mile | Approximate weight per mile |     |     |               |     |     |
|---------------------------|-----------------------|-----------------------------|-----|-----|---------------|-----|-----|
|                           |                       | 5' 6" lengths               |     |     | 6' 0" lengths |     |     |
|                           |                       | Cwt.                        | Qr. | Lb. | Cwt.          | Qr. | Lb. |
| 8                         | 660                   | 45                          | 1   | 14  | 49            | 2   | 0   |
| 9                         | 586                   | 40                          | 1   | 0   | 43            | 3   | 14  |
| 10                        | 528                   | 36                          | 1   | 0   | 39            | 2   | 0   |
| 11                        | 480                   | 33                          | 0   | 0   | 36            | 0   | 0   |
| 12                        | 440                   | 30                          | 1   | 0   | 33            | 0   | 0   |
| 15                        | 352                   | 24                          | 1   | 0   | 26            | 1   | 14  |
| 18                        | 293                   | 20                          | 0   | 14  | 22            | 0   | 0   |

## STRENGTH OF VARIOUS NON-FERROUS METALS & ALLOYS

Average values for strength based on test data from various testing laboratories. Data are lacking for values of strength in compression. In the absence of such data, a safe practice would be to consider the ultimate in compression as having a value equal to the elastic limit in tension.

| Metal                                    | Approximate Composition, per cent.                                   | Weight lb. per cu. in. | Strength in Tension, lb./sq. in. |          |
|------------------------------------------|----------------------------------------------------------------------|------------------------|----------------------------------|----------|
|                                          |                                                                      |                        | Elastic limit                    | Ultimate |
| Copper, cast .. ..                       | Copper, 100 .. ..                                                    | 0.310                  | 8,000                            | 25,000   |
| Hard drawn .. ..                         |                                                                      | 0.321                  | 30,000                           | 40,000   |
| Zinc, cast .. ..                         | Zinc, 100 .. ..                                                      | 0.256                  | —                                | 9,000    |
| Rolled .. ..                             |                                                                      | 0.260                  | 4,000                            | 24,000   |
| Lead, Rolled .. ..                       | Lead, 100 .. ..                                                      | 0.411                  | 800                              | *2,700   |
| Lead alloy, cast ..                      | Lead, 95.5, anti-mony, 4.5 .. ..                                     | 0.380                  | 4,000                            | 6,400    |
| Nickel, rolled and annealed .. ..        | Nickel, 100 .. ..                                                    | 0.340                  | 12,000                           | 70,000   |
| Cold-rolled .. ..                        |                                                                      | 0.340                  | 70,000                           | 165,000  |
| Aluminium, cast ..                       | Aluminium, 100 ..                                                    | 0.093                  | —                                | 13,000   |
| Rolled and annealed                      |                                                                      | 0.097                  | 8,500                            | 14,000   |
| Cold-rolled .. ..                        |                                                                      | 0.097                  | 20,000                           | 30,000   |
| Hard-drawn wire ..                       |                                                                      | 0.097                  | 30,000                           | 40,000   |
| Duralumin, rolled and heat-treated .. .. | Aluminium, 96; magnesium, 1.5; copper, 2.5 .. ..                     | 0.102                  | 19,000                           | 55,000   |
| 60-40 Brass, cast ..                     | Copper, 60; zinc, 40                                                 | 0.310                  | 12,000                           | 35,000   |
| Rolled and annealed                      |                                                                      | 0.310                  | 16,000                           | 60,000   |
| Cold-drawn .. ..                         |                                                                      | 0.310                  | 43,000                           | 96,000   |
| Phosphor bronze, cast                    | Copper, 95; tin, 5;                                                  | 0.320                  | 16,000                           | 32,000   |
| Rolled and annealed                      | phosphorus, trace                                                    | 0.320                  | 13,000                           | 46,000   |
| Cold-drawn .. ..                         |                                                                      | 0.320                  | 60,000                           | 85,000   |
| Aluminium-bronze, Cast .. ..             | Copper, 90; aluminium, 10 ..                                         | 0.270                  | 25,000                           | 60,000   |
| Hot-rolled .. ..                         |                                                                      | 0.270                  | 30,000                           | 70,000   |
| Cold-drawn .. ..                         |                                                                      | 0.270                  | 80,000                           | 90,000   |
| Manganese-bronze, Cast .. ..             | Copper, 60; zinc, 39; iron and manganese, 1 ..                       | 0.30                   | 30,000                           | 70,000   |
| Rolled .. ..                             |                                                                      | 0.30                   | 45,000                           | 70,000   |
| Monel Metal, hot-rolled .. ..            | Nickel, 67; copper, 28; iron, silicon, carbon and manganese, 5 .. .. | 0.32                   | 48,000                           | 88,000   |
| Cold-rolled and annealed .. ..           |                                                                      | 0.32                   | 60,000                           | 110,000  |

\* Under long-continued static load lead will flow very slowly under stresses as low as 600 lb. per sq. in.



## TINPLATE GAUGE TABLE

| Wt. of<br>Basis box<br>(31,360<br>sq. in.)<br>lb.    | Index or name                                       | Thickness:<br>based on<br>40.8 lb. sq. ft.                                |                                                               | Thickness:<br>based on<br>41.82 lb. sq. ft.                                |                                                               | Nearest<br>gauge<br>No.<br>B.G. std.<br>sheet<br>gauge |
|------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------|
|                                                      |                                                     | Inch                                                                      | Mm.                                                           | Inch                                                                       | Mm.                                                           |                                                        |
| 50 }<br>55 }<br>60 }                                 | Taggers                                             | { 0.00563<br>0.00619<br>0.00675                                           | { 0.143<br>0.157<br>0.172                                     | { 0.00549<br>0.00604<br>0.00659                                            | { 0.139<br>0.153<br>0.167                                     | 36.7<br>35.9<br>35.2                                   |
| 65 }<br>70 }<br>75 }<br>80 }<br>85 }<br>90 }<br>95 } | Lights                                              | { 0.00732<br>0.00788<br>0.00844<br>0.00900<br>0.00957<br>0.0101<br>0.0107 | { 0.186<br>0.200<br>0.214<br>0.229<br>0.243<br>0.257<br>0.272 | { 0.00714<br>0.00769<br>0.00824<br>0.00878<br>0.00933<br>0.00988<br>0.0104 | { 0.181<br>0.195<br>0.209<br>0.223<br>0.237<br>0.251<br>0.265 | 34.5<br>33.8<br>33.3<br>32.7<br>32.2<br>31.8<br>31.3   |
| 100<br>108<br>110<br>112                             | CL or ICL<br>IC "Common<br>substance"*<br>"112 lb." | 0.0113<br>0.0122<br>0.0124<br>0.0126                                      | 0.286<br>0.309<br>0.314<br>0.320                              | 0.0110<br>0.0119<br>0.0121<br>0.0123                                       | 0.279<br>0.301<br>0.307<br>0.312                              | 30.7<br>30.1<br>29.9<br>29.8                           |
| 118<br>122<br>125<br>136                             | IXL or XL<br><br>IX or X <sup>2</sup>               | 0.0133<br>0.0137<br>0.0141<br>0.0153                                      | 0.337<br>0.349<br>0.357<br>0.389                              | 0.0130<br>0.0134<br>0.0137<br>0.0149                                       | 0.329<br>0.340<br>0.349<br>0.379                              | 29.3<br>29.1<br>28.9<br>28.2                           |
| 139<br>156<br>156                                    | DC<br>2X or XX<br>SDC                               | 0.0156<br>0.0176<br>0.0176                                                | 0.397<br>0.446<br>0.446                                       | 0.0153<br>0.0171<br>0.0171                                                 | 0.388<br>0.435<br>0.435                                       | 28.0<br>26.9<br>26.9                                   |
| 176<br>176                                           | 3X or XXX<br>SDX                                    | 0.0198<br>0.0198                                                          | 0.503<br>0.503                                                | 0.0193<br>0.0193                                                           | 0.491<br>0.491                                                | 25.9<br>25.9                                           |
| 180<br>196<br>196                                    | DX<br>4X or XXXX<br>SDXX                            | 0.0203<br>0.0221<br>0.0221                                                | 0.515<br>0.560<br>0.560                                       | 0.0198<br>0.0215<br>0.0215                                                 | 0.502<br>0.547<br>0.547                                       | 25.7<br>25.0<br>25.0                                   |
| 216<br>216                                           | 5X or XXXXX<br>SDXXX                                | 0.0243<br>0.0243                                                          | 0.617<br>0.617                                                | 0.0237<br>0.0237                                                           | 0.602<br>0.602                                                | 24.2<br>24.2                                           |
| 236<br>236                                           | 6X or XXXXXX<br>SDXXXX                              | 0.0266<br>0.0266                                                          | 0.675<br>0.675                                                | 0.0259<br>0.0259                                                           | 0.658<br>0.658                                                | 23.4<br>23.4                                           |
| 240<br>256                                           | D3X or DXX<br>7X or XXXXXXX                         | 0.0270<br>0.0288                                                          | 0.686<br>0.732                                                | 0.0264<br>0.0281                                                           | 0.669<br>0.714                                                | 23.3<br>22.7                                           |

\*Standard size 28" x 20"—112 sheets per double box.

## COPPER — SHEET AND STRIP

GENERAL.—1. Types available: High Conductivity, Commercial, De-oxidised, Arsenical.

2. Finishes available: Hard (Cold) Rolled; Semi, Medium or Half Hard (Cold) Rolled; Soft (Cold) Rolled; Hot (Soft) Rolled.

TRADE SIZES — Sheets: 26G and heavier (48" x 14" sheathing), 4' x 2', 6' x 2', 6' x 2' 6", 6' x 3', 8' x 3', 6' x 4', 8' x 4', according to gauge.

Strip: .002" and heavier, 5/16" to 15" wide (special manufacture).

WEIGHT PER SQUARE FOOT.—It is customary to order copper sheets by the Imperial Standard Wire Gauge or by weight in pounds and ounces per square foot. A table showing the weight per square foot equivalents to the various gauge numbers, calculated on the assumption that one square foot of rolled copper, 1 inch in thickness, weighs 46½ lb., is detailed below.

| I.S.W.G.<br>No. | Decimal of<br>inch | Wt. per sq.<br>ft. in lbs. | Equiv. per<br>sq. ft. in<br>lbs. | I.S.W.G.<br>No. | Decimal of<br>inch | Wt. per sq.<br>ft. in lbs. | Equiv. per<br>sq. ft. in<br>oz. |
|-----------------|--------------------|----------------------------|----------------------------------|-----------------|--------------------|----------------------------|---------------------------------|
| 7/0             | .500               | 23.25                      | —                                | 23              | .024               | 1.116                      | 18                              |
| 6/0             | .464               | 21.57                      | —                                | 24              | .022               | 1.023                      | 16                              |
| 5/0             | .432               | 20.08                      | —                                | 25              | .020               | .930                       | 14                              |
| 4/0             | .400               | 18.60                      | —                                | 26              | .018               | .837                       | 13                              |
| 3/0             | .372               | 17.29                      | —                                | 27              | .0164              | .762                       | 12                              |
| 2/0             | .348               | 16.18                      | —                                | 28              | .0148              | .688                       | 11                              |
| 0               | .324               | 15.06                      | —                                | 29              | .0136              | .632                       | —                               |
| 1               | .300               | 13.950                     | —                                | 30              | .0124              | .576                       | 9                               |
| 2               | .276               | 12.834                     | —                                | 31              | .0116              | .539                       | —                               |
| 3               | .252               | 11.718                     | —                                | 32              | .0108              | .502                       | 8                               |
| 4               | .232               | 10.788                     | —                                | 33              | .0100              | .465                       | —                               |
| 5               | .212               | 9.858                      | 10                               | 34              | .0092              | .428                       | —                               |
| 6               | .192               | 8.928                      | 9                                | 35              | .0084              | .391                       | —                               |
| 7               | .176               | 8.184                      | 8                                | 36              | .0076              | .353                       | —                               |
| 8               | .160               | 7.440                      | 7½                               | 37              | .0068              | .316                       | —                               |
| 9               | .144               | 6.696                      | —                                | 38              | .0060              | .279                       | —                               |
| 10              | .128               | 5.952                      | 6                                | 39              | .0052              | .242                       | —                               |
| 11              | .116               | 5.394                      | —                                | 40              | .0048              | .223                       | —                               |
| 12              | .104               | 4.836                      | 5                                | 41              | .0044              | .205                       | —                               |
| 13              | .092               | 4.278                      | 4½                               | 42              | .0040              | .186                       | —                               |
| 14              | .080               | 3.720                      | 3¾                               | 43              | .0036              | .167                       | —                               |
| 15              | .072               | 3.348                      | —                                | 44              | .0032              | .149                       | —                               |
| 16              | .064               | 2.976                      | 3                                | 45              | .0028              | .130                       | —                               |
| 17              | .056               | 2.604                      | 2½                               | 46              | .0024              | .112                       | —                               |
| 18              | .048               | 2.232                      | 2¼                               | 47              | .0020              | .093                       | —                               |
| 19              | .040               | 1.860                      | 2                                | 48              | .0016              | .074                       | —                               |
| 20              | .036               | 1.674                      | 1¾                               | 49              | .0012              | .056                       | —                               |
| 21              | .032               | 1.488                      | 1½                               | 50              | .0010              | .047                       | —                               |
| 22              | .028               | 1.302                      | 1¼                               |                 |                    |                            |                                 |

## BRASS — SHEET AND STRIP

**GENERAL.**—1. Commercial Brass is made in three grades: 7/30 (Deep Drawing); 65/35; 63/37 (Basis Brass).

2. Finishes available: Soft (Cold) Rolled; Semi, Medium or Half Hard (Cold) Rolled; Hard (Cold) Rolled; Extra Hard (Strip only).

**TRADE SIZES.**—Sheets: 26 gauge and heavier—4' x 2', 6' x 2', 6' x 2' 6", 6' x 3'. Strip: .002" and heavier—5/16" to 15" wide (special manufacture).

**WEIGHT PER SQUARE FOOT.**—The weight per square foot of rolled brass varies slightly with the composition of the alloy. For the basis of all calculations the figure used is that one square foot of rolled brass weighs 44½ lb. per square foot one inch in thickness.

| I.S.W.G.<br>No. | Decimal<br>of an<br>inch | Weight per<br>sq. ft.<br>in lb. | I.S.W.G.<br>No. | Decimal<br>of an<br>inch | Weight per<br>sq. ft.<br>in lb. |
|-----------------|--------------------------|---------------------------------|-----------------|--------------------------|---------------------------------|
| 7/0             | .500                     | 22.250                          | 23              | .024                     | 1.068                           |
| 6/0             | .464                     | 20.648                          | 24              | .022                     | .979                            |
| 5/0             | .432                     | 19.224                          | 25              | .020                     | .890                            |
| 4/0             | .400                     | 17.800                          | 26              | .018                     | .801                            |
| 3/0             | .372                     | 16.540                          | 27              | .0164                    | .729                            |
| 2/0             | .348                     | 15.486                          | 28              | .0148                    | .658                            |
| 0               | .324                     | 14.418                          | 29              | .0136                    | .605                            |
| 1               | .300                     | 13.350                          | 30              | .0124                    | .551                            |
| 2               | .276                     | 12.282                          | 31              | .0116                    | .516                            |
| 3               | .252                     | 11.214                          | 32              | .0108                    | .480                            |
| 4               | .232                     | 10.324                          | 33              | .0100                    | .445                            |
| 5               | .212                     | 9.434                           | 34              | .0092                    | .409                            |
| 6               | .192                     | 8.544                           | 35              | .0084                    | .373                            |
| 7               | .176                     | 7.832                           | 36              | .0076                    | .338                            |
| 8               | .160                     | 7.120                           | 37              | .0068                    | .302                            |
| 9               | .144                     | 6.408                           | 38              | .0060                    | .267                            |
| 10              | .128                     | 5.696                           | 39              | .0052                    | .231                            |
| 11              | .116                     | 5.162                           | 40              | .0048                    | .213                            |
| 12              | .104                     | 4.628                           | 41              | .0044                    | .195                            |
| 13              | .092                     | 4.094                           | 42              | .0040                    | .178                            |
| 14              | .080                     | 3.560                           | 43              | .0036                    | .160                            |
| 15              | .072                     | 3.204                           | 44              | .0032                    | .142                            |
| 16              | .064                     | 2.848                           | 45              | .0028                    | .124                            |
| 17              | .056                     | 2.492                           | 46              | .0024                    | .106                            |
| 18              | .048                     | 2.136                           | 47              | .0020                    | .089                            |
| 19              | .040                     | 1.780                           | 48              | .0016                    | .071                            |
| 20              | .036                     | 1.602                           | 49              | .0012                    | .053                            |
| 21              | .032                     | 1.424                           | 50              | .0010                    | .044                            |
| 22              | .028                     | 1.246                           | —               | —                        | —                               |

**OTHER COPPER ALLOYS ARE**—Gilding Metal (four grades), 90/10, 88/12, 85/15, 80/20 (Sheet and Strip); Nickel Silver, 10% (Sheet and Strip), 15%, 18%, 20% (Strip only); Engraving Brass (free cutting), Sheet and Strip; Naval Brass (Improved Muntz Metal), Sheets and Sheathing; Phosphor Bronze (Strip only).



## ZINC AND ZINC SHEET

Zinc is manufactured in Australia, and is sold by the ton in the form of slabs weighing approximately 56 lb. each. Zinc can normally be obtained in the form of plates, sheets, and strip.

## WEIGHT OF SHEET ZINC

| Gauge | Approx. Thick-<br>ness |       | Approx.<br>weight<br>per sq. ft. | Approx. weight of Sheets |               |               |               |         |  |
|-------|------------------------|-------|----------------------------------|--------------------------|---------------|---------------|---------------|---------|--|
|       |                        |       |                                  | 6' x 3'                  |               | 7' x 3'       |               | 8' x 3' |  |
|       | In.                    | Mm.   | Lb. Oz. Drms.                    | Lb. Oz. Drms.            | Lb. Oz. Drms. | Lb. Oz. Drms. | Lb. Oz. Drms. |         |  |
| 3     | .007                   | .171  | 0 3 15                           | 4 6 14                   | 5 2 11        | 5 14 8        |               |         |  |
| 4     | .008                   | .209  | 0 4 13                           | 5 6 10                   | 6 5 1         | 7 3 8         |               |         |  |
| 5     | .010                   | .247  | 0 5 11                           | 6 6 6                    | 7 7 7         | 8 8 8         |               |         |  |
| 6     | .011                   | .291  | 0 6 11                           | 7 8 6                    | 8 12 7        | 10 0 8        |               |         |  |
| 7     | .013                   | .337  | 0 7 12                           | 8 11 8                   | 10 2 12       | 12 10 0       |               |         |  |
| 8     | .015                   | .386  | 0 8 14                           | 9 15 12                  | 11 10 6       | 13 5 0        |               |         |  |
| 9     | .018                   | .450  | 0 10 5                           | 11 9 10                  | 13 8 9        | 15 7 8        |               |         |  |
| 10    | .020                   | .500  | 0 11 7                           | 12 13 14                 | 15 0 3        | 17 2 8        |               |         |  |
| 12    | .026                   | .660  | 0 15 2                           | 17 0 4                   | 19 13 10      | 22 11 0       |               |         |  |
| 14    | .032                   | .820  | 1 2 12                           | 21 1 8                   | 24 9 12       | 28 2 0        |               |         |  |
| 16    | .043                   | 1.080 | 1 8 12                           | 27 13 8                  | 32 7 12       | 37 2 0        |               |         |  |
| 18    | .053                   | 1.340 | 1 14 11                          | 34 8 6                   | 40 4 7        | 46 0 8        |               |         |  |
| 20    | .063                   | 1.600 | 2 4 10                           | 41 3 4                   | 48 1 2        | 54 15 0       |               |         |  |
| 22    | .077                   | 1.960 | 2 12 14                          | 50 7 12                  | 58 14 6       | 67 5 0        |               |         |  |
| 24    | .091                   | 2.320 | 3 5 3                            | 59 13 6                  | 69 12 15      | 79 12 8       |               |         |  |
| 26    | .105                   | 2.680 | 3 13 7                           | 69 1 14                  | 80 10 3       | 92 2 8        |               |         |  |

## PROCESS ENGRAVERS' ZINC

Process engravers' zinc is supplied in 40" x 20" plates, polished on one side, and in 8, 10, 12, 14 and 16 I.S.W.G. The following table gives weights of these standard sizes of plates.

| 40" x 20" x           | 8G     | 10G     | 12G    | 14G     | 16G    |
|-----------------------|--------|---------|--------|---------|--------|
| Weight of plate .. .. | 33 lb. | 26½ lb. | 22 lb. | 16½ lb. | 13 lb. |
| No. of Plates/Case .. | 14     | 18      | 22     | 30      | 36     |

## LEAD AND LEAD SHEET

## WEIGHT PER SQUARE FOOT

| Thick | Lb.  | Thick  | Lb.  | Thick  | Lb.  |
|-------|------|--------|------|--------|------|
| 1/16" | 3.7  | 7/16"  | 25.9 | 3/4"   | 44.7 |
| 1/8"  | 7.4  | 1/2"   | 29.5 | 13/16" | 48.3 |
| 3/16" | 11.1 | 9/16"  | 33.2 | 7/8"   | 51.0 |
| 1/4"  | 14.8 | 5/8"   | 36.9 | 15/16" | 55.1 |
| 5/16" | 18.5 | 11/16" | 40.6 | 1"     | 59.4 |
| 3/8"  | 22.2 |        |      |        |      |

## STANDARD SIZES (20' and 30' lengths)

Sheet Lead.—Widths: 2' 6", 3', 3' 9", 5', 7' 6"; weights: 3 lb./sq. ft. and heavier.

Dampcourse.—Widths: 4½", 6", 9", 12", 14", 18"; weights: 2, 3, 4, 5 and 6 lb./sq. ft.

## MONEL METAL AND NICKEL

## WEIGHTS OF ROUNDS, SQUARES, AND HEXAGONS

| Size<br>in<br>inches | Lb. per foot |         |        | Size<br>in<br>inches | Lb. per foot |         |         |
|----------------------|--------------|---------|--------|----------------------|--------------|---------|---------|
|                      | Rounds       | Squares | Hexs.  |                      | Rounds       | Squares | Hexs.   |
| 7/32                 | .146         | —       | —      | 2                    | 12.178       | 15.504  | 13.426  |
| 1/4                  | .190         | —       | .209   | 2 1/8                | 13.747       | 17.503  | 15.156  |
| 5/16                 | .297         | .379    | .327   | 2 1/4                | 15.411       | 19.622  | 16.991  |
| 3/8                  | .428         | .545    | .472   | 2 3/8                | 17.171       | 21.863  | 18.921  |
| 7/16                 | .583         | .742    | .643   | 2 1/2                | 19.027       | 24.225  | 20.977  |
| 1/2                  | .761         | .969    | .839   | 2 3/4                | 20.977       | 26.708  | 23.127  |
| 9/16                 | .963         | 1.226   | 1.062  | 2 7/8                | 23.022       | 29.312  | 25.382  |
| 5/8                  | 1.189        | 1.514   | 1.311  | 3                    | 25.162       | 32.038  | 27.741  |
| 11/16                | 1.439        | 1.832   | 1.586  | 3 1/8                | 27.399       | 34.884  | 30.207  |
| 3/4                  | 1.712        | 2.180   | 1.887  | 3 1/4                | 32.155       | 40.940  | 35.451  |
| 13/16                | 2.010        | 2.559   | 2.216  | 3 1/2                | 37.291       | 47.481  | 41.113  |
| 7/8                  | 2.331        | 2.968   | 2.570  | 3 3/4                | 42.810       | 54.506  | 47.198  |
| 15/16                | 2.766        | 3.407   | 2.940  | 4                    | 48.706       | 62.016  | 53.698  |
| 1                    | 3.044        | 3.876   | 3.356  | 4 1/8                | 54.985       | 70.010  | 60.621  |
| 1-1/16               | 3.436        | 4.376   | 3.778  | 4 1/4                | 61.644       | 78.489  | 67.963  |
| 1-1/8                | 3.853        | 4.906   | 4.248  | 4 1/2                | 68.714       | 87.452  | 75.757  |
| 1-3/16               | 4.293        | 5.466   | 4.733  | 5                    | 76.105       | 96.900  | 83.906  |
| 1-1/4                | 4.756        | 6.056   | 5.243  | 5 1/8                | 83.908       | 106.832 | 92.509  |
| 1-5/16               | 5.244        | 6.677   | 5.782  | 5 1/4                | 92.086       | 117.249 | 101.525 |
| 1-3/8                | 5.756        | 7.328   | 6.346  | 5 3/8                | 100.648      | 128.150 | 110.964 |
| 1-7/16               | 6.291        | 8.009   | 6.934  | 6                    | 109.590      | 139.536 | 120.823 |
| 1-1/2                | 6.849        | 8.721   | 7.551  | 6 1/8                | 118.916      | 151.406 | 131.105 |
| 1-9/16               | 7.432        | 9.463   | 8.194  | 6 1/4                | 128.617      | 163.761 | 141.800 |
| 1-5/8                | 8.039        | 10.235  | 8.863  | 6 3/8                | 138.703      | 176.600 | 152.910 |
| 1-11/16              | 8.669        | 11.038  | 9.558  | 7                    | 149.168      | 189.924 | 164.458 |
| 1-3/4                | 9.321        | 11.870  | 10.276 | 7 1/8                | 160.009      | 203.733 | 176.410 |
| 1-13/16              | 10.001       | 12.733  | 11.026 | 7 1/4                | 171.238      | 218.025 | 188.790 |
| 1-7/8                | 10.702       | 13.627  | 11.799 | 7 3/8                | 182.843      | 232.802 | 201.584 |
| 1-15/16              | 11.428       | 14.550  | 12.599 | 8                    | 194.827      | 248.064 | 214.797 |

## ALUMINIUM

|            | Alloy and Temper | U.T.S.<br>lb./sq. in. | Elonga-<br>tion<br>% on 2" | Description                                                                                                                         |
|------------|------------------|-----------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Sheet      | 2S-O             | 12,000                | 35                         | { Commercially pure aluminium,<br>used where strength not im-<br>portant.                                                           |
|            | 2S-H14           | 17,000                | 9                          |                                                                                                                                     |
|            | 3S-O             | 15,500                | 35                         | { Aluminium alloyed with mangan-<br>ese, used where medium strength<br>is required with formability and<br>resistance to corrosion. |
|            | 3S-H14           | 21,000                | 8                          |                                                                                                                                     |
|            | 3S-H18           | 30,000                | 4                          |                                                                                                                                     |
|            | M57S-O           | 26,500                | 24                         | { Aluminium alloyed with magnesium<br>and manganese, used where<br>high strength and corrosion-<br>resistance are required.         |
|            | M57S-H34         | 34,000                | 9                          |                                                                                                                                     |
|            | M57S-H38         | 39,000                | 7                          |                                                                                                                                     |
| Extrusions | 2S-F             | 12,000                | 35                         | { Commercially pure aluminium,<br>strength unimportant.                                                                             |
|            | 50S-T5           | 26,000                | 18                         | { Aluminium alloyed with silicon<br>and manganese, medium<br>strength.                                                              |
|            | 51S-T5           | 44,000                | 12                         | { Aluminium alloyed with silicon<br>and manganese, high strength.                                                                   |

## WEIGHT PER SQUARE FOOT

| I.S.W.G. | Decimals<br>of an<br>inch | Weight<br>per sq. ft.<br>lb. | I.S.W.G. | Decimals<br>of an<br>inch | Weight<br>per sq. ft.<br>lb. |
|----------|---------------------------|------------------------------|----------|---------------------------|------------------------------|
| —        | .500                      | 7.042                        | 12       | .104                      | 1.465                        |
| —        | .4375                     | 6.161                        | 14       | .080                      | 1.127                        |
| —        | .375                      | 5.281                        | 16       | .064                      | 0.9013                       |
| —        | .3125                     | 4.401                        | 18       | .048                      | 0.6760                       |
| —        | .250                      | 3.521                        | 19       | .040                      | 0.5633                       |
| —        | .187                      | 2.641                        | 20       | .036                      | 0.5070                       |
| 8        | .160                      | 2.253                        | 22       | .028                      | 0.394                        |
| 10       | .128                      | 1.803                        | 24       | .022                      | 0.3098                       |
| —        | .125                      | 1.760                        | 26       | .018                      | 0.2535                       |





## Extruded Flat Brass Sections

| Dimensions, ins. |       | Est. Wght. per ft. in lb. | Dimensions, ins. |      | Est. Wght. per ft. in lb. | Dimensions, ins. |       | Est. Wght. per ft. in lb. |
|------------------|-------|---------------------------|------------------|------|---------------------------|------------------|-------|---------------------------|
| A                | B     |                           | A                | B    |                           | A                | B     |                           |
| 3-3/4            | 3/4   | 10.268                    | 1-1/2            | 1/16 | .342                      | 3/4              | 5/8   | 1.71                      |
| 3-9/16           | .35   | 4.549                     | 1-3/8            | 7/8  | 4.389                     | 3/4              | 1/2   | 1.368                     |
| 3-1/2            | 1/2   | 6.384                     | 1-3/8            | 1/2  | 2.508                     | 3/4              | 3/8   | 1.026                     |
| 3                | 3/4   | 8.216                     | 1-3/8            | 3/8  | 1.881                     | 3/4              | 5/16  | .855                      |
| 3                | 1/4   | 2.736                     | 1-3/8            | 3/16 | .94                       | 3/4              | 1/4   | .684                      |
| 2-13/16          | .95   | 9.747                     | 1-3/8            | 1/8  | .627                      | 3/4              | 3/16  | .513                      |
| 2-3/4            | 5/16  | 3.135                     | 1-5/16           | 9/16 | 2.692                     | 3/4              | 1/8   | .342                      |
| 2-1/2            | 3/8   | 3.42                      | 1-1/4            | 1    | 4.561                     | 3/4              | 1/16  | .171                      |
| 2-3/8            | 1/2   | 4.332                     | 1-1/4            | 3/4  | 3.421                     | 11/16            | 1/8   | .314                      |
| 2-1/4            | 7/8   | 7.182                     | 1-1/4            | 5/8  | 2.85                      | 5/8              | 1/2   | 1.14                      |
| 2-1/4            | 1/4   | 2.052                     | 1-1/4            | 1/2  | 2.281                     | 5/8              | 3/8   | .855                      |
| 2-1/8            | 1/2   | 3.876                     | 1-1/4            | 3/8  | 1.71                      | 5/8              | 1/4   | .57                       |
| 2                | 1     | 7.296                     | 1-1/4            | 1/4  | 1.14                      | 5/8              | 3/16  | .427                      |
| 2                | 1/2   | 3.648                     | 1-1/4            | 3/16 | .855                      | 5/8              | 1/8   | .285                      |
| 2                | 7/16  | 3.192                     | 1-1/4            | 1/8  | .57                       | 9/16             | 5/16  | .64                       |
| 2                | 3/8   | 2.736                     | 1-1/4            | 1/16 | .285                      | 1/2              | 3/8   | .684                      |
| 2                | 1/4   | 1.824                     | 1-1/8            | 1/2  | 2.052                     | 1/2              | 5/16  | .570                      |
| 2                | 3/16  | 1.368                     | 1-1/8            | 1/4  | 1.026                     | 1/2              | 1/4   | .456                      |
| 2                | 1/8   | .912                      | 1-1/8            | 7/32 | .898                      | 1/2              | 3/16  | .342                      |
| 1-3/4            | 1-1/8 | 7.182                     | 1-1/8            | 3/16 | .77                       | 1/2              | 1/8   | .228                      |
| 1-3/4            | 1     | 6.384                     | 1                | 7/8  | 3.192                     | 1/2              | 1/16  | .114                      |
| 1-3/4            | 1/4   | 1.596                     | 1                | 3/4  | 2.736                     | 7/16             | 3/8   | .599                      |
| 1-3/4            | 1/8   | .798                      | 1                | 5/8  | 2.28                      | 3/8              | 5/16  | .428                      |
| 1-1/2            | 1-1/4 | 6.840                     | 1                | 1/2  | 1.824                     | 3/8              | 1/4   | .342                      |
| 1-1/2            | 1     | 5.472                     | 1                | 3/8  | 1.368                     | 3/8              | 3/16  | .256                      |
| 1-1/2            | 3/4   | 4.108                     | 1                | 1/16 | .228                      | 3/8              | 1/8   | .171                      |
| 1-1/2            | 1/2   | 2.736                     | 7/8              | 3/4  | 2.394                     | 3/8              | 7/64  | .149                      |
| 1-1/2            | 3/8   | 2.052                     | 7/8              | 5/8  | 1.995                     | 3/8              | 1/16  | .085                      |
| 1-1/2            | 1/4   | 1.368                     | 7/8              | 1/2  | 1.596                     | 11/32            | 17/64 | .334                      |
| 1-1/2            | 3/16  | 1.026                     | 13/16            | 1/2  | 1.482                     | 5/16             | 1/4   | .285                      |
| 1-1/2            | 1/8   | .684                      |                  |      |                           | 5/16             | 3/32  | .107                      |
|                  |       |                           |                  |      |                           | .285             | 5/64  | .081                      |
|                  |       |                           |                  |      |                           | 1/4              | 3/16  | .171                      |
|                  |       |                           |                  |      |                           | 1/4              | 1/8   | .114                      |
|                  |       |                           |                  |      |                           | 1/4              | .075  | .068                      |
|                  |       |                           |                  |      |                           | 3/16             | 1/8   | .085                      |

*Brass and Copper—Rods and Bars*

WEIGHT PER LINEAL FOOT—LB.

| SQUARE      |       |        | ROUND          |       |        |
|-------------|-------|--------|----------------|-------|--------|
| Side inches | Brass | Copper | Dia. in inches | Brass | Copper |
| 1/8         | .057  | .06    | 1/8            | .045  | .047   |
| 3/16        | .128  | .135   | 3/16           | .101  | .106   |
| 1/4         | .228  | .240   | 1/4            | .179  | .189   |
| 5/16        | .357  | .376   | 5/16           | .280  | .294   |
| 3/8         | .513  | .541   | 3/8            | .403  | .424   |
| 7/16        | .699  | .736   | 7/16           | .549  | .578   |
| 1/2         | .913  | .962   | 1/2            | .717  | .755   |
| 9/16        | 1.15  | 1.21   | 9/16           | .91   | .955   |
| 5/8         | 1.43  | 1.51   | 5/8            | 1.12  | 1.18   |
| 11/16       | 1.73  | 1.82   | 11/16          | 1.35  | 1.43   |
| 3/4         | 2.05  | 2.16   | 3/4            | 1.61  | 1.70   |
| 13/16       | 2.41  | 2.54   | 13/16          | 1.89  | 1.99   |
| 7/8         | 2.80  | 2.95   | 7/8            | 2.19  | 2.31   |
| 15/16       | 3.21  | 3.38   | 15/16          | 2.52  | 2.65   |
| 1           | 3.65  | 3.85   | 1              | 2.87  | 3.02   |
| 1-1/8       | 4.62  | 4.87   | 1-1/8          | 3.63  | 3.83   |
| 1-1/4       | 5.70  | 6.01   | 1-1/4          | 4.48  | 4.73   |
| 1-3/8       | 6.90  | 7.27   | 1-3/8          | 5.42  | 5.72   |
| 1-1/2       | 8.21  | 8.65   | 1-1/2          | 6.45  | 6.80   |
| 1-5/8       | 9.64  | 10.16  | 1-5/8          | 7.57  | 7.99   |
| 1-3/4       | 11.18 | 11.78  | 1-3/4          | 8.78  | 9.26   |
| 1-7/8       | 12.83 | 13.52  | 1-7/8          | 10.08 | 10.63  |
| 2           | 14.60 | 15.39  | 2              | 11.47 | 12.10  |
| 2-1/8       | —     | —      | 2-1/8          | 12.94 | 13.66  |
| 2-1/4       | —     | —      | 2-1/4          | 14.51 | 15.31  |
| 2-3/8       | —     | —      | 2-3/8          | 16.17 | 17.06  |
| 2-1/2       | —     | —      | 2-1/2          | 17.92 | 18.90  |

*Whitworth Standard Hexagon Sizes*

| Association | Across flats min. to max. |           | Lb. per lin. ft. | Standard |           | Across flats min. to max. |       | Lb. per lin. ft. |
|-------------|---------------------------|-----------|------------------|----------|-----------|---------------------------|-------|------------------|
|             |                           |           |                  | Whit.    | Fine      |                           |       |                  |
| No. 3       | ins. .279                 | ins. .282 | .251             | ins. 1/2 | ins. 9/16 | .915                      | .920  | 2.68             |
| No. 2       | .321                      | .324      | .332             | 9/16     | 5/8       | 1.002                     | 1.010 | 3.22             |
| No. 1       | .362                      | .365      | .421             | 5/8      | 11/16     | 1.092                     | 1.100 | 3.82             |
| No. 0       | .410                      | .413      | .539             | 11/16    | 3/4       | 1.192                     | 1.200 | 4.55             |
| Standard    |                           |           |                  | 3/4      | 7/8       | 1.292                     | 1.300 | 5.34             |
|             |                           |           |                  | 7/8      | 1         | 1.468                     | 1.480 | 6.92             |
| Whit.       | Fine                      |           |                  | 1        | 1-1/8     | 1.658                     | 1.670 | 8.81             |
| ins.        | ins.                      |           |                  | 1-1/8    | 1-1/4     | 1.845                     | 1.860 | 10.94            |
| —           | 7/32                      | .410      | .413             | 1-1/4    | 1-3/8     | 2.035                     | 2.050 | 13.29            |
| —           | 1/4                       | .440      | .445             | 1-3/8    | 1-1/2     | 2.200                     | 2.220 | 15.58            |
| 1/4         | 5/16                      | .520      | .525             | 1-1/2    | 1-5/8     | 2.390                     | 2.410 | 18.36            |
| 5/16        | 3/8                       | .595      | .600             | 1-5/8    | 1-3/4     | 2.555                     | 2.580 | 21.03            |
| 3/8         | 7/16                      | .705      | .710             | 1-3/4    | 2         | 2.735                     | 2.760 | 24.07            |
| 7/16        | 1/2                       | .815      | .820             | 2        | —         | 3.125                     | 3.150 | 31.35            |

# NON-FERROUS WIRE

## WEIGHT PER 100 FEET IN POUNDS

| Thickness<br>Inches | I.S.W.G. | Copper<br>or<br>Bronze | Brass<br>or<br>Muntz | Alumin-<br>ium | Nickel<br>Silver | Monel<br>Metal or<br>Nickel |
|---------------------|----------|------------------------|----------------------|----------------|------------------|-----------------------------|
| 0.5                 | 7/0      | 75.7                   | 71.9                 | 22.93          | 74.1             | 76.1                        |
| 0.372               | 3/0      | 41.9                   | 39.8                 | 12.77          | 41               | 42.76                       |
| 0.324               | 0        | 31.8                   | 30.2                 | 7.63           | 31.1             | 31.9                        |
| 0.276               | 2        | 23.1                   | 21.9                 | 7.00           | 22.6             | 23.16                       |
| 0.252               | 3        | 19.2                   | 18.3                 | 5.83           | 18.8             | 19.20                       |
| 0.232               | 4        | 16.3                   | 15.5                 | 4.96           | 15.9             | 16.37                       |
| 0.192               | 6        | 11.2                   | 10.6                 | 3.4            | 10.9             | 11.18                       |
| 0.160               | 8        | 7.75                   | 7.36                 | 2.35           | 7.58             | 7.77                        |
| 0.128               | 10       | 4.96                   | 4.71                 | 1.53           | 4.85             | 4.98                        |
| 0.104               | 12       | 3.27                   | 3.11                 | 0.99           | 3.20             | 3.28                        |
| 0.080               | 14       | 1.94                   | 1.84                 | 0.66           | 1.9              | 1.93                        |
| 0.064               | 16       | 1.24                   | 1.18                 | 0.377          | 1.21             | 1.25                        |
| 0.048               | 18       | 0.698                  | 0.663                | 0.212          | 0.682            | 0.695                       |
| 0.036               | 20       | 0.392                  | 0.373                | 0.119          | 0.384            | 0.387                       |
| 0.028               | 22       | 0.237                  | 0.226                | 0.072          | 0.232            | 0.238                       |
| 0.022               | 24       | 0.146                  | 0.139                | 0.044          | 0.143            | 0.147                       |
| 0.018               | 26       | 0.0981                 | 0.0932               | 0.0297         | 0.096            | 0.098                       |
| 0.0148              | 28       | 0.0663                 | 0.0630               | 0.0201         | 0.0649           | 0.066                       |
| 0.0124              | 30       | 0.0465                 | 0.0442               | 0.0141         | 0.0455           | 0.046                       |
| 0.0108              | 32       | 0.0353                 | 0.0336               | 0.0108         | 0.0345           | 0.035                       |
| 0.0092              | 34       | 0.0256                 | 0.0243               | 0.0077         | 0.0250           | 0.025                       |
| 0.0076              | 36       | 0.0175                 | 0.0166               | 0.0053         | 0.0171           | 0.017                       |

## C.M.A. Cables—Single V.I.R., Braided and Compounded

| Nominal<br>area in<br>sq. in. | No. and<br>dia. of<br>wires<br>in ins. | Overall<br>dia. in<br>inches |      | Weight<br>per 100 yds.<br>in lb. |      | Rating<br>Current<br>SAA<br>Wiring<br>Rules in<br>Amps. | Stand.<br>Resist.<br>(ohms)<br>per<br>1000 yds.<br>@ 60°F. |
|-------------------------------|----------------------------------------|------------------------------|------|----------------------------------|------|---------------------------------------------------------|------------------------------------------------------------|
|                               |                                        | 660V                         | 250V | 660V                             | 250V |                                                         |                                                            |
| .0015                         | 1/.044                                 | .205                         | .150 | 7                                | 5    | 8                                                       | 15.79                                                      |
| .002                          | 3/.029                                 | .225                         | .175 | 8                                | 6    | 10                                                      | 12.36                                                      |
| .003                          | 1/.064                                 | .230                         | .175 | 10                               | 7    | 15                                                      | 8.019                                                      |
| .003                          | 3/.036                                 | .245                         | .195 | 10                               | 8    | 15                                                      | 7.463                                                      |
| .0045                         | 7/.029                                 | .265                         | .205 | 13                               | 10   | 20                                                      | 5.281                                                      |
| .007                          | 7/.036                                 | .290                         | .230 | 17                               | 14   | 27                                                      | 3.427                                                      |
| .010                          | 7/.044                                 | .315                         | .280 | 23                               | 20   | 35                                                      | 2.294                                                      |
| .0145                         | 7/.052                                 | .340                         | .310 | 29                               | 27   | 45                                                      | 1.643                                                      |
| .0225                         | 7/.064                                 | .380                         | .355 | 41                               | 38   | 55                                                      | 1.084                                                      |
| .03                           | 19/.044                                | .410                         | .390 | 50                               | 48   | 65                                                      | 0.8468                                                     |



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# SOLID DRAWN COPPER TUBES — COMMERCIAL QUALITY

Standard sizes—weight in lb. per linear foot. Calculated on a basis of copper at .323 lb. per cubic inch.

To find the weight of tubes composed of the following metals, multiply the weights of the equivalent copper tubes by the constants shown:—60/40 brass, 0.942; 70/30 brass, 0.958; aluminium, 0.304.

| Imperial<br>Standard<br>Wire Gauge | 1     | 2     | 4     | 6     | 8     | 10    | 11   | 12   | 13   | 14   | 16   | 18   | 20   | 22   | 24   |
|------------------------------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| Dec. equiv.<br>in inches           | .300  | .276  | .232  | .192  | .160  | .128  | .116 | .104 | .092 | .080 | .064 | .048 | .036 | .028 | .022 |
| External<br>diameter<br>inch       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |
| 1/8                                | —     | —     | —     | —     | —     | —     | —    | —    | —    | —    | —    | —    | .038 | .033 | .027 |
| 3/16                               | —     | —     | —     | —     | —     | —     | —    | —    | —    | —    | .14  | .12  | .082 | .066 | .054 |
| 1/4                                | —     | —     | —     | —     | —     | —     | —    | —    | —    | —    | .19  | .15  | .12  | .093 | .075 |
| 5/16                               | —     | —     | —     | —     | —     | —     | —    | —    | —    | .29  | .24  | .19  | .15  | .12  | .094 |
| 3/8                                | —     | —     | —     | —     | —     | —     | —    | —    | .35  | .29  | .23  | .18  | .14  | .11  | .094 |
| 7/16                               | —     | —     | —     | —     | —     | .58   | —    | .50  | .41  | .34  | .26  | .20  | .16  | .13  | .11  |
| 1/2                                | —     | —     | —     | —     | —     | —     | —    | —    | .47  | .39  | .30  | .23  | .18  | .14  | .11  |
| 9/16                               | —     | —     | —     | —     | —     | —     | —    | .66  | .53  | .44  | .34  | .26  | .20  | .16  | .13  |
| 5/8                                | —     | —     | —     | —     | —     | —     | —    | .74  | .59  | .48  | .37  | .28  | .22  | .18  | .14  |
| 11/16                              | —     | —     | —     | —     | —     | .97   | —    | .82  | .65  | .53  | .41  | .31  | .25  | .20  | .16  |
| 3/4                                | —     | —     | —     | —     | —     | 1.06  | —    | .89  | .80  | .71  | .58  | .45  | .34  | .27  | .21  |
| 13/16                              | —     | —     | —     | —     | —     | 1.16  | —    | .97  | .77  | .63  | .48  | .37  | .29  | .22  | .17  |
| 7/8                                | —     | —     | —     | —     | —     | 1.25  | —    | 1.05 | .83  | .68  | .52  | .39  | .31  | .24  | .19  |
| 15/16                              | —     | —     | —     | —     | 1.76  | 1.35  | —    | 1.13 | .89  | .73  | .55  | .42  | .33  | .26  | .20  |
| 1                                  | —     | —     | —     | —     | —     | —     | —    | —    | 1.04 | .92  | .72  | .55  | .43  | .34  | .27  |
| 1-1/32                             | —     | —     | —     | —     | —     | —     | —    | —    | —    | .92  | .72  | .55  | .43  | .34  | .27  |
| 1-1/8                              | —     | —     | —     | 2.17  | 1.87  | 1.54  | —    | 1.29 | 1.01 | .82  | .63  | .48  | .37  | .29  | .22  |
| 1-1/4                              | —     | —     | —     | 2.46  | 2.11  | 1.74  | —    | 1.45 | 1.13 | .92  | .70  | .53  | .42  | .33  | .26  |
| 1-9/32                             | —     | —     | —     | —     | —     | —     | —    | 1.48 | —    | —    | —    | —    | —    | —    | —    |
| 1-3/8                              | —     | —     | —     | 2.75  | 2.36  | 1.94  | —    | 1.60 | 1.26 | 1.02 | .77  | .58  | .45  | .36  | .28  |
| 1-1/2                              | —     | —     | —     | 3.04  | 2.60  | 2.13  | —    | 1.76 | 1.38 | 1.11 | .85  | .64  | .50  | .40  | .31  |
| 1-5/8                              | —     | —     | —     | 3.33  | 2.84  | 2.32  | —    | 1.92 | 1.50 | 1.21 | .92  | .69  | .54  | .43  | .34  |
| 1-3/4                              | —     | —     | —     | 3.62  | 3.08  | 2.52  | —    | 2.08 | 1.62 | 1.31 | .99  | .75  | .59  | .47  | .37  |
| 1-7/8                              | —     | —     | —     | 3.92  | 3.33  | 2.71  | —    | 2.23 | 1.74 | 1.41 | 1.06 | .80  | .62  | .50  | .40  |
| 2                                  | —     | —     | —     | 4.21  | 3.57  | 2.90  | —    | 2.39 | 1.86 | 1.50 | 1.14 | .86  | .67  | .54  | .43  |
| 2-1/8                              | —     | —     | 5.32  | 4.50  | 3.81  | 3.09  | —    | 2.55 | 1.98 | 1.60 | 1.21 | .92  | .71  | .57  | .46  |
| 2-1/4                              | —     | —     | 5.67  | 4.79  | 4.05  | 3.29  | —    | 2.71 | 2.10 | 1.70 | 1.28 | .97  | .75  | .60  | .49  |
| 2-5/16                             | —     | —     | —     | —     | —     | —     | 3.09 | —    | —    | 2.17 | —    | —    | —    | —    | —    |
| 2-3/8                              | —     | —     | 6.03  | 5.08  | 4.30  | 3.49  | —    | 2.86 | 2.23 | 1.79 | 1.35 | 1.02 | .79  | .64  | .51  |
| 2-1/2                              | —     | —     | 6.38  | 5.37  | 4.54  | 3.68  | —    | 3.02 | 2.35 | 1.89 | 1.43 | 1.08 | .83  | .67  | .54  |
| 2-5/8                              | —     | —     | 6.73  | 5.66  | 4.78  | 3.87  | —    | 3.18 | 2.47 | 1.99 | 1.50 | 1.13 | .87  | .70  | .57  |
| 2-3/4                              | —     | —     | 7.08  | 5.95  | 5.02  | 4.07  | —    | 3.34 | 2.59 | 2.08 | 1.57 | 1.18 | .91  | .73  | .60  |
| 2-7/8                              | —     | —     | 7.43  | 6.25  | 5.27  | 4.26  | —    | 3.49 | 2.71 | 2.18 | 1.65 | 1.24 | .96  | .78  | .64  |
| 2-15/16                            | —     | —     | —     | —     | —     | —     | 3.97 | —    | —    | 2.77 | —    | —    | —    | —    | —    |
| 3                                  | —     | 9.12  | 7.78  | 6.54  | 5.51  | 4.45  | —    | 3.65 | 2.83 | 2.28 | 1.72 | 1.29 | .99  | .79  | .65  |
| 3-1/4                              | —     | 9.96  | 8.48  | 7.12  | 5.99  | 4.84  | —    | 3.97 | 3.07 | 2.47 | 1.86 | —    | —    | —    | —    |
| 3-7/16                             | —     | —     | —     | —     | —     | —     | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| 3-1/2                              | —     | 10.79 | 9.19  | 7.70  | 6.48  | 5.23  | —    | 4.28 | 3.32 | 2.67 | 2.01 | —    | —    | —    | —    |
| 3-3/4                              | —     | 11.63 | 9.89  | 8.28  | 6.96  | 5.62  | —    | 4.60 | 3.56 | 2.86 | 2.15 | —    | —    | —    | —    |
| 4                                  | 13.47 | 12.47 | 10.59 | 8.87  | 7.45  | 6.00  | —    | 4.91 | 3.80 | 3.05 | 2.30 | —    | —    | —    | —    |
| 4-1/4                              | 14.38 | 13.31 | 11.29 | 9.45  | 7.93  | 6.39  | —    | 5.23 | 4.04 | 3.25 | —    | —    | —    | —    | —    |
| 4-1/2                              | 15.28 | 14.14 | 12.06 | 10.03 | 8.42  | 6.78  | —    | 5.54 | 4.29 | 3.44 | —    | —    | —    | —    | —    |
| 4-3/4                              | 16.19 | 14.98 | 12.70 | 10.61 | 8.90  | 7.17  | —    | 5.86 | 4.53 | —    | —    | —    | —    | —    | —    |
| 5                                  | 17.11 | 15.82 | 13.40 | 11.20 | 9.39  | 7.55  | —    | 6.17 | 4.77 | 3.83 | —    | —    | —    | —    | —    |
| 5-1/2                              | 18.92 | 17.49 | 14.81 | 12.36 | 10.36 | 8.33  | —    | 6.80 | —    | —    | —    | —    | —    | —    | —    |
| 6                                  | 20.75 | 19.17 | 16.21 | 13.53 | 11.33 | 9.10  | —    | 7.43 | —    | —    | —    | —    | —    | —    | —    |
| 6-1/2                              | 22.56 | 20.84 | 17.62 | 14.69 | 12.30 | 9.88  | —    | 8.06 | —    | —    | —    | —    | —    | —    | —    |
| 7                                  | 24.39 | 22.52 | 19.02 | 15.86 | 13.27 | 10.65 | —    | 8.69 | —    | —    | —    | —    | —    | —    | —    |
| 7-1/2                              | 26.20 | 24.19 | 20.43 | 17.02 | 14.24 | 11.43 | —    | 9.32 | —    | —    | —    | —    | —    | —    | —    |
| 8                                  | 28.03 | 25.87 | 21.83 | 18.19 | 15.21 | 12.20 | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| 8-1/2                              | 29.84 | 27.54 | 23.24 | 19.35 | 16.18 | 12.98 | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| 9                                  | 31.67 | 29.22 | 24.64 | 20.52 | 17.15 | 13.75 | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| 9-1/2                              | 33.45 | 30.86 | 26.06 | 21.86 | 18.11 | 14.54 | —    | —    | —    | —    | —    | —    | —    | —    | —    |

# ELECTRICITY

## FUNDAMENTAL UNITS:

The AMPERE is the unit in which electric current strength is measured.

The OHM is the unit in which resistance to the flow of an electric current is measured.

The VOLT is the unit of electric pressure. A pressure of 1 volt is required to force a current of 1 ampere through a resistance of 1 ohm.

**WATT.**—This is the unit of power or rate of doing work.  
Watts = Volts x Amperes

**KILOWATT HOUR.**—For commercial purposes electrical energy is charged for in units of 1,000 watt hours, and is called the Board of Trade unit or kilowatt hour.

$$\text{K.W.H.} = \frac{\text{Volts} \times \text{Amperes} \times \text{Hours}}{1,000} \quad \text{or} \quad \frac{\text{Watts} \times \text{Hours}}{1,000}$$

Example: To find the cost of burning three 60 watt lamps for five hours, assuming the cost per unit to be 6d.—

$$\text{Cost} = \frac{60 \times 3 \times 5 \times 6d.}{1,000} = 5.4d.$$

$$\text{HORSEPOWER} = \frac{\text{Watts}}{746} \qquad \text{Kilowatts} = \frac{\text{Watts}}{1,000}$$

The normal voltage for household appliances is 240; for 3-phase motors, etc., 415.

## HINTS:

Do NOT take risks with electricity.

Do NOT use frayed or damaged cords or flexibles on portable appliances—THEY ARE DANGEROUS.

WATER is injurious to most electrical equipment.

DO NOT handle wet or damp metal-clad switchgear unless it is effectively EARTHED. If in doubt, have it inspected by a competent electrician, or cover the hand with a rubber glove, several thicknesses of dry cloth or similar material before attempting to touch.

A cable carrying electric current (amperes) greater than its capacity will develop heat. This is injurious to insulation (except in special applications) and uneconomical.

The fuse is there for protection. ALWAYS use the correct wire sizes and material (usually copper) when replacing fuses. Over-size fuse wire is dangerous.

In all cases of electric shock remove person from danger zone and apply artificial respiration until medical aid arrives.



# Average District Rainfall Throughout Australia

PERIOD 1910 TO 1950 (100 Points = 1 Inch)

|        | DISTRICT                  | Annual fall,<br>Points | DISTRICT                      | Annual fall,<br>Points |
|--------|---------------------------|------------------------|-------------------------------|------------------------|
| N.S.W. | Trans-Darling North ..... | 829                    | Hunter .....                  | 3463                   |
|        | Trans-Darling South ..... | 967                    | Cudgegong .....               | 2310                   |
|        | Cis-Darling North .....   | 1282                   | Central Plateau .....         | 3342                   |
|        | Cis-Darling South .....   | 1287                   | Warrumbungles Highlands ..... | 2285                   |
|        | Upper Bogan .....         | 1746                   | Warrumbungles Lowlands .....  | 2193                   |
|        | Lower Macquarie .....     | 1713                   | Sydney .....                  | 4190                   |
|        | West Gwydir .....         | 1838                   | Nepean .....                  | 3004                   |
|        | East Gwydir .....         | 2181                   | Illawarra .....               | 4296                   |
|        | Nandowars .....           | 2606                   | South Coast .....             | 3628                   |
|        | Liverpool Plains .....    | 2428                   | Upper Murrumbidgee .....      | 2579                   |
|        | West New England .....    | 3045                   | Snowy Mountains .....         | 3338                   |
|        | East New England .....    | 4019                   | Jugiong .....                 | 3337                   |
|        | Clarence .....            | 5544                   | Tumut .....                   | 2327                   |
|        | Orara .....               | 5563                   | East Riverina .....           | 1846                   |
|        | Manning .....             | 5350                   | West Riverina .....           | 1371                   |
| VIC.   | Mallee North .....        | 1123                   | East Gippsland .....          | 3021                   |
|        | Mallee South .....        | 1335                   | West Gippsland .....          | 3570                   |
|        | Wimmera North .....       | 1578                   | West Central .....            | 2355                   |
|        | Wimmera South .....       | 1892                   | East Central .....            | 3572                   |
|        | Lower North .....         | 1655                   | North Central .....           | 2706                   |
|        | Upper North .....         | 1951                   | Volcanic Plains .....         | 2432                   |
|        | Lower North-east .....    | 3038                   | West Coast .....              | 2929                   |
|        | Upper North-east .....    | 4365                   |                               |                        |
| TAS.   | Northern .....            | 3911                   | Central Plateau .....         | 4034                   |
|        | East Coast .....          | 2985                   | West Coast—                   |                        |
|        | Midland .....             | 2314                   | Mountain Region .....         | 8706                   |
|        | South-eastern .....       | 2891                   | King Island .....             | 3543                   |
|        | Derwent .....             | 2975                   | Flinders Island .....         | 3016                   |
| S.A.   | North-west Interior ..... | 741                    | Central West .....            | 1688                   |
|        | Far North Interior .....  | 613                    | Central East .....            | 2338                   |
|        | Western .....             | 1394                   | Murray Valley .....           | 1210                   |
|        | Upper North .....         | 1247                   | Murray Mallee .....           | 1183                   |
|        | North-east .....          | 771                    | South-east—Upper .....        | 1658                   |
|        | Lower North .....         | 1665                   | South-east—Lower .....        | 2550                   |
| W.A.   | North Kimberley .....     | 2515                   | S.W. North Coast .....        | 1590                   |
|        | East Kimberley .....      | 1872                   | S.W. Central Coast .....      | 3549                   |
|        | West Kimberley .....      | 2008                   | S.W. South Coast .....        | 3675                   |
|        | De Grey .....             | 1181                   | S.W. Central North .....      | 1386                   |
|        | Fortescue .....           | 995                    | S.W. Central South .....      | 1710                   |
|        | West Gascoyne .....       | 845                    | Eucla .....                   | 830                    |
|        | East Gascoyne .....       | 953                    | South-east .....              | 1037                   |
|        | Murchison .....           | 869                    | North-east .....              | 891                    |
|        |                           |                        |                               |                        |
| N.T.   | Northern Rivers .....     | 4163                   | Northern Plateau .....        | 1135                   |
| QLD.   | Peninsula North .....     | 5837                   | Upper Western .....           | 1430                   |
|        | Peninsula South .....     | 3594                   | Lower Western .....           | 1037                   |
|        | Carpentaria—Lower .....   | 2449                   | Port Curtis .....             | 3659                   |
|        | Carpentaria—Upper .....   | 2351                   | Moreton .....                 | 4500                   |
|        | Barron .....              | 6594                   | East Darling Downs .....      | 3625                   |
|        | Herbert .....             | 7233                   | West Darling Downs .....      | 2128                   |
|        | East Central Coast .....  | 3694                   | Maranoa .....                 | 2066                   |
|        | West Central Coast .....  | 2399                   | Warrego .....                 | 1621                   |
|        | Central Highlands .....   | 2318                   | Far South-west .....          | 1205                   |
|        | Central Lowlands .....    | 1754                   |                               |                        |

*Occupation of the Population — Australia*

## CENSUS OF 1921, 1933 AND 1947

(Exclusive of Full-blood Aboriginals)

| Class of Occupation                  | Census<br>1921 | Census<br>1933 | Census<br>1947 |
|--------------------------------------|----------------|----------------|----------------|
| Fishing and Trapping .....           | 10,752         | 14,611         | 16,393         |
| Agricultural and Pastoral, etc. .... | 481,355        | 547,787        | 459,502        |
| Forestry .....                       | 30,280         | 26,133         | 22,124         |
| Mining, etc. ....                    | 66,766         | 68,520         | 54,391         |
| Industrial—                          |                |                |                |
| Manufacturing .....                  | 445,574        | 511,511        | 799,215        |
| Building .....                       | 95,274         | 107,446        | 232,433        |
| Roads, Earthworks, etc. ....         | 137,106        | 217,656        | —              |
| Other .....                          | 39,852         | 29,558         | 30,585         |
| TOTAL INDUSTRIAL .....               | 717,806        | 866,171        | 1,062,233      |
| Transport and Communication .....    | 207,737        | 223,893        | 295,567        |
| Commerce, etc. ....                  | 330,678        | 451,172        | 479,230        |
| Public Administration, etc. ....     | 215,229        | 232,212        | 348,811        |
| Entertainment, etc. ....             | 17,830         | 24,250         | 225,566        |
| Domestic Service .....               | 209,814        | 242,378        | No entry       |
| No Industry, etc. ....               | 61,414         | 195,430        | 232,534        |
| Pensioners } .....                   | 3,086,073      | 263,064        | 4,382,927      |
| Dependants } .....                   |                | 3,474,218      |                |
| TOTAL .....                          | 5,435,734      | 6,629,839      | 7,579,358      |

*Government Railways Statistics, 1953-54*

| Government            | Route<br>Mileage | Gross<br>Revenue<br>£000 | Working<br>Expenses<br>£000 | Net<br>Revenue<br>£000 |
|-----------------------|------------------|--------------------------|-----------------------------|------------------------|
| Commonwealth .....    | 2,201            | 3,402                    | 2,897                       | 505                    |
| N.S.W. ....           | 6,101            | 74,569                   | 68,197                      | 6,372                  |
| Victoria .....        | 4,482            | 35,707                   | 35,951                      | -244                   |
| Queensland .....      | 6,560            | 30,223                   | 29,103                      | 1,120                  |
| South Australia ..... | 2,564            | 12,718                   | 14,934                      | -2,216                 |
| Western Australia ... | 4,111            | 11,111                   | 14,298                      | -3,187                 |
| Tasmania .....        | 614              | 2,133                    | 2,804                       | 671                    |
| TOTAL .....           | 26,633           | £169,863                 | £168,184                    | £1,679                 |

## GAUGES OF GOVERNMENT RAILWAYS

|              |             |             |              |
|--------------|-------------|-------------|--------------|
| 5' 3" .....  | 6,034 miles | 3' 6" ..... | 13,242 miles |
| 4' 8½" ..... | 7,283 miles | Other ..... | 74 miles     |

*Area and Population*

| State or Territory | Year of formation into separate Colony or Territory | Present Area in square miles | Estimated Population, 30th September, 1955 |           |           |
|--------------------|-----------------------------------------------------|------------------------------|--------------------------------------------|-----------|-----------|
|                    |                                                     |                              | Male                                       | Female    | Persons   |
| N.S.W. ..          | 1786                                                | 309,432                      | 1,760,819                                  | 1,744,281 | 3,505,100 |
| Vic. ....          | 1851                                                | 87,884                       | 1,283,637                                  | 1,262,554 | 2,546,191 |
| Qld. ....          | 1859                                                | 670,500                      | 691,386                                    | 657,140   | 1,348,526 |
| S.A. ....          | 1834                                                | 380,070                      | 419,173                                    | 406,751   | 825,924   |
| W.A. ....          | 1829                                                | 975,920                      | 341,642                                    | 322,446   | 664,088   |
| Tas. ....          | 1825                                                | 26,215                       | 161,002                                    | 154,343   | 315,345   |
| N. Ter. ..         | 1863                                                | 523,620                      | 10,844                                     | 6,755     | 17,599    |
| A.C.T. ..          | 1911                                                | 940                          | 17,669                                     | 15,607    | 33,276    |
| TOTAL ..           | —                                                   | 2,974,581                    | 4,686,172                                  | 4,569,877 | 9,256,049 |

NOTE.—The six States with their included Territories were Federated under the name "Commonwealth of Australia" on January 1, 1901.

*Population and Vital Statistics*

AUSTRALIA, 1949 TO 1954

| Heading                                             | 1939    | 1945    | 1954    |
|-----------------------------------------------------|---------|---------|---------|
| Population at 31st December<br>(,000 omitted) ..... |         |         |         |
| Males ..                                            | 3,539   | 3,722   | 4,598   |
| Females ..                                          | 3,466   | 3,708   | 4,492   |
| Total ...                                           | 7,005   | 7,430   | 9,090   |
| Births .....                                        |         |         |         |
| Males ..                                            | 63,053  | 82,457  | 103,555 |
| Females ..                                          | 59,838  | 78,103  | 98,701  |
| Total ...                                           | 122,891 | 160,560 | 202,256 |
| Rate ...                                            | 17.6    | 21.7    | 22.5    |
| Marriages .....                                     |         |         |         |
| No. ....                                            | 64,249  | 62,822  | 71,229  |
| Rate ...                                            | 9.2     | 8.5     | 7.9     |
| Deaths .....                                        |         |         |         |
| Males ..                                            | 38,837  | 38,211  | 45,787  |
| Females ..                                          | 30,310  | 32,020  | 36,018  |
| Total ...                                           | 69,147  | 70,231  | 81,805  |
| Rate ...                                            | 9.9     | 9.5     | 9.1     |
| Deaths of children under<br>one year .....          |         |         |         |
| Males ..                                            | 2,711   | 2,685   | N.A.    |
| Females ..                                          | 1,987   | 2,032   | N.A.    |
| Total ...                                           | 4,698   | 4,717   | 4,546   |
| Rate ...                                            | 38.2    | 29.4    | 22.5    |
| Natural increase .....                              | 53,744  | 90,329  | 120,451 |
| Rate of natural increase ...                        | 7.71    | 12.22   | 13.40   |

NOTE.—In the case of Births, Marriages, Deaths, and Natural Increase, the "Rate" is the number per 1,000 of mean population; in the case of Deaths of Children under one year, it is the number per 1,000 births.



# CURRENCIES IN USE IN FOREIGN COUNTRIES

| Country                            | Currency and Fractional Divisions                   |
|------------------------------------|-----------------------------------------------------|
| ADEN .....                         | East African Shilling—100 Cents.                    |
| AFGHANISTAN .....                  | Afghani—100 Puls.                                   |
| ALASKA .....                       | U.S. Dollar—100 Cents.                              |
| ALBANIA .....                      | Lek—100 Quintars.                                   |
| ALGERIA .....                      | Algerian Franc—100 Centimes.                        |
| ARGENTINA .....                    | Argentine Peso—100 Centavos.                        |
| AUSTRALIA .....                    | Aust. Pound—20 Shillings, 240 Pence.                |
| AUSTRIA .....                      | Schilling—100 Groschen.                             |
| AZORES .....                       | Portuguese Escudo—100 Centavos.                     |
| BAHAMAS .....                      | British West Indian Pound—20 Shillings, 240 Pence.  |
| BAHREIN .....                      | Indian Rupee—16 Annas, 192 Pice.                    |
| BALI (Indonesia) .....             | Indonesian Rupiah—100 Sen.                          |
| BARBADOS (Br. W. Ind.) .....       | British West Indian Dollar—100 Cents.               |
| BELGIUM .....                      | Belgian Franc—100 Centimes.                         |
| BERMUDA .....                      | Bermuda Pound—20 Shillings, 240 Pence.              |
| BISMARCK<br>ARCHIPELAGO .....      | Aust. Pound—20 Shillings, 240 Pence.                |
| BOLIVIA .....                      | Boliviano—100 Centavos.                             |
| BORNEO, BRITISH NTH. .....         | North Borneo Dollar—100 Cents.                      |
| BORNEO (Indonesia) ....            | Malayan Dollar—100 Cents.                           |
| BRAZIL .....                       | Indonesian Rupiah—100 Sen.                          |
| BULGARIA .....                     | Cruzeiro—100 Centavos.                              |
| BURMA .....                        | Lev—100 Stotinki.                                   |
| CAMEROONS, BRITISH ..              | Kyat—100 Pyas.                                      |
| CANADA .....                       | British West African Pound—20 Shillings, 240 Pence. |
| CANARY ISLANDS .....               | Canadian Dollar—100 Cents.                          |
| CAPE VERDE ISLANDS ..              | Spanish Peseta—100 Centimos.                        |
| CAROLINE ISLANDS ...               | Portuguese Col. Escudo—100 Centavos.                |
| CELEBES (Indonesia) ....           | U.S. Dollar—100 Cents.                              |
| CEYLON .....                       | Indonesian Rupiah—100 Sen.                          |
| CHILE .....                        | Ceylonese Rupee—100 Cents.                          |
| CHINA (People's<br>Republic) ..... | Chilean Peso—100 Centavos.                          |
| CHINA, PORTUGUESE ..               | Jen Men Piao—People's Bank Dollar.                  |
| COLOMBIA, REPUBLIC ..              | Pataca—100 Avos.                                    |
| CONGO, BELGIAN .....               | Colombian Peso—100 Centavos.                        |
| COSTA RICA .....                   | Congolese Franc—100 Centimes.                       |
| CUBA .....                         | Colon—100 Centimos.                                 |
| CYPRUS .....                       | Cuban Peso—100 Centavos.                            |
| CZECHOSLOVAKIA ....                | Cyprus Pound—180 Piastres, 7,200 Paras.             |
| DENMARK .....                      | Czech. Crown (Koruna)—100 Heller.                   |
| EAST AFRICA, BRITISH               | Krone—100 Oere.                                     |
|                                    | East African Shilling—100 Cents.                    |

## CURRENCIES IN FOREIGN COUNTRIES (Cont.)

| Country                                 | Currency and Fractional Divisions                  |
|-----------------------------------------|----------------------------------------------------|
| EAST AFRICA, PORTUGUESE (Mozambique) .  | Portuguese Colonial Escudo—100 Centavos.           |
| ECUADOR .....                           | Sucre—100 Centavos.                                |
| EIRE .....                              | Irish Pound—20 Shillings, 240 Pence.               |
| EGYPT .....                             | Egyptian Pound — 100 Piastres, 1,000 Milliemes.    |
| EQUATORIAL AFRICA, FRENCH .....         | CFA-Franc—100 Centimes.                            |
| ETHIOPIA .....                          | Ethiopian Dollar—100 Cents.                        |
| FALKLAND ISLANDS ...                    | Falk. Is. Pound—20 Shillings, 240 Pence.           |
| FIJI ISLANDS .....                      | Fiji Pound—20 Shillings, 240 Pence.                |
| FINLAND .....                           | Markka (Finmark)—100 Pennia.                       |
| FORMOSA (Nat. China)                    | Taiwan Dollar—100 Cents.                           |
| FRANCE .....                            | Franc—100 Centimes.                                |
| GERMANY (Eastern) ...                   | Ostmark—100 Pfennig.                               |
| GERMANY (Western) ...                   | Deutsche Mark—100 Pfennig.                         |
| GIBRALTAR .....                         | Gibltr. Pound—20 Shillings, 240 Pence.             |
| GREAT BRITAIN AND NORTHERN IRELAND .    | Pound Sterling—20 Shillings, 240 Pence.            |
| GREECE .....                            | Drachma—100 Lepta.                                 |
| GREENLAND .....                         | Danish Kroner—100 Oere.                            |
| GUATEMALA .....                         | Quetzal—100 Centavos.                              |
| GUIANA, BRITISH .....                   | British West Indian Dollar—100 Cents.              |
| GUIANA, FRENCH .....                    | French Franc—100 Centimes.                         |
| GUIANA, NETHERLANDS                     | Surinam Guilder (Florin)—100 Cents.                |
| GUINEA, PORTUGUESE .                    | Portuguese Col. Escudo—100 Centavos.               |
| HAITI .....                             | Gourde—100 Centimes.                               |
| HAWAII .....                            | U.S. Dollar—100 Cents.                             |
| HONDURAS, REPUBLIC .                    | Lempira—100 Centavos.                              |
| HONDURAS, BRITISH ...                   | British Honduras Dollar—100 Cents.                 |
| HONGKONG .....                          | Hongkong Dollar—100 Cents.                         |
| HUNGARY .....                           | Forint—100 Filler.                                 |
| ICELAND .....                           | Krona—100 Aurar (Oere).                            |
| INDIA .....                             | Rupee—16 Annas, 192 Pice.                          |
| INDIA, PORTUGUESE (Goa, Damao, Dju) ... | Portuguese Indian Rupee—16 Tangas, 192 Reis.       |
| INDO-CHINA .....                        | Indo-Chinese Piastre—100 Cents.                    |
| INDONESIA .....                         | Indonesian Rupiah—100 Sen.                         |
| IRAN (Persia) .....                     | Rial—100 Dinars.                                   |
| IRAQ (Mesopotamia) .                    | Iraqi Dinar—5 Riyals, 20 Dirhams, 1,000 Fils.      |
| ISRAEL .....                            | Israeli Pound—1,000 Prutot.                        |
| ITALY .....                             | Lira—100 Centesimi.                                |
| JAMAICA .....                           | British West Indian Pound—20 Shillings, 240 Pence. |
| JAPAN .....                             | Yen—100 Sen, 1,000 Rin.                            |

## CURRENCIES IN FOREIGN COUNTRIES (Cont.)

| Country                                 | Currency and Fractional Divisions             |
|-----------------------------------------|-----------------------------------------------|
| JAVA (Indonesia) .....                  | Indonesian Rupiah—100 Sen.                    |
| JORDAN .....                            | Jordan Dinar—1,000 Mils.                      |
| JUGOSLAVIA .....                        | Dinar—100 Paras.                              |
| KOREA, SOUTH .....                      | Hwan—100 Won.                                 |
| LEBANON .....                           | Lebanese Pound—100 Piastres.                  |
| LIBERIA .....                           | U.S. Dollar—100 Cents.                        |
| LIBYA .....                             | Libyan Pound — 100 Piastres, 1,000 Milliemes. |
| MADAGASCAR .....                        | CFA-Franc—100 Centimes.                       |
| MADEIRA .....                           | Portuguese Escudo—100 Centavos.               |
| MALAYA .....                            | Malayan Dollar—100 Cents.                     |
| MALTA .....                             | Maltese Pound—20 Shillings, 240 Pence.        |
| MARIANNE ISLANDS ...                    | U.S. Dollar—100 Cents.                        |
| MARSHALL ISLANDS ...                    | U.S. Dollar—100 Cents.                        |
| MAURITIUS .....                         | Mauritius Rupee—100 Cents.                    |
| MEXICO .....                            | Mexican Peso—100 Centavos.                    |
| MOLUCCA ISLANDS ...                     | Indonesian Rupiah—100 Sen.                    |
| MONACO .....                            | French Franc—100 Centimes.                    |
| MOROCCO (French) ....                   | Moroccan Franc—100 Centimes.                  |
| MOROCCO (Spanish) ...                   | Spanish Peseta—100 Centimos.                  |
| MOZAMBIQUE .....                        | Portuguese Col. Escudo—100 Centavos.          |
| NEPAL .....                             | Rupee—100 Pice.                               |
| NETHERLANDS, THE ....                   | Guilder (Florin)—100 Cents.                   |
| NEW GUINEA, WEST<br>(Netherlands) ..... | New Guinea Guilder—100 Cents.                 |
| NEW CALEDONIA .....                     | CFP-Franc—100 Centimes.                       |
| NEW GUINEA, EAST ...                    | Aust. Pound—20 Shillings, 240 Pence.          |
| NEW HEBRIDES .....                      | CFP-Franc—100 Centimes.                       |
| NEW ZEALAND .....                       | N.Z. Pound—20 Shillings, 240 Pence.           |
| NICARAGUA .....                         | Cordoba—100 Centavos.                         |
| NORWAY .....                            | Norwegian Krone—100 Oere.                     |
| OCEANIA, FRENCH                         | CFP-Franc—100 Centimes.                       |
| PAKISTAN .....                          | Pakistan Rupee—16 Annas, 192 Pice.            |
| PANAMA .....                            | Balboa (Panamanian Dollar)—100 Centesimos.    |
| PAPUA .....                             | Aust. Pound—20 Shillings, 240 Pence.          |
| PARAGUAY .....                          | Guarani—100 Centimos.                         |
| PERU .....                              | Sol—100 Centavos.                             |
| PHILIPPINES, THE .....                  | Philippine Peso—100 Centavos.                 |
| POLAND .....                            | Zloty—100 Groszy.                             |
| PORTUGAL .....                          | Escudo—100 Centavos.                          |
| PUERTO RICO .....                       | U.S. Dollar—100 Cents.                        |
| RIO DE ORO .....                        | Spanish Peseta—100 Centimos.                  |
| RUMANIA .....                           | Leu—100 Bani.                                 |
| SALVADOR, EL .....                      | Colon—100 Centavos.                           |
| SAMOA, WESTERN .....                    | N.Z. Pound—20 Shillings, 240 Pence.           |
| SAMOA (U.S.) .....                      | U.S. Dollar—100 Cents.                        |



## CURRENCIES IN FOREIGN COUNTRIES (Cont.)

| Country                                                              | Currency and Fractional Divisions                         |
|----------------------------------------------------------------------|-----------------------------------------------------------|
| SARAWAK (Borneo) .....                                               | Sarawak Dollar—100 Cents; Malayan Dollar—100 Cents.       |
| SAUDI-ARABIA .....                                                   | Riyal—22 Qursh Dari, 88 Halals.                           |
| SEYCHELLES .....                                                     | Seychelles Rupee—100 Cents.                               |
| SINGAPORE .....                                                      | Malayan Dollar—100 Cents.                                 |
| SOLOMON ISLANDS ...                                                  | Aust. Pound—20 Shillings, 240 Pence.                      |
| SOMALILAND, PROTECTORATE .....                                       | East African Shilling—10 Cents.                           |
| SOMALILAND, FRENCH .....                                             | Djibouti Franc—100 Centimes.                              |
| SOMALILAND, ITALIAN .....                                            | Somalo—100 Centesimi.                                     |
| SOUTH AFRICA, BRITISH (Northern and Southern Rhodesia, Nyasaland) .. | South Rhodesian Pound—20 Shillings, 240 Pence.            |
| SOUTH AFRICA, UNION .....                                            | S.A. Pound—20 Shillings, 240 Pence.                       |
| SOUTH-WEST AFRICA ..                                                 | S.A. Pound—20 Shillings, 240 Pence.                       |
| SPAIN .....                                                          | Peseta—100 Centimos.                                      |
| SUDAN .....                                                          | Egyptian Pound — 100 Piastres, 1,000 Milliemes.           |
| SUMATRA (Indonesia) ..                                               | Indonesian Rupiah—100 Sen.                                |
| SWEDEN .....                                                         | Krona—100 Oere.                                           |
| SWITZERLAND .....                                                    | Franc—100 Centimes (Rappen).                              |
| SYRIA .....                                                          | Syrian Pound—100 Piastres.                                |
| TANGIER .....                                                        | Moroccan Franc—100 Centimes; Spanish Peseta—100 Centimos. |
| THAILAND (Siam) .....                                                | Baht or Tical—100 Satang.                                 |
| TIBET .....                                                          | Rupee—circa 6 Trangkaz.                                   |
| TIMOR, ARCHIPELAGO ..                                                | Indonesian Rupiah—100 Sen.                                |
| TIMOR, PORTUGUESE ..                                                 | Pataca—100 Avos.                                          |
| TOGOLAND, BRITISH ...                                                | British West Africa Pound—20 Shillings, 240 Pence.        |
| TONGA ISLANDS .....                                                  | Tongan Pound—20 Shillings, 240 Pence.                     |
| TRIESTE, FREE TERRITORY .....                                        | Italian Lira—100 Centesimi.                               |
| TUNISIA .....                                                        | Tunisian Franc—100 Centimes.                              |
| TURKEY .....                                                         | Turkish Pound—100 Piastres, 4,000 Paras.                  |
| URUGUAY .....                                                        | Uruguayan Peso—100 Centesimos.                            |
| U.S.S.R. ....                                                        | Rouble—100 Kopecks.                                       |
| UNITED STATES OF AMERICA .....                                       | Dollar—100 Cents.                                         |
| VATICAN CITY .....                                                   | Lira—100 Centesimi.                                       |
| VENEZUELA .....                                                      | Bolivar—100 Centimos.                                     |
| WEST AFRICA, BRITISH ..                                              | British West African Pound—20 Shillings, 240 Pence.       |
| WEST AFRICA, FRENCH ..                                               | CFA-Franc—100 Centimes.                                   |
| WEST AFRICA, PORTUGUESE (Angola) .....                               | Angolar—100 Centavos.                                     |
| WEST INDIES, BRITISH ..                                              | British West Indian Pound—20 Shillings, 240 Pence.        |
| YEMEN (Arabia) .....                                                 | Indian Rupee—16 Annas, 192 Pice.                          |

## POSTAGE RATES

## WITHIN THE COMMONWEALTH

(Including Lord Howe Island, Norfolk Island, Papua, New Guinea, New Ireland, New Hanover, Admiralty, Nauru, Bougainville, Buka.)

| Classification                                                                                                           | Rate of Postage                             | Maximum Weight                     |
|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------------------------------------|
| First Class Mail—                                                                                                        |                                             |                                    |
| Letters and Letter Cards .....                                                                                           | 4d. first oz.,<br>2½d. each add.<br>oz.     | —                                  |
| Post Cards .....                                                                                                         | 4d. each                                    | —                                  |
| Second Class Mail—                                                                                                       |                                             |                                    |
| Commercial Papers .....                                                                                                  | 3½d. first 2 oz.,<br>2d. each add.<br>2 oz. | 5 lb.                              |
| Printed Matter (comprising printed papers, catalogues, books, periodicals, newspapers, NOT registered at a G.P.O.) ..... | 3½d. first 4 oz.,<br>2d. each add.<br>4 oz. | 6½ lb.<br>Single<br>Vol.<br>11 lb. |
| Patterns, Samples, Merchandise ...                                                                                       | 3½d. first 2 oz.,<br>2d. each add.<br>2 oz. | 1 lb.                              |
| Third Class Mail—                                                                                                        |                                             |                                    |
| Books, periodicals, newspapers (registered at a G.P.O.) .....                                                            | 2½d. first 6 oz.,<br>2d. each add.<br>6 oz. | 6½ lb.<br>Single<br>Vol.<br>11 lb. |

## Fourth Class Mail—Parcel Post:

| Scale | Destination                                                                             | 1 lb. | 2 lb. | 3 lb. | 4-5 lb. | 6-8 lb. | 9-11 lb.         |
|-------|-----------------------------------------------------------------------------------------|-------|-------|-------|---------|---------|------------------|
| 1.    | Within 30 miles of office of posting ...                                                | 1/-   | 1/4   | 1/8   | 1       | 2/9     | 3/4              |
| 2.    | Within N.S.W. beyond 30 miles (including Norfolk Island, Lord Howe Island and Cocos) .. | 1/6   | 1/10  | 2/3   | 2/11    | 3/8     | 4/8              |
| 3.    | Queensland, Victoria, and Tasmania .....                                                | 2/6   | 3/-   | 3/8   | 4/4     | 6/-     | 8/-              |
| 4.    | S. Aust., W. Aust., N.T.                                                                | 3/-   | 3/9   | 5/-   | 6/-     | 8/4     | 11/8             |
|       |                                                                                         |       |       |       |         | 1-3 lb. | 4-7 lb. 8-11 lb. |

|                                                                                               |     |     |     |
|-----------------------------------------------------------------------------------------------|-----|-----|-----|
| Papua, New Guinea, New Britain, New Ireland, New Hanover, Admiralty, Bougainville, Buka ..... | 2/6 | 5/- | 7/3 |
|-----------------------------------------------------------------------------------------------|-----|-----|-----|

Max. weight of parcels within the Commonwealth and beyond, 11 lb.

## POSTAGE RATES BEYOND THE COMMONWEALTH

| Classification                           | N.Z., Fiji,<br>and Islands                | Within the<br>British Empire                                          | Foreign<br>Countries                                   | Maximum<br>Weights                     |
|------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------|
| Letters and<br>Letter Cards              | 4d. first oz.<br>2½d. ea. add.            | 4d. first oz.<br>2½d. ea. add.                                        | 7½d. first oz.<br>4½d. ea. add.                        | 4½ lb.                                 |
| Post Cards                               | 4d. each                                  | 4d. each                                                              | 4½d. ea.                                               |                                        |
| Commercial<br>Papers ...                 | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz. | 3½d. up to 2<br>oz., 5d. from<br>2 to 4 oz.,<br>2d. ea. add.<br>2 oz. | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz.<br>min. 7½d. | 4½ lb.                                 |
| Printed<br>Matter ....                   | 3½d. first 4 oz.<br>2d. ea. add.<br>4 oz. | 3½d. first 4 oz.<br>2d. ea. add.<br>4 oz.                             | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz.              | 6½ lb.<br>Single<br>vols. to<br>11 lb. |
| Samples ....                             | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz. | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz.                             | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz.              | 1 lb.<br>U.K. only<br>5 lb.            |
| Merchandise.                             | 3½d. first 2 oz.<br>2d. ea. add.<br>2 oz. | No rate                                                               | No rate                                                | 1 lb.                                  |
| Small Packets<br>to certain<br>countries | 3½d. ea. 2 oz.<br>min. 1/3                | 3½d. ea. 2 oz.<br>min. 1/3                                            | 3½d. ea. 2 oz.<br>min. 1/3                             | 2 lb.<br>must be<br>unsealed           |
| Newspapers &<br>Periodicals              | 2½d. first 6 oz.<br>2d. ea. add.<br>6 oz. | U.K. and Ire-<br>land, 2½d. first<br>6 oz., 2d. ea.<br>add. 6 oz.*    | 3½d. first 2 oz.,<br>2d. ea. add.<br>2 oz.             | 6½ lb.                                 |

\* To other places within the British Empire, 3d. first 4 oz., 2d. each additional 4 oz.

## AIR MAIL RATES BEYOND THE COMMONWEALTH

| Country of Address                                                    | Letters, etc.,<br>per ½ oz.                               | Post-<br>cards |
|-----------------------------------------------------------------------|-----------------------------------------------------------|----------------|
|                                                                       | s. d.                                                     | s. d.          |
| Commonwealth of Australia, Papua,<br>New Guinea, Norfolk Island ..... | Ordinary postage rates plus<br>3d. per ½ oz. Air Mail Fee |                |
| (All classes of articles except parcels)                              | 8d. per ½ oz.                                             | 4              |
| New Zealand .....                                                     | 2 0                                                       | 1 0            |
| United Kingdom, Europe, Africa ....                                   | 1 0                                                       | 6              |
| Malaya, Indonesia .....                                               |                                                           |                |
| Burma, Ceylon, Hong Kong, India,<br>Pakistan, Siam, Philippines ..... | 1 3                                                       | 8              |
| China, Japan, U.S.S.R. ....                                           | 2 0                                                       | 1 0            |
| Canada, U.S.A. ....                                                   | 2 0                                                       | 1 0            |
| Central America, West Indies .....                                    | 2 6                                                       | 1 3            |
| South America .....                                                   | 3 0                                                       | 1 6            |



Parcel Post beyond Australia, enquire at any Post Office regarding Rates of Postage and Customs Declarations.

**AEROGRAMS.**—A lightweight airletter service is available to most overseas countries. The special forms used are obtainable at Post Offices. Price 10d., inclusive of postage.

## MONEY ORDERS & POSTAL NOTES

The Money Order system provides a safe and convenient means of sending money anywhere in Australia or abroad. Commission charged on orders payable in Australia is 1/- for each £5 or fraction of £5, and 6d. each additional £5 or fraction of £5. For orders payable in United Kingdom and foreign countries, the rate of commission is 6d. for each £1 or portion of £1 up to £6, and 4d. for each additional £1, with a minimum of 1/-. For orders payable in New Zealand and New Guinea the rate of commission is 4d. for each £1 or fraction of £1, with a minimum of 1/-. A limit of £8 sterling, £10 Australian, per week is imposed on money orders issued on sterling countries, and £5 Australian per month on money orders issued on non-sterling countries. Postal Notes in denominations from 1/- to 20/- (poundage from 2d. to 6d.) are available for remitting small amounts within Australia, Papua-New Guinea, and Norfolk Island.

## TELEGRAPH SERVICE

### RATES WITHIN THE COMMONWEALTH

**Ordinary Rate Telegrams.**—Not exceeding 12 words (including address and signature):

|                                                      |       |
|------------------------------------------------------|-------|
| Within a 15-mile radius of the office of origin .... | 2/3d. |
| Beyond a 15-mile radius .....                        | 2/6d. |
| Additional word in each case .....                   | 2d.   |

**Urgent Rate Telegrams.**—Urgent rate telegrams are charged at double the ordinary rate, and are treated with the utmost expedition at all stages.

**Lettergrams.**—24 words or portion thereof ..... 2/-d.  
Each additional word ..... 1d.

## Rates to and from Countries Overseas

BRITISH EMPIRE DESTINATIONS, excepting as indicated below:

### Rates Per Word:

|                                                     |        |
|-----------------------------------------------------|--------|
| Ordinary (minimum 5 words) .....                    | 1/8d.  |
| Letter Telegrams (minimum 22 words) .....           | 18/4d. |
| Each additional word .....                          | 10d.   |
| Social and Greeting Telegrams (minimum 11 words) .. | 8/4d.  |
| Each additional word ..                             | 10d.   |

**Social Letter Telegrams** are accepted for transmission between places in the Commonwealth and Empire points overseas, with certain minor exceptions. Charges are 8/4 for a minimum of 10 words and 10d. each additional word.

Note.—The service indication "GLT" must appear before the address, but is not charged for.

**TELEGRAMS TO AND FROM THE PACIFIC ISLANDS, ETC.**—Telegrams may be exchanged between Australia and Islands in the Pacific Ocean such as Fiji, Caroline Island, Cook Islands, Friendly Islands, Gilbert and Ellice Islands, Lord Howe Island, New Caledonia, New Hebrides, Samoa, Society Islands, Solomon Islands, Union Island, Willis Island, New Guinea, Papua, and many other islands adjacent to those mentioned.

**RADIO-TELEGRAMS.**—Radio-telegrams to ships at sea may be lodged at any Telegraph Office, or telephone subscribers may utilise the phonogram facility to lodge these messages. The rates vary from 9d. to 1/4 per word.

**CODE ADDRESSES.**—A code address for telegrams may be registered. For Commonwealth telegrams the charge is £3/3/- per annum; for international telegrams only, £1/1/- yearly; and for both Commonwealth and international telegrams, £3/3/-. Particulars of a code address and relative full address may be published in the Post Office Guide on payment of a fee of 5/- per annum.

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## FIRST AID TO THE INJURED

The following notes of First Aid have been contributed by The St. John Ambulance Association, of St. John House, 21 Macquarie Place, Sydney, the recognised teachers of First Aid, and have been taken from the St. John Manual, "First Aid to the Injured."

In all cases of illness or accident first send for a doctor or ambulance, notifying them clearly of the case to be treated and location of the accident.

**FIRST AID KIT.**—It is recommended that every home be equipped with an adequate First Aid Kit, the suggested contents for which are:—

Dressings: Bandages 1" and 2", broad bandage, cotton wool, lint, sling, gauze. Suggest cutting lint and gauze into 2" x 2" strips, placing each in a clean rag (to be sewn up) and sterilise by baking in the oven one hour.

Iodine (tincture).

Castor Oil.

Soda Bicarb.

Condy's Crystals.

Sal volatile.

**SHOCK.**—All cases of accident or sudden illness result in a condition known as Shock, which must be treated primarily.

**TREATMENT OF SHOCK.**—Lay patient on his back, loosen clothing about the neck, chest, and waist, and ensure a free circulation of air. Keep patient warm by covering with coats and blankets, but do not overheat the patient. When able to swallow give strong tea or coffee with plenty of sugar, or milk as hot as can be drank.

## Haemorrhage (Bleeding)—General Rules for Treatment

Place patient in suitable position. Elevate bleeding part except in the case of broken limb. Expose wound, removing only whatever clothing is necessary. Remove any visible and easily removed foreign bodies. All others are left severely alone. When bleeding has stopped keep the patient warm. Give plenty of fluids, especially warm tea or water with sugar if available.

**SCALP.**—Apply small firm pad on the wound, securing it by a narrow bandage.

**NECK.**—Apply thumb of one hand on the artery, pressing backwards against the spine, taking care to avoid windpipe.

**FACE.**—Below the level of the eye. Apply direct pressure on the wound from the outside of the cheek against the jawbone.

**ARMPIT.**—Place hard pad (size of billiard ball) in the armpit. Apply centre of narrow bandage on the pad, cross the bandage on shoulder, pull the ends tight, and tie under the opposite armpit.

**UPPER ARM.**—Apply pressure with fingers on the artery by grasping the arm at its centre from behind and compress the artery against the bone.

**FOREARM.**—Pressure may be applied by the thumb placed on either of the pulsating arteries (according to the side of the arm the wound occurs).

**PALM OF HAND.**—When foreign body or broken bone is not present, apply dressing and firm pad, making the patient grasp it. Bandage hand.

**FINGERS.**—Apply small pad on wound and secure firmly with bandage.

**THIGH.**—Place thumbs one on the other on the pulsating artery at the centre of the groin, grasping the thigh with hands. When wound occurs in upper region of artery keep the pressure up until the arrival of doctor. Each fresh assistant places his thumbs over those of his predecessor, who slips his away, and thus gushes of blood are prevented during the change.

**LEG.**—Front or back: Apply pressure by fingers or pad if bleeding at the ankle and bandage on pulsating arteries on front (below knee) and back (halfway down leg) of leg if haemorrhage occurs there.

**SOLE OF FOOT.**—Apply dressing and firm pad over the bleeding point, and maintain firm pressure by bandaging. Support foot in an elevated position.

**ANTISEPTICS.**—In wounds and on the skin, no antiseptics which burn or irritate should be used. When prepared antiseptics are not available, normal saline solution (one teaspoonful of common salt to one pint of sterile water) should be used.

If sterilised dressings are not available, sterilise the fingers, cut piece of clean gauze, lint, or boracic lint to required size and apply to wound. Dressing should be covered with cotton wool and kept in place with bandage.

**COLD COMPRESS.**—Used to ease pain, lessen swelling, control internal bleeding. A clean handkerchief or piece of lint is soaked in cold water and applied to affected part. Change frequently.



**HOT COMPRESS.**—Used to ease pain. Piece of flannel or lint soaked in very hot water and wrung dry and shaken to expel steam and applied to affected part.

## Fractures (Broken Bones)—Signs and Symptoms

Pain at or near seat of fracture; loss of power in the limb; swelling about the seat of fracture; deformity of limb; unnatural mobility.

**TREATMENT.**—Attend to fracture on spot. No attempt must be made to move patient until limb has been rendered immovable as practicable by splints or other means of restraint. Steady and support injured limb, placing it in as natural position as possible. Apply splints and bandages.

**SPLINTS.**—These may be improvised from walking sticks, umbrellas, broom handles, rifles, folded coats, pieces of wood, or other similar objects. When splints are not available, tie fractured limb to the body, and in all cases a fractured lower limb should be bandaged to its fellow.

**FRACTURED SKULL.**—Apply ice or cold water to head continuously, keeping patient absolutely quiet in a darkened room. Promote warmth to lower part of the body by applying hot water bottles to the sides of the abdomen and lower limbs.

**LOWER JAW.**—Place palm of hand below injured bone and press it gently against the upper jaw, applying bandage under the chin, carrying both ends upward and tying above the head.

**COLLAR BONE.**—Place pad about 2" thick in armpit. Place arm in sling; secure injured limb firmly to the side by broad bandage passed round elbow and trunk.

**RIBS.**—Apply two broad bandages or strong towel folded about 8" wide firmly round the chest, securing with three or four safety pins on side opposite to the injury.

**FOREARM.**—Apply splints on the front and back of forearm from elbow to fingers, unless there is a wound at the site of injury. Bandage above fracture and around the wrist. Place arm in sling.

**UPPER ARM.**—Near shoulder: Apply broad bandage with upper border level with top of shoulder; pass it round the limb and body and tie on opposite side under armpit.

Middle of shaft: Apply splints from shoulder to elbow in front and back and outer side of arm. Secure splints by bandages above and below fracture.

**HAND.**—Apply carefully padded splint to front of hand and secure by bandage.

**THIGH.**—Apply bandage around ankles and feet; place splint along injured side from armpit to beyond the foot; secure with bandages.

**LEG.**—Apply splints on outer and inner side of leg and secure by bandages. When no splints are available, tie feet, ankles, knees, and thighs together.

**CRUSHED FOOT.**—Apply carefully padded splint to sole of foot from heel to toes and secure with bandages.

## General

**DISLOCATION OF JOINTS.**—Steady and support limb in most comfortable position. Apply cold compresses to relieve pain. Do not attempt to reduce dislocation.

**SPRAINS.**—Apply firm bandage; wet the bandage with cold water and keep it wet.

**STRAINS.**—Support the injured part and apply hot compresses.

**RUPTURE (HERNIA).**—Lay patient down, raise and support head and shoulders; bend the knees and place pillow under them. Apply ice or cold compress to affected part. Make no attempt to reduce swelling.

**BURNS AND SCALDS.**—Do not remove clothes and do not break away any blisters. Saturate area with warm alkaline solution (1 dessertspoonful baking soda to 1 pint warm water) or warm saline solution (1 teaspoonful common salt to 1 pint warm water). Cover area with lint, gauze or linen soaked in similar solution. Bandage firmly in position. Give large quantities of warm, weak, sweet tea.

**FOREIGN BODY IN EYEBALL.**—Do not attempt to remove. Drop medicinal paraffin or castor oil on eyeball after pulling down lower lid. Close the lids, apply soft pad of cotton wool and secure by bandage.

**QUICKLIME OR OTHER CORROSIVE ALKALI IN EYE.**—Bathe the eye with solution of vinegar and cold water (1 part in 4) and treat as for the foreign body. If vinegar is not available, wash freely with cold water.

**CORROSIVE ACID IN THE EYE.**—Bathe the eye with solution of baking soda (1 dessertspoonful in pint of cold water) and treat as for foreign body.

**FOREIGN BODY IN EAR CHANNEL.**—Fill ear with olive oil, when insect will float and may be removed. Do not probe or syringe the ear.

**FOREIGN BODY IN NOSE.**—Instruct patient to breathe through the mouth. Seek medical aid at once.

**SUNSTROKE.**—Sponge body with cold water continuously. Apply ice bags to head and spine; fan vigorously. Give Epsom or Glauber Salts (1 tablespoon to tumbler of water). Place patient in cool spot.

**APOPLEXY (STROKE).**—Apply ice or cold water to head continuously; apply hot water bottles to lower limbs and feet. If face flushed, raise head, loosen clothing.

**FAINTING.**—Sprinkle face with hot and cold water alternately; apply warmth to pit of stomach and over the heart. Loosen all clothing, give air.

**BITES.**—Snake Bite, Spider Bite.—Immediately arrest circulation in limb by means of constriction on limb between the wound and the heart on the upper arm or thigh (as the case may be). Release constriction after 20 minutes, immediately replacing it. Give hot drinks, such as strong coffee, tea, or milk. Encourage bleeding by scarifying puncture marks. If available, rub in Condy's crystals.

## Poisons

**EMETIC.**—To make patient vomit:—

1. Mustard powder—a tablespoonful in a tumblerful ( $\frac{1}{2}$  pint) of lukewarm water, or
2. Salt—two tablespoonsful in a tumblerful ( $\frac{1}{2}$  pint) of lukewarm water.

**POISONS.**—Except when lips and mouth are burned, promptly give an EMETIC.

When lips and mouth are burned DO NOT give an emetic, but give the following antidotes:—

If an acid is known to be the poison, give one of the following alkalis:—Lime-water in large quantities or 1 tablespoonful of whitening, chalk, or magnesia in  $\frac{1}{2}$  pint of water, repeated frequently, or carb. soda.

If an alkali is known to be the poison, give one of the following acids:—Vinegar or lemon juice or lime juice, each diluted with an equal quantity of water, by the tumblerful.

If these antidotes are not readily available, or if it is not known whether the corrosive poison is an acid or alkali, give copious draughts of cold water or milk.

**CARBOLIC ACID (PHENOL) AND LYSOL POISONS.**—Give  $\frac{1}{2}$  pint of medicinal paraffin or Epsom or Glauber Salts, 1 tablespoonful in tumbler of milk or water.

**IODINE POISON.**—Before the emetic give starch and water freely or thin cornflour or arrowroot.

**PHOSPHORUS.**—Give Epsom or Glauber Salts, 1 tablespoonful in a tumblerful of water. Oil or fat in any form must not be given.

**ALCOHOL.**—Promote warmth of the body, ensure rest and shelter; adopt general rules which apply; give strong coffee.



**STRYCHNINE** (Contained in many vermin killers).—Between the convulsions give an emetic and perform artificial respiration. Adopt the general rules which apply.

**PRUSSIC ACID AND CYANIDE OF POTASSIUM.**—Not a moment should be lost in carrying out treatment. Apply artificial respiration even if breathing has not ceased. If patient can swallow, give freely brandy, whisky, or sal volatile diluted with an equal quantity of water. Dash cold water on head and spine continuously. Adopt the general rules which apply.

## Artificial Respiration for Mild Asphyxiation Electric Shock, Drowning, etc.

**SCHAFER'S METHOD.**—At once place the patient face downwards with arms extended above the head and head turned to one side so as to keep the nose and mouth away from the ground. Do not waste time loosening clothing; no pad is to be placed under the patient, nor need the tongue be drawn out. Kneel at one side of the patient, facing his head and sitting on your heels. Place your hands on the small of the patient's back, their lower edges just clearing the top of the pelvis, the wrists nearly touching, the thumbs as near each other as possible without strain, and the fingers passing over the loins on either side and pointing towards the ground. Bending your body from the knees and somewhat straightening the hip joints, swing slowly forward, keeping your arms quite straight and rigid. Swing your body slowly backwards to its first position. Alternate these movements by a rhythmic swaying forwards and backwards of your body from the knee joints, twelve times a minute. Rhythm is—pressure two seconds and relaxation three seconds. When natural breathing begins, regulate the movements of artificial respiration to correspond with it, and promote circulation by rubbing the limbs vigorously towards the heart and applying warmth. Artificial respiration must be continued perseveringly until respiration is restored or until a doctor pronounces life to be extinct.

The above are brief notes only on First Aid. It is strongly recommended that classes in First Aid and Home Nursing be attended so as to give members of a household a thorough knowledge of how to render First Aid in case of accident and the care of sick persons in the home. Branches of the St. John Ambulance Association are in existence at Ambulance Stations in all country towns. Enquiries are welcomed by the Head Office of the Association, 21 Macquarie Place, Sydney.

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