# CONVERSION FACTORS.

| TO CONVERT. | INTO. | MULTIPLY BY. |
|---|---|---|
| ATMOSPHERES | LBS PER SQUARE INCH. | 14·696 |
| CENTIGRADE (DEGREES) | FAHRENHEIT (DEGREES) | (°C x 9/5) + 32 |
| CENTIMETRES | INCHES. | ·393701 |
| " PER SEC. | FEET PER SEC. | ·0328084 |
| " " " | " " MIN. | 1·968 |
| CUBIC CENTIMETRE | CUBIC FOOT. | ·0000353 |
| " " | " INCH. | ·06102338 |
| " " | LITRES. | ·001 |
| " " | PINTS. | ·001760 |
| " FOOT | CUBIC CENTIMETRE. | 28317·017 |
| " " | PINTS. | 49·83 |
| " " | GALLONS. | 6·229 |
| " " | LITRES. | 28·31625 |
| " INCH | CUBIC CENTIMETRE. | 16·3871624 |
| " " | PINTS. | ·0288 |
| " " | GALLONS. | ·003604 |
| " " | LITRES. | ·0163876 |
| CWTS. | KILOGRAMS. | 50·803 |
| DEGREES (ARC) | RADIANS. | ·017453292 |
| FAHRENHEIT (DEGREES) | CENTIGRADE (DEGREES) | (°F - 32) x 5/9 |
| FATHOMS | FEET. | 6·00 |
| " | METRES. | 1·8288 |
| FEET | FATHOMS. | ·166667 |
| " | METRES. | ·3048006 |
| " | KILOMETRES. | ·0003048 |
| " PER MIN. | MILES PER HOUR. | ·0113636 |
| " " " | CENTIMETRES PER SEC. | ·508001 |
| " " " | METRES PER SEC. | ·00508001 |
| " " " | KILOMETRES PER HOUR. | ·018288 |
| " " SEC. | MILES PER HOUR | ·681818 |
| " " " | CENTIMETRES PER SEC. | 30·48006 |
| " " " | METRES PER SEC. | ·3048006 |
| " " " | " " MIN. | 18·28 |
| " " " | KILOMETRES PER HOUR. | 1·09728220 |
| " " " | KNOTS. | ·5920858 |
| FOOT - POUND | KILOGRAM - METRES. | ·1384 |
| " " PER SEC. | HORSE POWER | ·001818 |

| TO CONVERT. | INTO. | MULTIPLY BY. |
|---|---|---|
| GALLONS (IMPERIAL) | CUBIC INCH | 277·420 |
| " " | " FOOT | ·160544 |
| " " | LITRES. | 4·54596 |
| " " | U.S.A. GALLONS. | 1·205 |
| " PER MILE. | LITRES PER KILOMETRE. | 2·8217 |
| " U.S.A. | GALLONS - IMPERIAL. | ·832670 |
| GRAMMES. | POUNDS. | ·0022046 |
| HORSE POWER | FOOT POUNDS PER SEC. | 550·0 |
| " " | " " " MIN. | 33000·0 |
| " " | FORCE DE CHEVAL (C.V.) | 1·013872 |
| " " | KILOWATTS. | ·7457 |
| INCHES | MILLIMETRES. | 25·399978 |
| " | CENTIMETRES. | 2·5399978 |
| " | FEET. | ·083333 |
| " | YARDS. | ·0277778 |
| KILOGRAMS. | POUNDS. | 2·20462234 |
| " | CWT. | ·019684 |
| " | TONS. | ·000984 |
| KILOGRAM / METRE. | FOOT / POUNDS. | 7·2329983 |
| " PER METRE. | POUNDS PER FOOT. | ·6719702 |
| " " SQ METRE. | " " SQ FOOT. | ·00142234 |
| " " " " | TONS PER SQ. INCH. | ·6349 |
| " " CUBIC " | " " CUBIC FOOT. | ·06242833 |
| KILOMETRES | FEET. | 3280·833 |
| " | MILES. | ·6213700 |
| " PER HOUR. | FEET PER SEC. | ·9113426 |
| " " " | " " MIN. | 54·68 |
| " " " | MILES PER HOUR. | ·62137 |
| " " " | METRES PER SEC. | ·2777 |
| " " " | KNOTS. | ·539593 |
| KNOTS | FEET PER SEC. | 1·688944 |
| " | MILES PER HOUR. | 1·151553 |
| " | KILOMETRES PER HOUR. | 1·853249 |
| " | METRES PER SEC. | ·514791 |
| KILOWATTS. | HORSE POWER. | 1·341 |
| LBS. | GRAMMES | 453·59243 |
| " | KILOGRAMS. | ·45359243 |
| " PER SQ. INCH. | ATMOSPHERES. | ·0680457 |
| | KILOGRAMS PER SQ. METRE | 703·0696 |

| TO CONVERT. | INTO | MULTIPLY BY |
|---|---|---|
| LBS PER CUBIC FOOT. | KILOGRAMS PER CUBIC METRE. | 16·018369 |
| LITRES | CUBIC INCH | 61·02503 |
| " | " FOOT | ·0353156 |
| " | " CENTIMETRE | 1000·00 |
| " | PINTS. | 1·764 |
| " | GALLONS (IMPERIAL) | ·219975 |
| " PER KILOMETRE | GALLONS PER MILE. | ·3544 |
| METRES | FEET. | 3·28084 |
| " | MILES. | ·00062137 |
| " | FATHOMS | ·546681 |
| " PER SEC. | FEET PER SEC. | 3·28084 |
| " " " | " " MIN. | 196·8 |
| " " " | MILES PER HOUR | 2·2369317 |
| " " " | KNOTS | 1·9433 |
| " " " | KILOMETRES PER HOUR. | 3·600 |
| " " MIN | FEET PER SEC. | ·0547 |
| MILES | KILOMETRES. | 1·609344 |
| " | METRES. | 1609·344 |
| " | NAUTICAL MILES. | ·8684 |
| " PER HOUR | FEET PER SEC. | 1·46667 |
| " " " | " " MIN. | 88·000 |
| " " " | KNOTS. | ·8683925 |
| " " " | METRES PER SEC. | ·4470409 |
| " " " | KILOMETRES PER HOUR. | 1·609347 |
| MILLIMETRES | INCHES | ·03937 |
| NAUTICAL MILES | MILES. | 1·15152 |
| PINTS | CUBIC INCH. | 34·67 |
| " | " FOOT. | ·020068 |
| " | LITRES | ·56825 |
| " | CUBIC CENTIMETRES. | 568·18 |
| RADIANS | DEGREES | 57·29578 |
| " PER SEC. | REVS. PER MIN. | 9·5493 |
| REVS. PER MIN. | RADIANS PER SEC. | ·10472 |
| SQ. CENTIMETRES. | SQ. INCHES. | ·1549997 |
| " " | " FEET. | ·00107639 |
| " FEET | " CENTIMETRES. | 929·03412 |
| " " | " METRES. | ·0929034 |
| " " | " INCHES. | 144·00 |

# CONVERSION FACTORS CONTd.

| TO CONVERT | INTO | MULTIPLY BY |
|---|---|---|
| SQ. INCHES | SQ. MILLIMETRES. | 645·162581. |
| " " | " CENTIMETRES. | 6·45162581. |
| " " | " FEET. | ·00694 |
| " " | " METRES. | ·000645 |
| " " | " YARDS. | ·000771 |
| " KILOMETRE. | " MILES. | ·3862 |
| " METRE. | " INCHES. | 1550·00 |
| " " | " FEET. | 10·763867 |
| " " | " YARDS. | 1·1959853 |
| " MILES. | " KILOMETRES. | 2·589 |
| " MILLIMETRES. | " INCHES. | ·00115 |
| " YARDS. | " METRES. | ·8361307 |
| " " | " INCHES. | 1296·00 |
| " " | " FEET. | 9·00 |
| TONS | KILOGRAMS. | 1016·06 |
| " PER SQ. INCH. | KILOGRAMS PER SQ METRE. | 1·575 |
| YARDS. | CENTIMETRES. | 91·44018 |
| " | METRES. | ·9144018 |

# CONVERSION FACTORS, Cont'.

## LENGTH

| | INCHES | FEET | YARDS | C.M. | METRES |
|---|---|---|---|---|---|
| 1 INS. | | ·083 | ·0277 | 2·540 | ·0254 |
| 1 FT. | 12·0 | | ·333 | 30·48 | ·3048 |
| 1 YD. | 36·0 | 3·0 | | 91·44 | ·9144 |
| 1 C.M. | ·3937 | ·03281 | ·01094 | | ·01 |
| 1 M. | 39·37 | 3·281 | 1·094 | 100 | |

## AREA

| | SQ. INS. | SQ. FEET | SQ. YDS. | SQ. C.M. | SQ. M. |
|---|---|---|---|---|---|
| 1 SQ. IN. | | ·006944 | ·0007716 | 6·452 | ·0006452 |
| 1 SQ. FT. | 144 | | ·111 | 929·0 | ·09290 |
| 1 SQ. YD. | 1296 | 9 | | 8361· | ·8361 |
| 1 SQ. C.M. | ·1550 | ·001076 | ·0001196 | | ·0001 |
| 1 SQ. M. | 1550 | 10·76 | 1·196 | 10·000 | |

## VELOCITY

| | FEET / SEC | FT. / MIN | M.P.H. | KNOTS | CMS / SEC | METRES / SEC | KM / HR. |
|---|---|---|---|---|---|---|---|
| 1 FT / SEC | | 60 | ·68182 | ·592105 | 30·4801 | ·304801 | 1·0973 |
| 1 FT / MIN | ·016667 | | ·011364 | ·0098684 | ·50800 | ·00508 | ·018288 |
| 1 MILE / HOUR | 1·4667 | 88 | | ·86842 | 44·704 | ·44704 | 1·60935 |
| 1 KNOT | 1·6889 | 101·33 | 1·1515 | | 51·478 | ·51478 | 1·8532 |
| 1 CM. / SEC | ·0328084 | 1·9685 | ·022369 | ·019426 | | ·01 | ·036 |
| 1 M. / SEC. | 3·2808 | 196·85 | 2·2369 | 1·9426 | 100 | | 3·60 |
| 1 KM / HOUR | ·91134 | 54·68 | ·62137 | ·53961 | 27·778 | 27·778 | |

## WEIGHT AND VOLUME OF WATER

| | LBS | TONS | GRM OR CC. OF WAT | C.U. INCHES | CU. FT. | LITRES (C DECIMET) | GALLS |
|---|---|---|---|---|---|---|---|
| 1 LB | | $10^{-4}\times4\cdot464$ | 453·6 | 27·68 | ·016017 | ·4536 | ·1 |
| 1 TON | 2240 | | 1016,047 | 62,000 | 35·88 | 1016 | 224 |
| 1 GRAM OR CU. CENT | ·002205 | $10^{-7}\times9\cdot842$ | | ·06102 | $10^{-5}\times3\cdot531$ | ·001 | ·00022 |
| 1 CU. IN. OF WATER | ·03613 | $10^{-5}\times1\cdot6128$ | 16·388 | | $10^{-4}\times5\cdot790$ | ·01639 | ·00361 |
| 1 CU. FT. OF WATER | 62·43 | ·02787 | 28317· | 1728 | | 28·32 | 6·243 |
| 1 LITRE OF WATER | 2·2046 | $10^{-4}\times9\cdot842$ | 1000 | 61·02 | ·03531 | | ·22046 |
| 1 GALLON OF WATER | 10 | ·004464 | 4546 | 276·8 | ·16017 | 4·536 | |

## FORCE

| | DYNES | POUNDAL | GMS. WT. | KGMS. WT. | LBS. WT. | TONS |
|---|---|---|---|---|---|---|
| 1 DYNE | | $10^{-5}\times7\cdot233$ | ·0010194 | $10^{-6}\times1\cdot0194$ | $10^{-6}\times2\cdot247$ | $10^{-9}\times1\cdot0033$ |
| 1 POUNDAL | 13825 | | 14·093 | ·014093 | ·03107 | $10^{-5}\times1\cdot387$ |
| 1 GM. WT. | 981 | ·07096 | | ·001 | ·0022046 | $10^{-7}\times9\cdot842$ |
| 1 KGM. WT. | 981000 | 70·96 | 1000 | | 2·2046 | $10^{-4}\times9\cdot842$ |
| 1 LB. WT. | 445000 | 32·185 | 453·6 | ·4536 | | $10^{-4}\times4\cdot464$ |
| 1 TON | $10^{8}\times9967$ | 72090 | 1016000 | 1016 | 2240 | |

## AREAS AND TIME

| | SECONDS | MINUTES | DEGREES OR HOURS | RADIANS | RIGHT ANGLES |
|---|---|---|---|---|---|
| 1 SEC | | ·016667 | $10^{-4}\times2\cdot7778$ | $10^{-6}\times4\cdot848$ | $10^{-6}\times3\cdot0864$ |
| 1 MIN | 60 | | ·016667 | $10^{-4}\times2\cdot9089$ | $10^{-4}\times1\cdot851$ |
| 1 DEG OR HR. | 3600 | 60 | | ·017453 | ·01 |
| 1 RADIAN | 20626 | 3437·7 | 57·296 | | ·63662 |
| 1 RT. ANGLE | 324000 | 5400 | 90 | 1·5708 | |

## ENERGY AND MOMENTS

(NOTE- B.T.U. BRITISH THERMAL UNIT- 1 BOARD OF TRADE UNIT (ELECT) = $3\cdot6\times10^{6}$ JOULES OR WATT SECS = 1 KILOWATT H.R.)

| | 1 FEET x LBS WT | INCHES x LBS W.T. | INCHES x TONS W.T. | FEET x TONS W.T. | CMS x GMS. W.T. | METRES x KGMS WT. | FOOT POUNDALS | CMS x DYNES OR ERGS | JOULES | CALORIES OR 01 CMS WATER FROM 0° C | B.T.U. / 100 LB. WATER FROM 32° F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 FT x LB. WT | | 12 | ·005357 | $10^{-4}\times4\cdot4643$ | 13825 | ·13825 | 32·185 (THIS WAS VALUE OF g) | $10^{7}\times1\cdot3563$ | 1·3563 | 32416 | ·0012863 |
| 1 INCH x LB. WT. | ·083 | | $10^{-4}\times4\cdot4643$ | $10^{-5}\times3\cdot720$ | 1152·1 | ·011521 | 2·6821 | $10^{6}\times1\cdot13025$ | ·11302 | ·027013 | $10^{-4}\times1\cdot072$ |
| 1 INCH x TON WT. | 1866 | 2240 | | ·083 | $10^{4}\times2\cdot58075$ | 25·808 | 6007·8 | $10^{9}\times2\cdot5317$ | 253·17 | 60·51 | ·24012 |
| 1 FT. x TON WT. | 2240 | 26880 | 12 | | $10^{7}\times3\cdot0969$ | 309·69 | 72094 | $10^{10}\times3\cdot038$ | 3038 | 726·1 | 2·8814 |
| 1 GM. x GM. WT. | $10^{-5}\times7\cdot233$ | $10^{-4}\times8\cdot6796$ | $10^{-7}\times3\cdot875$ | $10^{-8}\times3\cdot229$ | ·00001 | ·002328 | 981 | $10^{-5}\times9\cdot81$ | $10^{-5}\times2\cdot3446$ | $10^{-8}\times9\cdot304$ |
| 1 METRE x KG. WT. | 7·233 | 86·796 | ·038749 | ·003229 | $10^{5}$ | 232·8 | $10^{5}\times981$ | 9·81 | 2·3446 | ·009304 | |
| 1 FT. POUNDAL | ·03107 | ·37285 | $10^{-4}\times1\cdot6645$ | $10^{-5}\times1\cdot3971$ | 429·57 | ·0042957 | 421400 | ·04214 | ·0100717 | $10^{-5}\times3\cdot9967$ | |
| 1 GM. DYNE OR ERG. | $10^{-8}\times7\cdot373$ | $10^{-7}\times8\cdot848$ | $10^{-10}\times3\cdot950$ | $10^{-11}\times3\cdot2916$ | ·0010194 | $10^{-8}\times1\cdot0194$ | $10^{-6}\times2\cdot373$ | $10^{-7}$ | $10^{-8}\times2\cdot3901$ | $10^{-11}\times9\cdot484$ | |
| 1 JOULE | ·7373 | 8·8477 | $10^{-8}\times3\cdot950$ | $10^{-4}\times3\cdot2916$ | 10194· | ·10194 | 23·73 | $10^{7}$ | ·23901 | $10^{-4}\times9\cdot484$ | |
| 1 CALORIE | 3·0849 | 37·02 | ·016526 | $10^{-3}\times1\cdot3772$ | 42650· | ·4265 | 99·29 | $10^{7}\times4\cdot184$ | 4·184 | ·003968 | |
| 1 B.T.U. | 777·4 | 9329 | 4·1645 | ·34704 | $10^{7}\times1\cdot0748$ | 107·48 | 25020 | $10^{10}\times1\cdot0543$ | 1054·3 | 252 | |

## POWER

| | ERGS PER SEC | CM. GM. SECS | WATTS | FT. LBS SEC. | H.P. | FORCES DE CHEVAL | KILOWATTS |
|---|---|---|---|---|---|---|---|
| 1 ERG PER SEC | | ·0010194 | $10^{-7}$ | $10^{-3}\times7\cdot373$ | $10^{-10}\times1\cdot3406$ | $10^{-10}\times1\cdot3592$ | $10^{-10}$ |
| 1 CM GM / SEC | 981 | | $10^{5}\times9\cdot81$ | $10^{-7}\times7\cdot233$ | $10^{-7}\times1\cdot315$ | $10^{-7}\times1\cdot3333$ | $10^{-8}\times9\cdot81$ |
| 1 WATT | $10^{7}$ | 10194 | | ·7373 | ·0013406 | ·0013592 | ·001 |
| 1 FT. LB / SEC | $10^{7}\times1\cdot3563$ | 13825 | 1·3563 | | ·0018182 | ·0018434 | ·0013563 |
| 1 H.P. | $10^{9}\times4\cdot5595$ | $10^{6}\times7\cdot604$ | 745·95 | 550 | | 1·0139 | ·74595 |
| 1 FORCE DE CHEVAL | $10^{9}\times7\cdot3575$ | $10^{6}\times7\cdot5$ | 735·80 | 542·48 | ·9863 | | ·73575 |

## PRESSURE AND STRESS

| | LBS. SQ IN. | LBS. SQ FT. | TONS SQ IN. | KG. SQ. M. OR M.M. OF WATER | KG. SQ. CM. | DYNES SQ. C.M. | FEET OF WATER |
|---|---|---|---|---|---|---|---|
| 1 LB PER SQ. IN. | | 144 | $10^{-4}\times4\cdot4643$ | 703·06 | ·070306 | 68971·0 | 2·3067 |
| 1 LB PER SQ. FT. | $10^{-5}\times6\cdot9444$ | | $10^{6}\times3\cdot1002$ | 4·883 | $10^{-4}\times4\cdot883$ | 478·96 | ·01602 |
| 1 TON PER SQ. IN. | 2240 | 322560 | | $10^{6}\times1\cdot515$ | 157·5 | $10^{8}\times1\cdot5448$ | 5167·0 |
| 1 KG. SQ. M. OR 1 M.M. OF WATER | ·0014224 | ·20482 | $10^{-7}\times6\cdot350$ | | ·0001 | 98·10 | ·003281 |
| 1 KG. PER SQ. CM. | 14·224 | 2048·2 | ·00638 | 10,000 | | 981000 | 32·81 |
| 1 DYNE PER SQ. CM. | $10^{-5}\times1\cdot4498$ | ·0020876 | $10^{-9}\times6\cdot473$ | ·010193 | $10^{-6}\times1\cdot0193$ | | $10^{-5}\times3\cdot3445$ |

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# WEIGHTS.

## ROUND STEEL BARS.

## FRACTIONS.

### POUND PER INCH RUN.

| DIA INCHES | WEIGHT. | DIA INCHES | WEIGHT. | DIA INCHES | WEIGHT. | DIA INCHES | WEIGHT. |
|---|---|---|---|---|---|---|---|
| 1/8 | .0035 | 3 5/8 | 2.92 | 7 1/8 | 11.30 | 10 5/8 | 25.10 |
| 1/4 | .0139 | 3 3/4 | 3.13 | 7 1/4 | 11.70 | 10 3/4 | 25.70 |
| 3/8 | .0313 | 3 7/8 | 3.34 | 7 3/8 | 12.10 | 10 7/8 | 26.30 |
| 1/2 | .0556 | 4 | 3.56 | 7 1/2 | 12.50 | 11 | 26.90 |
| 5/8 | .0868 | 4 1/8 | 3.78 | 7 5/8 | 12.90 | 11 1/8 | 27.50 |
| 3/4 | .125 | 4 1/4 | 4.01 | 7 3/4 | 13.30 | 11 1/4 | 28.10 |
| 7/8 | .170 | 4 3/8 | 4.25 | 7 7/8 | 13.80 | 11 3/8 | 28.80 |
| 1 | .222 | 4 1/2 | 4.50 | 8 | 14.30 | 11 1/2 | 29.40 |
| 1 1/8 | .28 | 4 5/8 | 4.75 | 8 1/8 | 14.70 | 11 5/8 | 30.00 |
| 1 1/4 | .348 | 4 3/4 | 5.01 | 8 1/4 | 15.10 | 11 3/4 | 30.70 |
| 1 3/8 | .42 | 4 7/8 | 5.28 | 8 3/8 | 15.60 | 11 7/8 | 31.30 |
| 1 1/2 | .50 | 5 | 5.56 | 8 1/2 | 16.10 | 12 | 32.00 |
| 1 5/8 | .59 | 5 1/8 | 5.84 | 8 5/8 | 16.50 | 12 1/8 | 32.70 |
| 1 3/4 | .68 | 5 1/4 | 6.13 | 8 3/4 | 17.00 | 12 1/4 | 33.40 |
| 1 7/8 | .78 | 5 3/8 | 6.42 | 8 7/8 | 17.50 | 12 3/8 | 34.00 |
| 2 | .89 | 5 1/2 | 6.72 | 9 | 18.00 | 12 1/2 | 34.70 |
| 2 1/8 | 1.00 | 5 5/8 | 7.03 | 9 1/8 | 18.50 | 12 5/8 | 35.40 |
| 2 1/4 | 1.13 | 5 3/4 | 7.35 | 9 1/4 | 19.00 | 12 3/4 | 36.10 |
| 2 3/8 | 1.25 | 5 7/8 | 7.67 | 9 3/8 | 19.50 | 12 7/8 | 36.80 |
| 2 1/2 | 1.39 | 6 | 8.00 | 9 1/2 | 20.10 | 13 | 37.60 |
| 2 5/8 | 1.53 | 6 1/8 | 8.34 | 9 5/8 | 20.60 | 13 1/8 | 38.30 |
| 2 3/4 | 1.68 | 6 1/4 | 8.68 | 9 3/4 | 21.10 | 13 1/4 | 39.00 |
| 2 7/8 | 1.84 | 6 3/8 | 9.03 | 9 7/8 | 21.70 | 13 3/8 | 39.80 |
| 3 | 2.00 | 6 1/2 | 9.39 | 10 | 22.20 | 13 1/2 | 40.50 |
| 3 1/8 | 2.17 | 6 5/8 | 9.76 | 10 1/8 | 22.80 | 13 5/8 | 41.30 |
| 3 1/4 | 2.35 | 6 3/4 | 10.10 | 10 1/4 | 23.40 | 13 3/4 | 42.00 |
| 3 3/8 | 2.53 | 6 7/8 | 10.50 | 10 3/8 | 23.90 | 13 7/8 | 42.80 |
| 3 1/2 | 2.72 | 7 | 10.90 | 10 1/2 | 24.50 | 14 | 43.60 |

# WEIGHTS.

## ROUND STEEL BARS. SP. WT. 0·283 lbs/C.INCH.

## DECIMALS.

POUNDS PER INCH RUN

| DIA. INS. | ·00 | ·01 | ·02 | ·03 | ·04 | ·05 | ·06 | ·07 | ·08 | ·09 |
|---|---|---|---|---|---|---|---|---|---|---|
| ·0 | – | ·000022 | ·000088 | ·000199 | ·000355 | ·000555 | ·000800 | ·00109 | ·00142 | ·00180 |
| ·1 | ·00222 | ·00269 | ·00320 | ·00376 | ·00435 | ·00500 | ·00569 | ·00642 | ·00720 | ·00802 |
| ·2 | ·00888 | ·00980 | ·0108 | ·0118 | ·0128 | ·0139 | ·0150 | ·0162 | ·0174 | ·0187 |
| ·3 | ·0200 | ·0214 | ·0228 | ·0242 | ·0256 | ·0272 | ·0288 | ·0304 | ·0321 | ·0338 |
| ·4 | ·0356 | ·0374 | ·0392 | ·0410 | ·0430 | ·0450 | ·0470 | ·0491 | ·0512 | ·0533 |
| ·5 | ·0556 | ·0577 | ·0600 | ·0623 | ·0647 | ·0672 | ·0697 | ·0722 | ·0747 | ·0773 |
| ·6 | ·0799 | ·0826 | ·0853 | ·0881 | ·0909 | ·0938 | ·0968 | ·0998 | ·103 | ·106 |
| ·7 | ·109 | ·112 | ·115 | ·118 | ·122 | ·125 | ·128 | ·132 | ·135 | ·139 |
| ·8 | ·142 | ·146 | ·149 | ·153 | ·157 | ·160 | ·164 | ·168 | ·172 | ·176 |
| ·9 | ·180 | ·184 | ·188 | ·192 | ·196 | ·200 | ·204 | ·209 | ·214 | ·218 |
| 1·0 | ·222 | ·226 | ·231 | ·236 | ·240 | ·245 | ·250 | ·254 | ·259 | ·264 |
| 1·1 | ·269 | ·274 | ·279 | ·284 | ·289 | ·294 | ·299 | ·304 | ·309 | ·314 |
| 1·2 | ·320 | ·325 | ·330 | ·336 | ·342 | ·348 | ·353 | ·359 | ·364 | ·370 |
| 1·3 | ·376 | ·381 | ·387 | ·393 | ·399 | ·405 | ·411 | ·417 | ·423 | ·429 |
| 1·4 | ·435 | ·442 | ·448 | ·455 | ·461 | ·467 | ·473 | ·480 | ·486 | ·493 |
| 1·5 | ·500 | ·507 | ·514 | ·520 | ·527 | ·534 | ·541 | ·548 | ·555 | ·561 |
| 1·6 | ·568 | ·576 | ·583 | ·590 | ·598 | ·605 | ·612 | ·620 | ·627 | ·635 |
| 1·7 | ·642 | ·650 | ·658 | ·665 | ·673 | ·681 | ·689 | ·697 | ·704 | ·712 |
| 1·8 | ·720 | ·728 | ·736 | ·745 | ·753 | ·761 | ·769 | ·777 | ·786 | ·794 |
| 1·9 | ·802 | ·811 | ·819 | ·828 | ·836 | ·845 | ·853 | ·862 | ·871 | ·879 |
| 2·0 | ·888 | ·897 | ·906 | ·915 | ·924 | ·934 | ·943 | ·952 | ·961 | ·970 |
| 2·1 | ·979 | ·989 | ·998 | 1·008 | 1·017 | 1·027 | 1·037 | 1·046 | 1·055 | 1·065 |
| 2·2 | 1·075 | 1·085 | 1·095 | 1·105 | 1·115 | 1·125 | 1·135 | 1·145 | 1·155 | 1·165 |
| 2·3 | 1·175 | 1·186 | 1·196 | 1·207 | 1·217 | 1·228 | 1·238 | 1·249 | 1·259 | 1·270 |
| 2·4 | 1·280 | 1·291 | 1·302 | 1·313 | 1·324 | 1·335 | 1·345 | 1·356 | 1·367 | 1·378 |
| 2·5 | 1·389 | 1·400 | 1·412 | 1·423 | 1·434 | 1·446 | 1·457 | 1·468 | 1·479 | 1·491 |
| 2·6 | 1·502 | 1·514 | 1·526 | 1·537 | 1·549 | 1·561 | 1·573 | 1·585 | 1·596 | 1·608 |
| 2·7 | 1·620 | 1·632 | 1·644 | 1·657 | 1·669 | 1·681 | 1·693 | 1·705 | 1·718 | 1·730 |
| 2·8 | 1·742 | 1·755 | 1·768 | 1·780 | 1·793 | 1·806 | 1·819 | 1·832 | 1·844 | 1·856 |
| 2·9 | 1·869 | 1·883 | 1·896 | 1·909 | 1·922 | 1·935 | 1·948 | 1·961 | 1·974 | 1·987. |

# WEIGHTS.

## HEXAGON STEEL BARS.

## INCLUDING HEXAGON SIZES FOR BOLTS AND NUTS.

POUNDS PER INCH RUN.

| DIMENSION ACROSS FLATS IN INCHES. | | | | WEIGHT. |
|---|---|---|---|---|
| | UNIFIED THREAD SIZE. | DECIMAL EQUIVALENT | B.S.F AND WHIT. THREAD SIZE | |
| 1/4 | | ·25 | | ·016 |
| 5/16 | | ·3125 | | ·024 |
| 3/8 | | ·375 | | ·036 |
| | 7/16 | ·4375 | | ·047 |
| | | | ·448 | ·049 |
| | 1/2 | ·500 | | ·061 |
| | | | ·525 | ·0675 |
| | 9/16 | ·5625 | | ·077 |
| | | | ·600 | ·088 |
| 5/8 | | ·625 | | ·096 |
| | 11/16 | ·6875 | | ·117 |
| | | | ·710 | ·123 |
| | 3/4 | ·750 | | ·138 |
| 13/16 | | ·8125 | | ·159 |
| | | | ·820 | ·165 |
| | 7/8 | ·875 | | ·187 |
| | | | ·920 | ·208 |
| | 15/16 | ·9375 | | ·215 |
| 1 | | 1·000 | | ·245 |
| | | | 1·010 | ·250 |
| 1 1/16 | | 1·0625 | | ·277 |
| | 1 1/8 | 1·125 | | ·311 |
| 1 3/16 | | 1·1875 | | ·346 |
| 1 1/4 | | 1·250 | | ·383 |
| | | | 1·300 | ·414 |
| | 1 5/16 | 1·3125 | | ·422 |
| 1 3/8 | | 1·375 | | ·464 |
| 1 7/16 | | 1·4375 | | ·506 |
| | | | 1·480 | ·508 |
| | 1 1/2 | 1·500 | | ·552 |
| | | | 1·670 | ·683 |

## SHEET STEEL.

### WEIGHT IN lbs PER SQ IN AND SQ FT.

| THICKNESS | | | | WT. | WT. | THICKNESS. | | | | WT. | WT. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S.W.G. | FRACT.N | M/M | DEC/IN. | SQ. IN. | SQ. FT. | S.W.G. | FRACTN | M/M. | DEC/IN. | SQ. IN. | SQ. FT. |
| | 1/2 | | ·500 | ·1415 | 20·40 | | | 3 | ·1181 | ·0334 | 4·810 |
| | | 12. | ·472 | ·1339 | 19·29 | 11 | | | ·116 | ·0328 | 4·726 |
| | 7/16 | | ·4375 | ·1238 | 17·80 | 12 | | | ·104 | ·0294 | 4·238 |
| | | 11. | ·433 | ·1226 | 17·65 | | 3/32 | | ·0938 | ·0265 | 3·816 |
| | | 10. | ·394 | ·1112 | 16·03 | 13 | | | ·092 | ·0264 | 3·748 |
| | 3/8 | | ·375 | ·1061 | 15·30 | 14 | | | ·080 | ·0227 | 3·260 |
| | | 9. | ·354 | ·1000 | 14·48 | | | 2 | ·078 | ·0220 | 3·168 |
| 0 | | | ·324 | ·0917 | 13·204 | 15 | | | ·072 | ·0204 | 2·934 |
| | | 8 | ·315 | ·0891 | 12·83 | 16 | | | ·064 | ·0181 | 2·608 |
| | 5/16 | | ·3125 | ·0885 | 12·74 | | 1/16 | | ·0625 | ·0177 | 2·550 |
| 1 | | | ·300 | ·0849 | 12·22 | 17 | | | ·056 | ·0159 | 2·282 |
| | | 7 | ·275 | ·0779 | 11·21 | 18 | | | ·048 | ·0136 | 1·956 |
| 2 | | | ·276 | ·0781 | 11·25 | 19 | | | ·040 | ·0113 | 1·630 |
| 3 | | | ·252 | ·0713 | 10·27 | | | 1 | ·0394 | ·0111 | 1·600 |
| | 1/4 | | ·250 | ·0707 | 10·20 | 20 | | | ·036 | ·0102 | 1·467 |
| | | 6 | ·236 | ·0670 | 9·65 | 21 | | | ·032 | ·0091 | 1·304 |
| 4 | | | ·232 | ·0656 | 9·45 | | 1/32 | | ·03125 | ·0088 | 1·267 |
| 5 | | | ·212 | ·0600 | 8·64 | 22 | | | ·028 | ·0079 | 1·141 |
| | | 5 | ·197 | ·0556 | 8·01 | 23 | | | ·024 | ·0068 | ·978 |
| 6 | | | ·192 | ·0543 | 7·82 | 24 | | | ·022 | ·0062 | ·896 |
| | 3/16 | | ·1875 | ·0530 | 7·64 | 25 | | | ·020 | ·0057 | ·815 |
| 7 | | | ·176 | ·0498 | 7·17 | 26 | | | ·018 | ·0051 | ·733 |
| 8 | | | ·160 | ·0453 | 6·52 | 27 | | | ·0164 | ·0046 | ·668 |
| | | 4 | ·157 | ·0445 | 6·42 | 28 | | | ·0148 | ·0042 | ·603 |
| 9 | | | ·144 | ·0408 | 5·867 | 29 | | | ·0136 | ·0039 | ·554 |
| 10 | | | ·128 | ·0362 | 5·215 | 30 | | | ·0124 | ·0035 | ·505 |
| | 1/8 | | ·125 | ·0354 | 5·100 | | | | | | |

## BIRMABRIGHT SHEET.

| THICKNESS | | WEIGHT | WEIGHT |
|---|---|---|---|
| S.W.G. | DEC/IN. | SQ. IN. | SQ. FT. |
| 10 | ·128 | ·0124 | 1·788 |
| 12 | ·104 | ·0101 | 1·453 |
| 14 | ·080 | ·0077 | 1·117 |
| 16 | ·064 | ·0062 | ·894 |
| 18 | ·048 | ·0046 | ·670 |
| 20 | ·036 | ·0035 | ·503 |
| 22 | ·028 | ·0027 | ·391 |

## GLASS — TRIPLEX

| THICKNESS INS. | SPECIFIC GRAVITY | WEIGHT IN POUNDS. | |
|---|---|---|---|
| | | PER SQ. IN. | PER SQ. FT. |
| 1/8 | 2 · 15 | ·0097 | 1 · 40 |
| 5/32 | 2 · 15 | ·0121 | 1 · 75 |
| 1/4 | 2 · 38 | ·0215 | 3 · 10 |

## PETROL AND OIL.

| TYPE. | SPECIFIC GRAVITY | WEIGHT lbs / GALL. |
|---|---|---|
| COMMERCIAL PETROL. | ·73 | 7 · 3 |
| DIESEL FUEL OIL. | ·83 | 8 · 3 |
| ENGINE OIL. | ·88 | 8 · 8 |

## MATERIALS.

| MATERIAL. | SPECIFIC GRAVITY | Wt. IN lbs PER CU. IN. |
|---|---|---|
| ALUMINIUM | 2 · 70 | ·0975 |
| ALUMINIUM | 2 · 67 | ·0968 |
| ALUMINUM BRONZE. | 8 · 13 | ·293 |
| BIRMABRIGHT. | 2 · 69 | ·097 |
| BRASS. | 8 · 50 | ·307 |
| CAST IRON. | 7 · 20 | ·260 |
| COPPER. | 8 · 82 | ·318 |
| PHOSPHOR BRONZE | 8 · 85 | ·319 |
| RUBBER - HARD - AVGE | 1 · 66 | ·060 |
| " - SOFT - " | · 83 | ·030 |
| " SYNTHETIC " | 1 · 11 | ·040 |
| STEEL. | 7 · 85 | ·283 |
| WATER | 1 · 00 | ·036 |

## CONVERSION FACTORS.

| WEIGHT IN | MULTIPLY BY | TO GIVE WT. IN. |
|---|---|---|
| STEEL | ·3456 | ALUMINIUM |
| STEEL | 1 · 09 | BRASS |
| STEEL | ·3427 | BIRMABRIGHT. |

# HARDNESS CONVERSION TABLE WITH EQUIVALENT TENSILE STRENGTH.

| BRINELL HARDNESS NUMBER | BRINELL DIA. MM 10/3000KG | VICKERS HARDNESS NUMBER | ROCKWELL A SCALE 60 KG/BRALE | ROCKWELL B SCALE 100 KG/1/16" BALL | ROCKWELL C SCALE 150 KG/BRALE | TENSILE STRENGTH 100 P.S.I | TENSILE STRENGTH TONS/SQ. IN. | TENSILE STRENGTH KGS/SQ. MM |
|---|---|---|---|---|---|---|---|---|
| 601 | 2·50 | 717 | 80 | — | 59 | 2979 | 133 | 210 |
| 578 | 2·55 | 670 | 79 | — | 57 | 2845 | 127 | 200 |
| 555 | 2·60 | 633 | 78 | — | 56 | 2755 | 123 | 194 |
| 534 | 2·65 | 599 | 77 | — | 54 | 2666 | 119 | 187 |
| 514 | 2·70 | 570 | 77 | — | 52 | 2576 | 115 | 181 |
| 495 | 2·75 | 540 | 76 | — | 50 | 2464 | 110 | 173 |
| 477 | 2·80 | 520 | 75 | — | 49 | 2374 | 106 | 167 |
| 461 | 2·85 | 495 | 75 | — | 48 | 2285 | 102 | 161 |
| 444 | 2·90 | 476 | 74 | — | 47 | 2218 | 99 | 156 |
| 429 | 2·95 | 456 | 73 | — | 45 | 2128 | 95 | 150 |
| 415 | 3·00 | 440 | 73 | — | 44 | 2038 | 91 | 143 |
| 401 | 3·05 | 420 | 72 | — | 43 | 1971 | 88 | 139 |
| 388 | 3·10 | 408 | 72 | — | 42 | 1904 | 85 | 134 |
| 375 | 3·15 | 390 | 71 | — | 40 | 1837 | 82 | 129 |
| 363 | 3·20 | 380 | 70 | — | 39 | 1770 | 79 | 124 |
| 352 | 3·25 | 363 | 69 | — | 38 | 1725 | 77 | 121 |
| 341 | 3·30 | 358 | 69 | — | 36 | 1658 | 74 | 117 |
| 331 | 3·35 | 344 | 68 | — | 35 | 1613 | 72 | 113 |
| 321 | 3·40 | 332 | 68 | — | 34 | 1568 | 70 | 110 |
| 311 | 3·45 | 320 | 67 | — | 32 | 1523 | 68 | 107 |
| 302 | 3·50 | 305 | 66 | — | 31 | 1478 | 66 | 104 |
| 293 | 3·55 | 297 | 66 | — | 30 | 1434 | 64 | 101 |
| 285 | 3·60 | 288 | 65 | — | 29 | 1389 | 62 | 98 |
| 277 | 3·65 | 280 | 64 | — | 27 | 1344 | 60 | 95 |
| 269 | 3·70 | 270 | 64 | — | 26 | 1322 | 59 | 93 |
| 262 | 3·75 | 265 | 63 | — | 25 | 1277 | 57 | 90 |
| 255 | 3·80 | 258 | 63 | — | 24 | 1254 | 56 | 88 |
| 248 | 3·85 | 251 | 63 | — | 23 | 1232 | 55 | 87 |
| 241 | 3·90 | 244 | 62 | — | 22 | 1187 | 53 | 84 |
| 235 | 3·95 | 238 | 61 | 100 | 20 | 1165 | 52 | 82 |
| 229 | 4·00 | 232 | 61 | 99 | — | 1120 | 50 | 79 |
| 223 | 4·05 | 225 | 60 | 98 | — | 1098 | 49 | 77 |
| 217 | 4·10 | 220 | 60 | 97 | — | 1075 | 48 | 76 |
| 212 | 4·15 | 215 | 60 | 97 | — | 1030 | 46 | 72 |
| 207 | 4·20 | 210 | 59 | 95 | — | 1008 | 45 | 71 |
| 197 | 4·30 | 200 | 59 | 94 | — | 963 | 43 | 68 |

CONTINUED.

# HARDNESS CONVERSION TABLE WITH EQUIVALENT TENSILE STRENGTH.

| BRINELL HARDNESS NUMBER | BRINELL DIA MM. 10/3000 KG | VICKERS HARDNESS NUMBER | ROCKWELL | | | TENSILE STRENGTH | | |
|---|---|---|---|---|---|---|---|---|
| | | | A SCALE 60 KG / BRALE | B SCALE 100 KG / 1" 16 BALL | C SCALE 150 KG / BRALE | 100 P.S.I | TONS SQ. IN | KGS SQ. MM |
| 187 | 4·40 | 190 | 58 | 92 | — | 918 | 41 | 65 |
| 179 | 4·50 | 182 | 56 | 90 | — | 874 | 39 | 61 |
| 170 | 4·60 | 173 | 56 | 88 | — | 829 | 37 | 58 |
| 163 | 4·70 | 166 | 54 | 86 | — | 806 | 36 | 57 |
| 156 | 4·80 | 159 | 53 | 83 | — | 762 | 34 | 54 |
| 149 | 4·90 | 152 | 52 | 82 | — | 739 | 33 | 52 |
| 143 | 5·00 | 146 | 51 | 80 | — | 717 | 32 | 51 |
| 137 | 5·10 | 140 | 50 | 77 | — | 694 | 31 | 49 |
| 131 | 5·20 | 134 | 49 | 74 | — | 672 | 30 | 48 |
| 126 | 5·30 | 129 | 48 | 71 | — | 650 | 29 | 46 |
| 121 | 5·40 | 124 | 47 | 69 | — | 627 | 28 | 45 |

NOTE !

NO GENERAL THEORETICAL RELATIONSHIP CAN BE GIVEN BETWEEN THESE SCALES AND THE ABOVE TABLE IS A GENERAL APPROXIMATION ONLY.