

copper

The word "copper" is rendered in a bold, lowercase, sans-serif font. Each letter is filled with a different image related to copper: the 'c' shows a close-up of a copper pipe; the first 'o' shows a profile of a person's face; the 'p' shows a copper pipe in an industrial setting; the second 'p' shows a close-up of a copper pipe with a glowing orange-red light; the 'e' shows a close-up of a copper pipe; and the 'r' shows a close-up of a copper pipe. A white, hollow triangle is positioned to the left of the word, pointing towards the first 'o'.

Copper

Copper is the 3rd most widely used metal in the world! A highly versatile and efficient material that has numerous advantages, some of which are:

- ▶ Easy to form
- ▶ High corrosion resistance
- ▶ High mechanical strength
- ▶ High durability
- ▶ Antimicrobial activity
- ▶ Withstands high temperatures
- ▶ Reduced characteristic thermal expansion
- ▶ Dimensional stability
- ▶ Recyclable
- ▶ Low incrustation tendency

Its field of application extends to practically all industrial segments and its properties make it key in the production of the most varied products. Furthermore, it is an infinitely recyclable material and has antimicrobial properties capable of eliminating up to 99.9% of bacteria from its surface.



Copper

MAIN ALLOYS, SHAPES, CHARACTERISTICS AND APPLICATIONS

| Name | Alloy ASTM/UNS | Shape | Characteristics | Applications |
|--------------------------|-------------------|--|--|---|
| Copper Elox | C10200 | Strips | Excellent cold formability and good hot formability. Excellent weldability and brazing. | Electrical conductors, wave guides, and electronic applications. |
| Electrolytic Copper | C11000 | Coils, Sheets, Strips, Rectangular Bars, Rods, Pipes, Anodes | Excellent cold formability and good hot formability. Excellent weldability and good brazability. | Cables, conductors, engines, generators, transformers. Contacts, conductive wires, radio and television components, boilers, vessels, automotive joints, radiators, gutters, nails, rivets, anodes. |
| Phosphorous Copper (DLP) | C12000 | Coils, Sheet, Strips | Excellent cold and hot formability. Excellent weldability and brazing. | Engine joints, sealing washers, handicraft parts, building facades, solar heater panels, electric heaters, residential gutters and conductors, rivets. |
| Phosphorous Copper (DLP) | C12200 | Tubes, Anodes | Excellent cold formability and good hot formability. Excellent weldability and brazing. | Air conditioning and refrigeration appliances, pipes for conducting hot, cold and gas water, evaporators, heat exchangers, radiators. |
| Copper Chrome | C18400 | Barras | Good cold and hot formability. Good weldability and brazability. | Welding electrodes, torch tips and welding irons, in all those requiring mechanical characteristics superior to those of copper, while retaining high thermal and electrical conductivity. |
| Cupronickel 90/10 | C70600 | Rods | Good cold and hot formability. Excellent weldability and brazing. | Pipes and connections for condensers and heat exchangers, evaporators, pipes for salt water. |
| Cuproníquel 70/30 | C71500 | Tubos | Good cold and hot formability. Excellent weldability and brazing. | Condensers, distillery pipes, evaporator and heat exchanger pipes, salt water pipes. |

COPPER

CHEMICAL COMPOSITION OF COPPER

| Name | Alloys | Cu | Zn | Pb | P | Sn | Fe | Si | Ni | Mn | Others |
|-----------------------------|------------|-----------------|------|------|----------------|-----|-------------|------|----------|------|----------------|
| | ASTM / UNS | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) |
| Electrolytic Copper | C11000 | 99.9 (mín.) | | | | | | | | | |
| Phosphorous Copper (DLP) | C12000 | 99.9 (mín.) | | | 0,004 0,012 | | | | | | |
| Phosphorous Copper (DHP) | C12200 | 99.9 (mín.) | | | 0.015 0.040 | | | | | | |
| Copper Chrome | C18400 | 99.8 (mín.) | 0.7 | | 0.05 | | 0.15 | 0.10 | | | Cr=0,40 1.2 |
| Cuproníquel 90/10 | C70600 | remaining | 1.00 | 0.05 | | | 1.00 1.8 | | 9 11 | 1.00 | |
| Cuproníquel 70/30 | C71500 | remaining | 1.00 | 0.05 | | | 0.4 1.00 | | 29 33 | 1.00 | |
| Copper Elox | C10200 | 99.95 (mín.) | | | | | | | | | |

Notas:

1. The mentioned values represent maximum limits per chemical element, except when minimum and maximum ranges are indicated.
2. The indicated values do not imply a formal guarantee.

Copper

MECHANICAL PROPERTIES OF COPPER

| Name | Alloy ASTM/UNS | Shape | Tempering | Tensile Strength Limit (kgf/mm ²) | Yield Strength (kgf/mm ²) | Minimum Elongation "50.80 mm" (%) | Brinell Hardness (HB) |
|-----------------------------|-------------------|--|-----------|---|--|--|-----------------------------|
| Copper Elox | C10200 | Strips | Soft | 22 | 5 | 48 | 45 |
| | | | 1/2 Hard | 32 | 27 | 12 | 90 |
| Electrolytic Copper | C11000 | Coils, sheets, strips, rectangular bars | Soft | 22 | 5 | 48 | 45 |
| | | | 1/2 Hard | 32 | 27 | 12 | 90 |
| Electrolytic Copper | C11000 | Rods | 1/2 Hard | 28 | 19 | 20 | 75 |
| Electrolytic Copper | C11000 | Tubes | 1/2 Hard | 32 | 27 | 15 | 90 |
| Phosphorous Copper (DLP) | C12000 | Coils, sheets, strips | Soft | 22 | 5 | 48 | 45 |
| | | | 1/2 Hard | 32 | 27 | 12 | 90 |
| Phosphorous Copper (DHP) | C12200 | Tubes | Soft | 24 | 6 | 45 | 45 |
| | | | 1/2 Hard | 35 | 30 | 8 | 100 |
| | | | Hard | 38 | 35 | 6 | 105 |
| Copper Chrome | C18400 | Rod (drawn) | Hard | 52 | 52 | 15 | 137 |
| Cuproníquel 90/10 | C70600 | Tubes | Soft | 31 | 11 | 42 | 60 |
| Cuproníquel 70/30 | C71500 | Tubes | Soft | 42 | 18 | 45 | 74 |

Notes: The values indicated do not imply a formal guarantee.

Copper

PHYSICAL PROPERTIES OF COPPER

| Name | Alloys ASTM / UNS | Density at 20 °C p=specific weight (g/ cm ³) | Melting Point (°C) | Thermal conductivity at 20 °C (cal/cm/ sec °C) | Specific Heat at 20 °C (cal/g °C) | Electrical Resistivity at 20 °C (annealed material) (μΩ cm) | Electrical Conductivity at 20 °C (annealed material) (IACS %) | Coefficient of Thermal Expansion 20 to 300 °C (10 ⁻⁶ °C) | Modulus of Elasticity at 20 °C (kg/mm ²) | Modulus of Rigidity at 20 °C (kg/ mm ²) |
|-----------------------------|-------------------------|--|-----------------------|---|--|--|---|---|--|--|
| Copper Elox | C10200 | 8.90 | 1,083 | 0.94 | 0.092 | 1.710 | 101 | 17.7 | 12,000 | 4,500 |
| Electrolytic Copper | C11000 | 8.90 | 1,083 | 0.94 | 0.092 | 1.710 | 101 | 17.7 | 12,000 | 4,500 |
| Phosphorous Copper (DLP) | C12000 | 8.94 | 1,083 | 0.91 | 0.092 | 1.760 | 98 | 17.7 | 12,000 | 4,500 |
| Phosphorous Copper (DHP) | C12200 | 8.94 | 1,083 | 0.81 | 0.092 | 2.030 | 85 | 17.7 | 12,000 | 4,500 |
| Copper Chrome | C18400 | 8.89 | 1,080 | 0.75 | 0.092 | 2.100 | 82 | 18 | 16,000 | 5,900 |
| Cuproníquel 90/10 | C70600 | 8.94 | 1,150 | 0.11 | 0.090 | 19.100 | 9 | 17.1 | 12,700 | 4,800 |
| Cuproníquel 70/30 | C71500 | 8.94 | 1,240 | 0.07 | 0.090 | 37.500 | 5 | 16.2 | 15,500 | 5,800 |

Notes: The values indicated do not imply a formal guarantee

Copper




REBAR - WEIGHT PER LINEAR METER




| Inch | Millimeter | ● | ⬡ | ■ |
|--------|------------|-------|-------|-------|
| 3/32" | 2,38 | 0,040 | 0,044 | 0,050 |
| 1/8" | 3,17 | 0,070 | 0,077 | 0,089 |
| 5/32" | 3,97 | 0,110 | 0,121 | 0,140 |
| 3/16" | 4,76 | 0,158 | 0,175 | 0,202 |
| 7/32" | 5,56 | 0,216 | 0,238 | 0,275 |
| 1/4" | 6,35 | 0,282 | 0,311 | 0,359 |
| 9/32" | 7,14 | 0,356 | 0,393 | 0,454 |
| 5/16" | 7,94 | 0,441 | 0,486 | 0,561 |
| 3/8" | 9,53 | 0,635 | 0,700 | 0,808 |
| 7/16" | 11, 11 | 0,863 | 0,951 | 1,099 |
| 1/2" | 12,70 | 1,127 | 1,243 | 1,435 |
| 9/16" | 14,28 | 1,425 | 1,572 | 1,815 |
| 5/8" | 15,87 | 1,760 | 1,941 | 2,242 |
| 11/16" | 17,46 | 2,131 | 2,350 | 2,713 |
| 3/4" | 19,05 | 2,537 | 2,797 | 3,230 |
| 13/16" | 20,63 | 2,975 | 3,280 | 3,788 |
| 7/8" | 22,22 | 3,451 | 3,805 | 4,394 |

| Inch | Millimeter | ● | ⬡ | ■ |
|---------|------------|--------|--------|--------|
| 15/16" | 23,81 | 3,963 | 4,369 | 5,046 |
| 1" | 25,40 | 4,510 | 4,973 | 5,742 |
| 1.1/16" | 26,97 | 5,084 | 5,606 | 6,474 |
| 1.1 /8" | 28,57 | 5,706 | 6,291 | 7,265 |
| 1.3/16" | 30,16 | 6,358 | 7,011 | 8,096 |
| 1.1 /4" | 31,75 | 7,046 | 7,770 | 8,972 |
| 1.5/16" | 33,34 | 7,770 | 8,567 | 9,893 |
| 1.3/8" | 34,92 | 8,524 | 9,398 | 10,853 |
| 1.7/16" | 36,51 | 9,318 | 10,274 | 11,864 |
| 1.1/2" | 38,10 | 10,147 | 11,188 | 12,919 |
| 1.9/16" | 39,69 | 11,011 | 12,141 | 14,020 |
| 1.5/8" | 41,27 | 11,906 | 13,127 | 15,159 |

Copper

REBAR - WEIGHT PER LINEAR METER

| Inch | Millimeter |  |  |  |
|---------|------------|--|---|---|
| 1.3/4" | 44,45 | 13,811 | 15,228 | 17,585 |
| 1.7/8" | 47,62 | 15,851 | 17,478 | 20,182 |
| 2" | 50,80 | 18,039 | 19,890 | 22,968 |
| 2.1/16" | 52,39 | 19,186 | 21,155 | 24,428 |
| 2.1/8" | 53,97 | 20,360 | 22,450 | 25,924 |
| 2.3/16" | 55,56 | 21,578 | 23,792 | 27,474 |
| 2.1/4" | 57,15 | 22,830 | 25,173 | 29,068 |
| 2.5/16" | 58,73 | 24,110 | 26,584 | 30,698 |
| 2.3/8" | 60,33 | 25,442 | 28,053 | 32,393 |
| 2.7/16" | 61,91 | 26,792 | 29,541 | 34,112 |
| 2.1/2" | 63,50 | 28,186 | 31,078 | 35,887 |
| 2.5/8" | 66,67 | 31,070 | 34,259 | 39,560 |
| 2.3/4" | 69,85 | 34,105 | 37,605 | 43,423 |
| 2.7/8" | 73,03 | 37,281 | 41,106 | 47,467 |
| 3" | 76,20 | 40,587 | 44,753 | 51,677 |
| 3.1/8" | 79,37 | 44,035 | 48,554 | 56,066 |

| Inch | Millimeter |  |  |  |
|--------|------------|---|---|---|
| 3.3/8" | 85,73 | 51,374 | 56,647 | 65,412 |
| 3.1/2" | 88,90 | 55,244 | 60,913 | 70,339 |
| 3.5/8" | 92,07 | 59,254 | 65,335 | 75,444 |
| 3.3/4" | 95,25 | 63,418 | 69,926 | 80,746 |
| 3.7/8" | 98,42 | 67,709 | 74,658 | 86,210 |
| 4" | 101,60 | 72,155 | 79,560 | 91,871 |
| 4.1/2" | 114,30 | 91,322 | 100,693 | 116,274 |
| 5" | 127,00 | 112,743 | 124,313 | 143,548 |
| 6" | 152,40 | 162,349 | 179,010 | 206,709 |
| 7" | 177,80 | 220,976 | 243,653 | 281,354 |
| 8" | 203,20 | 288,621 | 318,240 | 367,483 |

Copper

RECTANGULAR BARS - WEIGHT PER LINEAR METER

| Inch/mm | | 1/16" 1,58mm | 3/32" 2,38mm | 1/8" 3,17mm | 3/16" 4,76mm | 1/4" 6,35mm | 5/16" 7,94mm | 3/8" 9,53mm | 1/2" 12,70mm | 5/8" 15,87mm | 3/4" 19,05mm | 1" 25,40mm |
|---------|-------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|---------------|
| 1/4" | 6,35 | 1,180 | 0,135 | 0,179 | 0,269 | --- | --- | --- | --- | --- | --- | --- |
| 5/16" | 7,94 | 0,112 | 0,168 | 0,224 | 0,336 | 0,449 | --- | --- | --- | --- | --- | --- |
| 3/8" | 9,53 | 0,134 | 0,202 | 0,269 | 0,404 | 0,539 | 0,673 | --- | --- | --- | --- | --- |
| 7/16" | 11,11 | 0,156 | 0,235 | 0,313 | 0,471 | 0,628 | 0,785 | 0,942 | --- | --- | --- | --- |
| 1/2" | 12,70 | 0,179 | 0,269 | 0,358 | 0,538 | 0,718 | 0,897 | 1,077 | --- | --- | --- | --- |
| 9/16" | 14,29 | 0,201 | 0,303 | 0,403 | 0,605 | 0,808 | 1,010 | 1,212 | 1,615 | --- | --- | --- |
| 5/8" | 15,87 | 0,223 | 0,336 | 0,448 | 0,672 | 0,897 | 1,121 | 1,346 | 1,794 | --- | --- | --- |
| 11/16" | 17,46 | 0,246 | 0,370 | 0,493 | 0,740 | 0,987 | 1,234 | 1,481 | 1,974 | 2,466 | --- | --- |
| 3/4" | 19,05 | 0,268 | 0,404 | 0,537 | 0,807 | 1,077 | 1,346 | 1,616 | 2,153 | 2,691 | --- | --- |
| 7/8" | 22,22 | 0,312 | 0,471 | 0,627 | 0,941 | 1,256 | 1,570 | 1,885 | 2,512 | 3,138 | 3,767 | --- |
| 1" | 25,40 | 0,357 | 0,538 | 0,717 | 1,076 | 1,435 | 1,795 | 2,154 | 2,871 | 3,588 | 4,306 | --- |
| 1.1/8" | 28,57 | 0,402 | 0,605 | 0,806 | 1,210 | 1,615 | 2,019 | 2,423 | 3,229 | 4,035 | 4,844 | --- |
| 1.1/4" | 31,75 | 0,446 | 0,673 | 0,896 | 1,345 | 1,794 | 2,244 | 2,693 | 3,589 | 4,484 | 5,383 | 7,177 |
| 1.3/8" | 34,93 | 0,491 | 0,740 | 0,985 | 1,480 | 1,974 | 2,468 | 2,963 | 3,948 | 4,934 | 5,922 | 7,896 |
| 1.1/2" | 38,10 | 0,536 | 0,807 | 1,075 | 1,614 | 2,153 | 2,692 | 3,232 | 4,306 | 5,381 | 6,460 | 8,613 |

Copper

RECTANGULAR BARS - WEIGHT PER LINEAR METER

| Inch/mm | | 1/16" 1,58mm | 3/32" 2,38mm | 1/8" 3,17mm | 3/16" 4,76mm | 1/4" 6,35mm | 5/16" 7,94mm | 3/8" 9,53mm | 1/2" 12,70mm | 5/8" 15,87mm | 3/4" 19,05mm | 1" 25,40mm |
|---------|--------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|---------------|
| 1.5/8" | 41,27 | 0,580 | 0,874 | 1,164 | 1,748 | 2,332 | 2,916 | 3,500 | 4,665 | 5,829 | 6,997 | 9,329 |
| 1.3/4" | 44,45 | 0,625 | 0,942 | 1,254 | 1,883 | 2,512 | 3,141 | 3,770 | 5,024 | 6,278 | 7,536 | 10,048 |
| 1.7/8" | 47,62 | 0,670 | 1,009 | 1,344 | 2,017 | 2,691 | 3,365 | 4,039 | 5,382 | 6,726 | 8,074 | 10,765 |
| 2" | 50,80 | 0,714 | 1,076 | 1,433 | 2,152 | 2,871 | 3,590 | 4,309 | 5,742 | 7,175 | 8,613 | 11,484 |
| 2.1/4" | 57,15 | 0,804 | 1,211 | 1,612 | 2,421 | 3,230 | 4,039 | 4,847 | 6,460 | 8,072 | 9,689 | 12,919 |
| 2.1/2" | 63,50 | 0,893 | 1,345 | 1,792 | 2,690 | 3,589 | 4,487 | 5,386 | 7,177 | 8,969 | 10,766 | 14,355 |
| 2.3/4" | 69,85 | 0,982 | 1,480 | 1,971 | 2,959 | 3,948 | 4,936 | 5,924 | 7,895 | 9,866 | 11,843 | 15,790 |
| 3" | 76,20 | 1,072 | 1,614 | 2,150 | 3,228 | 4,306 | 5,385 | 6,463 | 8,613 | 10,763 | 12,919 | 17,226 |
| 3.1/4" | 82,55 | 1,161 | 1,749 | 2,329 | 3,497 | 4,665 | 5,833 | 7,002 | 9,331 | 11,660 | 13,996 | 18,661 |
| 3.1/2" | 88,90 | 1,250 | 1,883 | 2,508 | 3,766 | 5,024 | 6,282 | 7,540 | 10,048 | 12,557 | 15,073 | 20,097 |
| 3.3/4" | 95,25 | 1,339 | 2,018 | 2,687 | 4,035 | 5,383 | 6,731 | 8,079 | 10,766 | 13,453 | 16,149 | 21,532 |
| 4" | 101,60 | 1,429 | 2,152 | 2,866 | 4,304 | 5,742 | 7,180 | 8,617 | 11,484 | 14,350 | 17,226 | 22,968 |

Copper

RECTANGULAR BARS - WEIGHT PER LINEAR METER

| Inch/mm | | 1/16" 1,58mm | 3/32" 2,38mm | 1/8" 3,17mm | 3/16" 4,76mm | 1/4" 6,35mm | 5/16" 7,94mm | 3/8" 9,53mm | 1/2" 12,70mm | 5/8" 15,87mm | 3/4" 19,05mm | 1" 25,40mm |
|---------|--------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|---------------|
| 4.1/2" | 114,30 | 1,607 | 2,421 | 3,225 | 4,842 | 6,460 | 8,077 | 9,695 | 12,919 | 16,144 | 19,379 | 25,839 |
| 5" | 127,00 | 1,786 | 2,690 | 3,583 | 5,380 | 7,177 | 8,975 | 10,772 | 14,355 | 17,938 | 21,532 | 28,710 |
| 5.1/2" | 139,70 | 1,964 | 2,959 | 3,941 | 5,918 | 7,895 | 9,872 | 11,849 | 15,790 | 19,732 | 23,685 | 31,581 |
| 6" | 152,40 | 2,143 | 3,228 | 4,300 | 6,456 | 8,613 | 10,769 | 12,926 | 17,226 | 21,525 | 25,839 | 34,452 |
| 6.1/2" | 165,10 | | | 4,658 | 6,994 | 9,331 | 11,667 | 14,003 | 18,661 | 23,319 | 27,992 | 37,323 |
| 7" | 177,80 | | | 5,016 | 7,532 | 10,048 | 12,564 | 15,080 | 20,097 | 25,113 | 30,145 | 40,193 |
| 7.1/2" | 190,50 | | | 5,375 | 8,070 | 10,766 | 13,462 | 16,158 | 21,532 | 26,907 | 32,298 | 43,064 |
| 8" | 203,20 | | | 5,733 | 8,608 | 11,484 | 14,359 | 17,235 | 22,968 | 28,701 | 34,452 | 45,935 |

Copper

AMPERAGE FOR RECTANGULAR BARS - CURRENT AMPERE PER MM²

| Inch/mm | | 1/16" 1,58mm | 3/32" 2,38mm | 1/8" 3,17mm | 3/16" 4,76mm | 1/4" 6,35mm | 5/16" 7,94mm | 3/8" 9,53mm | 1/2" 12,70mm | 5/8" 15,87mm | 3/4" 19,05mm | 1" 25,40mm |
|---------|-------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|---------------|
| 1/4" | 6,35 | 20 | 30 | 40 | --- | --- | --- | --- | --- | --- | --- | --- |
| 5/16" | 7,94 | 25 | 38 | 50 | --- | --- | --- | --- | --- | --- | --- | --- |
| 3/8" | 9,53 | 30 | 45 | 60 | 91 | 121 | --- | --- | --- | --- | --- | --- |
| 1/2" | 12,70 | 40 | 60 | 81 | 121 | 161 | 202 | 242 | --- | --- | --- | --- |
| 5/8" | 15,87 | 50 | 76 | 101 | 151 | 202 | 252 | 302 | 403 | --- | --- | --- |
| 3/4" | 19,05 | 60 | 91 | 121 | 181 | 242 | 303 | 363 | 484 | --- | --- | --- |
| 7/8" | 22,22 | 70 | 106 | 141 | 212 | 282 | 353 | 423 | 564 | --- | --- | --- |
| 1" | 25,40 | 80 | 121 | 161 | 242 | 323 | 403 | 484 | 645 | 806 | 968 | --- |
| 1.1/4" | 31,75 | 100 | 151 | 201 | 302 | 403 | 504 | 605 | 806 | 1008 | 1210 | 1613 |
| 1.1/2" | 38,10 | 120 | 181 | 242 | 363 | 484 | 605 | 725 | 968 | 1209 | 1452 | 1935 |
| 1.5/8" | 41,27 | 130 | 196 | 262 | 393 | 524 | 655 | 786 | 1048 | 1310 | 1572 | 2097 |
| 1.3/4" | 44,45 | 140 | 212 | 282 | 423 | 565 | 706 | 846 | 1129 | 1411 | 1694 | 2258 |
| 2" | 50,80 | 161 | 242 | 322 | 484 | 645 | 807 | 967 | 1290 | 1612 | 1935 | 2581 |
| 2.1/4" | 57,15 | 181 | 272 | 362 | 544 | 726 | 908 | 1088 | 1452 | 1814 | 2177 | 2903 |
| 2.1/2" | 63,50 | 201 | 302 | 403 | 605 | 806 | 1008 | 1209 | 1613 | 2015 | 2419 | 3226 |
| 2.3/4" | 69,85 | 221 | 332 | 443 | 665 | 887 | 1109 | 1330 | 1774 | 2217 | 2661 | 3548 |

Copper

AMPERAGE FOR RECTANGULAR BARS - CURRENT AMPERE PER MM²

| Inch/mm | | 1/16" 1,58mm | 3/32" 2,38mm | 1/8" 3,17mm | 3/16" 4,76mm | 1/4" 6,35mm | 5/16" 7,94mm | 3/8" 9,53mm | 1/2" 12,70mm | 5/8" 15,87mm | 3/4" 19,05mm | 1" 25,40mm |
|---------|--------|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|---------------|
| 3" | 76,20 | 241 | 363 | 483 | 725 | 968 | 1210 | 1451 | 1935 | 2419 | 2903 | 3871 |
| 3.1/4" | 82,55 | 261 | 393 | 523 | 786 | 1048 | 1311 | 1572 | 2097 | 2620 | 3145 | 4194 |
| 3.1/2" | 88,90 | 281 | 423 | 564 | 846 | 1129 | 1412 | 1693 | 2258 | 2822 | 3387 | 4516 |
| 3.3/4" | 95,25 | 301 | 453 | 604 | 907 | 1210 | 1513 | 1814 | 2419 | 3023 | 3629 | 4839 |
| 4" | 101,60 | 321 | 484 | 644 | 967 | 1290 | 1613 | 1934 | 2581 | 3225 | 3871 | 5161 |
| 4.1/2" | 114,30 | --- | --- | 725 | 1088 | 1452 | 1815 | 2176 | 2903 | 3628 | 4355 | 5806 |
| 5" | 127,00 | --- | --- | 805 | 1209 | 1613 | 2017 | 2418 | 3226 | 4031 | 4839 | 6452 |
| 5.1/2" | 139,70 | --- | --- | 886 | 1330 | 1774 | 2218 | 2660 | 3548 | 4434 | 5323 | 7097 |
| 6" | 152,40 | --- | --- | 966 | 1451 | 1935 | 2420 | 2902 | 3871 | 4837 | 5806 | 7742 |
| 6.1/2" | 165,10 | --- | --- | 1047 | 1572 | 2097 | 2622 | 3144 | 4194 | 5240 | 6290 | 8387 |
| 7" | 177,80 | --- | --- | 1127 | 1693 | 2258 | 2823 | 3385 | 4516 | 5643 | 6774 | 9032 |
| 7.1/2" | 190,50 | --- | --- | 1208 | 1814 | 2419 | 3025 | 3627 | 4839 | 6046 | 7258 | 9677 |
| 8" | 203,20 | --- | --- | 1288 | 1934 | 2581 | 3227 | 3869 | 5161 | 6450 | 7742 | 10323 |

Notas: Coeficiente de amperaje utilizado 2A/mm²

Copper

TUBES - WEIGHT PER LINEAR METER

| Outside Diameter | | Wall Thickness | | | | | Outside Diameter | | Wall Thickness | | | | |
|------------------|--------|------------------|---------|------------------|------------------|-----------------|------------------|--------|------------------|---------|------------------|------------------|-----------------|
| In. | Mm | 1/32" 0,79 mm | 1,00 mm | 1/16" 1,58 mm | 3/32" 2,38 mm | 1/8" 3,17 mm | In. | Mm | 1/32" 0,79 mm | 1,00 mm | 1/16" 1,58 mm | 3/32" 2,38 mm | 1/8" 3,17 mm |
| 1/8" | 3,17 | 0,053 | 0,061 | --- | --- | --- | 1.1/2" | 38,10 | 0,824 | 1,040 | 1,620 | 2,380 | 3,100 |
| 5/32" | 3,97 | 0,070 | 0,083 | 0,105 | --- | --- | 1.5/8" | 41,27 | 0,893 | 1,130 | 1,760 | 2,590 | 3,380 |
| 3/16" | 4,76 | 0,088 | 0,105 | 0,141 | --- | --- | 1.3/4" | 44,45 | 0,964 | 1,210 | 1,910 | 2,800 | 3,660 |
| 1/4" | 6,35 | 0,123 | 0,150 | 0,212 | 0,264 | --- | 1.7/8" | 47,62 | 1,030 | 1,300 | 2,050 | 3,010 | 3,940 |
| 5/16" | 7,94 | 0,158 | 0,194 | 0,282 | 0,370 | 0,422 | 2" | 50,80 | 1,100 | 1,390 | 2,190 | 3,220 | 4,220 |
| 3/8" | 9,53 | 0,193 | 0,238 | 0,353 | 0,475 | 0,563 | 2.1/8" | 53,97 | 1,170 | 1,480 | 2,330 | 3,430 | 4,500 |
| 7/16" | 11, 11 | 0,228 | 0,283 | 0,423 | 0,581 | 0,704 | 2.1/4" | 57,15 | 1,240 | 1,570 | 2,470 | 3,640 | 4,780 |
| 1/2" | 12,70 | 0,263 | 0,327 | 0,494 | 0,687 | 0,844 | 2.3/8" | 60,33 | 1,310 | 1,660 | 2,610 | 3,860 | 5,070 |
| 9/16" | 14,28 | 0,298 | 0,372 | 0,565 | 0,793 | 0,985 | 2.1/2" | 63,50 | 1,390 | 1,750 | 2,750 | 4,060 | 5,350 |
| 5/8" | 15,87 | 0,333 | 0,416 | 0,635 | 0,898 | 1,130 | 2.5/8" | 66,67 | 1,460 | 1,840 | 2,890 | 4,280 | 5,630 |
| 3/4" | 19,05 | 0,403 | 0,505 | 0,776 | 1,110 | 1,410 | 2.3/4" | 69,85 | 1,530 | 1,930 | 3,030 | 4,490 | 5,910 |
| 7/8" | 22,22 | 0,473 | 0,593 | 0,918 | 1,320 | 1,609 | 3" | 76,20 | 1,670 | 2,100 | 3,320 | 4,910 | 6,470 |
| 1" | 25,40 | 0,544 | 0,682 | 1,060 | 1,530 | 1,970 | 3.1/4" | 82,55 | --- | --- | --- | 5,392 | 7,111 |
| 1.1/8" | 28,57 | 0,614 | 0,771 | 1,200 | 1,740 | 2,250 | 3.1/2" | 88,90 | --- | --- | --- | 5,910 | 7,830 |
| 1.1/4" | 31,75 | 0,684 | 0,860 | 1,340 | 1,950 | 2,530 | 3.3/4" | 95,25 | --- | --- | --- | 6,243 | 8,300 |
| 1.3/8" | 34,92 | 0,754 | 0,948 | 1,480 | 2,170 | 2,810 | 4" | 101,60 | --- | --- | --- | 6,673 | 8,719 |

copper

HIDROLAR PIPES - WEIGHT PER LINEAR METER

| Class "E" | | | |
|------------------|---|---------------|--|
| Nominal Diameter | Outside diameter x Thickness of the wall (mm) | Weight (kg/m) | Internal Pressure (kgf/cm ²) |
| 1/2" | 15,00 x 0,50 | 1,213 | 41 |
| 3/4" | 22,00 X 0,60 | 0,360 | 34 |
| 1" | 28,00 X 0,60 | 0,460 | 26 |
| 1.1/4" | 35,00 X 0,70 | 0,673 | 25 |
| 1.1 /2" | 42,00 X 0,80 | 0,923 | 24 |
| 2" | 54,00 X 0,90 | 1,339 | 21 |
| 2.1/2" | 66,70 X 1,00 | 1,839 | 20 |
| 3" | 79,40 X 1,20 | 2,627 | 19 |
| 4" | 104,80 X 1,20 | 3,480 | 14 |

| Class "A" | | | |
|------------------|---|---------------|--|
| Nominal Diameter | Outside diameter x Thickness of the wall (mm) | Weight (kg/m) | Internal Pressure (kgf/cm ²) |
| 1/2" | 15,00 X 1,50 | 0,318 | 65 |
| 3/4" | 22,00 X 0,90 | 0,532 | 50 |
| 1" | 28,00 X 0,90 | 0,683 | 40 |
| 1.1/4" | 35,00 X 1,10 | 1,045 | 40 |
| 1.1 /2" | 42,00 X 1,10 | 1,261 | 35 |
| 2" | 54,00 X 1,20 | 1,775 | 28 |
| 2.1/2" | 66,70 X 1,20 | 2,200 | 24 |
| 3" | 79,40 X 1,50 | 3,271 | 24 |
| 4" | 104,80 X 1,50 | 4,337 | 18 |

| Class "I" | | | |
|------------------|---|---------------|--|
| Nominal Diameter | Outside diameter x Thickness of the wall (mm) | Weight (kg/m) | Internal Pressure (kgf/cm ²) |
| 1/2" | 15,00 X 1,00 | 0,392 | 88 |
| 3/4" | 22,00x1,10 | 0,644 | 60 |
| 1" | 28,00 X 1,20 | 0,901 | 55 |
| 1.1/4" | 35,00 X 1,40 | 1,318 | 45 |
| 1.1/2" | 42,00 X 1,40 | 1,593 | 42 |
| 2" | 54,00 X 1,50 | 2,206 | 34 |
| 2.1/2" | 66,70x1,50 | 2,737 | 28 |
| 3" | 79,40 X 1,90 | 4,122 | 27 |
| 4" | 104,80x2,00 | 5,755 | 20 |

Copper

SHEETS - WEIGHT PER PIECE

| Nº (BWG) | Mm | 1.200 X 600mm | 2.000 X 1.000mm |
|----------|------|---------------|-----------------|
| 30 | 0,30 | 1,92 | --- |
| 28 | 0,36 | 2,31 | --- |
| 27 | 0,41 | 2,63 | --- |
| 26 | 0,46 | 2,95 | --- |
| 25 | 0,51 | 3,27 | 9,08 |
| 24 | 0,56 | 3,59 | 9,97 |
| 23 | 0,64 | 4,10 | 11,39 |
| 22 | 0,71 | 4,55 | 12,64 |
| 21 | 0,81 | 5,19 | 14,42 |
| 20 | 0,89 | 5,70 | 15,84 |
| 19 | 1,07 | 6,86 | 19,05 |
| 18 | 1,24 | 7,95 | 22,07 |
| 17 | 1,47 | 9,42 | 26,17 |

| Nº (BWG) | Mm | 1.200 X 600mm | 2.000 X 1.000mm |
|----------|-------|---------------|-----------------|
| 16 | 1,65 | 10,57 | 29,37 |
| 15 | 1,83 | 11,73 | 32,57 |
| 14 | 2, 11 | 13,52 | 37,56 |
| 13 | 2,41 | 15,44 | 42,90 |
| 12 | 2,77 | 17,75 | 49,31 |
| 11 | 3,04 | 19,48 | 54,11 |
| --- | 3,17 | 20,31 | 56,43 |
| 10 | 3,40 | 21,79 | 60,52 |
| --- | 3,97 | 25,44 | 70,67 |
| --- | 4,76 | 30,50 | 84,73 |
| --- | 6,35 | 40,69 | 113,03 |
| --- | 7,93 | 50,82 | 141,15 |
| --- | 9,53 | 61,07 | 169,63 |

| Nº (BWG) | Mm | 1.200 X 600mm | 2.000 X 1.000mm |
|----------|-------|---------------|-----------------|
| --- | 12,70 | 81,38 | 226,06 |
| --- | 15,87 | 101,69 | 282,49 |
| --- | 19,05 | 122,07 | 339,09 |
| --- | 22,22 | 142,39 | 395,52 |
| --- | 25,40 | 162,76 | 452,12 |
| --- | 31,75 | 205,74 | --- |
| --- | 38,10 | 246,89 | --- |
| --- | 44,45 | 288,04 | --- |
| --- | 50,80 | 329,18 | --- |
| --- | 55,58 | 360,16 | --- |
| --- | 63,50 | 411,48 | --- |
| --- | 76,20 | 493,78 | --- |
| --- | 101,4 | 657,07 | --- |