



## Properties of Copper Based Alloys

(Tabulated in accordance with the Unified Numbering System for Metals and Alloys (UNS), Society of Automotive Engineers, Warrendale, Pa., 1975. This reference contains the cross reference numbers for AISI, ASTM, FED, MIL SPEC, and SAE specifications. All yield strengths are by 0.5 percent offset method. Multiply strength in MPa by 0.145 to get strength in kpsi.)

| UNS Number | Alloy Name       | Form  | Temper | Yield Strength MPa | Tensile Strength MPa | Elongation In 2 in % | Brinell Hardness H_b |
|------------|------------------|-------|--------|--------------------|----------------------|----------------------|----------------------|
| C17000     | Beryllium        | Rod   | Hard   | 515                | 790                  | 5                    | 95B                  |
| C17000     | Beryllium        | Rod   | Soft   | 170                | 415                  | 50                   | 77B                  |
| C17000     | Beryllium        | Sheet | Hard   | 1000               | 1240                 | 2                    |                      |
| C21000     | Gilding brass    | Sheet | Hard   | 345                | 385                  | 5                    | 64B                  |
| C21000     | Gilding brass    | Sheet | Soft   | 70                 | 235                  | 45                   | 46F                  |
| C22000     | Commercial brass | Sheet | Hard   | 370                | 420                  | 5                    | 70B                  |
| C22000     | Commercial brass | Sheet | Soft   | 70                 | 255                  | 45                   | 53F                  |
| C22000     | Commercial brass | Rod   | Hard   | 380                | 415                  | 20                   | 60B                  |
| C22000     | Commercial brass | Rod   | Soft   | 70                 | 275                  | 50                   | 55F                  |
| C23000     | Red brass        | Sheet | Hard   | 395                | 480                  | 5                    | 77B                  |
| C23000     | Red brass        | Sheet | Soft   | 85                 | 275                  | 47                   | 59F                  |
| C23000     | Red brass        | Rod   | Hard   | 360                | 395                  | 23                   | 75B                  |
| C23000     | Red brass        | Rod   | Soft   | 70                 | 275                  | 55                   | 55F                  |
| C26000     | Cartridge brass  | Sheet | Hard   | 435                | 525                  | 8                    | 82B                  |
| C26000     | Cartridge brass  | Sheet | Soft   | 105                | 325                  | 62                   | 64F                  |
| C26000     | Cartridge brass  | Rod   | Hard   | 360                | 480                  | 30                   | 80B                  |
| C26000     | Cartridge brass  | Rod   | Soft   | 110                | 330                  | 65                   | 65F                  |
| C27000     | Yellow brass     | Sheet | Hard   | 415                | 510                  | 8                    | 80B                  |
| C27000     | Yellow brass     | Sheet | Soft   | 105                | 325                  | 62                   | 64F                  |
| C27000     | Yellow brass     | Rod   | Hard   | 310                | 415                  | 25                   | 80B                  |
| C27000     | Yellow brass     | Rod   | Soft   | 110                | 330                  | 65                   | 65F                  |
| C28000     | Muntz metal      | Sheet | Hard   | 415                | 550                  | 10                   | 85B                  |
| C28000     | Muntz metal      | Sheet | Soft   | 145                | 370                  | 45                   | 80F                  |
| C28000     | Muntz metal      | Rod   | Hard   | 380                | 515                  | 20                   | 80B                  |
| C28000     | Muntz metal      | Rod   | Soft   | 145                | 370                  | 50                   | 80F                  |
| C28000     | Muntz metal      | Tube  | Hard   | 380                | 510                  | 10                   | 80B                  |

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|        |                   |       |      |     |     |    |     |
|--------|-------------------|-------|------|-----|-----|----|-----|
| C28000 | Muntz metal       | Tube  | Soft | 160 | 385 | 50 | 82F |
| C33000 | Low-leaded brass  | Tube  | Hard | 415 | 515 | 7  | 80B |
| C33000 | Low-leaded brass  | Tube  | Soft | 105 | 325 | 60 | 64F |
| C33200 | High-leaded brass | Sheet | Hard | 415 | 510 | 7  | 80B |
| C33200 | High-leaded brass | Sheet | Soft | 115 | 340 | 52 | 68F |
| C46200 | Naval brass       | Sheet | Hard | 480 | 620 | 5  | 90B |
| C46200 | Naval brass       | Rod   | Hard | 365 | 515 | 20 | 82B |
| C46200 | Naval brass       | Tube  | Hard | 455 | 605 | 18 | 95B |

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