



## C172 Beryllium Copper Alloy Wire

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### Introduction

Beryllium Copper alloys combine formability with very high strength properties when aged. Applications are in springs, connectors, switches and automotive parts. Special heat treating of the wire at the mill produces a “Mill Hardened” (HM) tempered Beryllium Copper wire which can then be formed and used without additional heat treatment.

To learn more please contact our [sales department](#).

# C172 Beryllium Copper Alloy Wire

| Chemical Composition - Limits                          |  | Chemical Composition - Nominal |               |
|--|--|--------------------------------|---------------|
| Cu rem - incl Ag (99.5 min incl named elements)        |  | Cu 97.7                        |               |
| Be 1.80-2.00   |  | Be 1.9                         |               |
| Al 0.20 max  |  | Co 0.4                         |               |
| Co 0.20 min (0.20 min incl Ni - 0.60 max incl Ni + Fe) |  |                                |               |
| Si 0.20 max  |  |                                |               |
| Specifications   |  | Fabrication Index              |               |
| AMS 4725   |  | Soldering                      | 4 - Very Good |
| ASTM B194  |  | Hot Worked                     | 5 - Excellent |
| ASTM B197  |  | Cold Worked                    | 4 - Very Good |
| QQ C-530   |  | Brazing                        | 4 - Very Good |
| QQ C-533   |  | Machinability                  | 1 - Poor      |

## Physical Properties

|                                    |  |
|------------------------------------|--|
| Annealing Range (Min)              | 1425 °F                                  |
| Annealing Range (Max)              | 1475 °F                                  |
| Density                            | 0.298 lb/in <sup>3</sup>                 |
| Electrical Resistivity (Annealed)  | 47.1 Ω-cir-mil/ft @ 68 °F                |
| Electrical Conductivity (Annealed) | 22% IACS @ 68 °F                         |
| Thermal Conductivity               | 62 Btu/ft <sup>2</sup> /ft·hr/°F @ 68 °F |
| Coefficient of Thermal Expansion   | 9.9 per °F (68-572 °F)                   |
| Modulus of Elasticity (Tension)    | 19 ksi                                   |
| Modulus of Rigidity (Tension)      | 7 ksi                                    |
| Melting Point (Solidus)            | 1,700 °F                                 |
| Melting Point (Liquidus)           | 1,900 °F                                 |

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## Round Wire

| TEMPER NAME | TEMPER CODE | TENSILE STRENGTH (ksi) |      | MILL LIMITS (inch) |
|-------------|-------------|------------------------|------|--------------------|
|             |             | Min                    | Max  |                    |
| Annealed    | TB00        | 58.0                   | 78.0 | .0010 - .1285 inch |
| 1/4 Hard    | TD01        | 90.0                   | 115  |                    |
| 1/2 Hard    | TD02        | 110                    | 135  |                    |
| 3/4 Hard    | TD03        | 130                    | 155  |                    |
| Hard        | TD04        | 140                    | 165  |                    |
| AT          | TF00        | 160                    | 200  |                    |
| 1/4 HT      | TH01        | 175                    | 210  |                    |
| 1/2 HT      | TH02        | 185                    | 215  |                    |
| 3/4 HT      | TH03        | 190                    | 230  |                    |
| HT          | TH04        | 195                    | 230  |                    |

## Square Wire

| TEMPER NAME | TEMPER CODE | TENSILE STRENGTH (ksi) |      | MILL LIMITS (inch) |
|-------------|-------------|------------------------|------|--------------------|
|             |             | Min                    | Max  |                    |
| Annealed    | TB00        | 58.0                   | 78.0 | .0100 - .0808 inch |
| 1/4 Hard    | TD01        | 90.0                   | 115  |                    |
| 1/2 Hard    | TD02        | 110                    | 135  |                    |
| 3/4 Hard    | TD03        | 130                    | 155  |                    |
| Hard        | TD04        | 140                    | 165  |                    |
| AT          | TF00        | 160                    | 200  |                    |
| 1/4 HT      | TH01        | 175                    | 210  |                    |
| 1/2 HT      | TH02        | 185                    | 215  |                    |
| 3/4 HT      | TH03        | 190                    | 230  |                    |
| HT          | TH04        | 195                    | 230  |                    |

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## Rolled Flat

| TEMPER NAME | TEMPER CODE | TENSILE STRENGTH (ksi) |      | MILL LIMITS (inch)               |
|-------------|-------------|------------------------|------|----------------------------------|
|             |             | Min                    | Max  |                                  |
| Annealed    | TB00        | 60.0                   | 78.0 | Thickness:<br>.0100 - .0500 inch |
| 1/4 Hard    | TD01        | 75.0                   | 88.0 |                                  |
| 1/2 Hard    | TD02        | 85.0                   | 100  | Width:<br>.0150 - .2500 inch     |
| Hard        | TD04        | 100                    | 130  |                                  |
| AT          | TF00        | 165                    | 195  |                                  |
| 1/4 HT      | TH01        | 175                    | 205  |                                  |
| 1/2 HT      | TH02        | 185                    | 215  |                                  |
| HT          | TH04        | 195                    | 220  |                                  |

## Round Wire - Pretempered

| TEMPER NAME    | TEMPER CODE | TENSILE STRENGTH (ksi) |     | MILL LIMITS (inch)   |
|----------------|-------------|------------------------|-----|----------------------|
|                |             | Min                    | Max |                      |
| 1/8 Hard       | TL00        | 90.0                   | 120 |                      |
| 1/4 Hard       | TL01        | 110                    | 140 | Most sizes available |
| 1/2 Hard       | TL02        | 135                    | 160 | .0808" and below     |
| Hard           | TL04        | 150                    | 175 | .0571" and below     |
| Extra Hard     | TL06        | 165                    | 190 | .0403" and below     |
| Spring         | TL08        | 180                    | 205 | .0253" or below      |
| Special Spring | TL10        | 195                    | 230 | .0100" and below     |