



Specification Sheet

Last Modified: May 27, 2017

C70600

Copper-Nickel, 10%

Chemical Composition

(%max., unless shown as range or min.)

| | Cu ⁽¹⁾ | Fe | Pb | Mn | Ni ⁽²⁾ | Zn |
|------------------|-------------------|---------|------|----|-------------------|----|
| Min./Max. | Rem. | 1.0-1.8 | 0.05 | 1 | 9.0-11.0 | 1 |
| Nominal | 88.6 | 1.4 | - | - | 10 | - |

(1) Cu value includes Ag.

(2) Ni value includes Co.

Note: Cu + Sum of Named Elements, 99.5% min.

Applicable Specifications

| Product | Specification |
|-----------------------|---|
| Bar | ASTM B151, B122 MILITARY MIL-C-15726 |
| Pipe, Seamless | ASME SB466 ASTM B466 |
| Pipe, Welded | ASME SB467 ASTM B608, B467 |
| Plate | ASTM B122 MILITARY MIL-C-15726 |
| Plate, Clad | ASTM B432 |
| Plate, Condenser Tube | ASME SB171 ASTM B171 SAE J463, J461 |
| Rod | ASTM B151 MILITARY MIL-C-15726 |
| Rod, Welding | AWS A5.15 |
| Sheet | ASTM B122 MILITARY MIL-C-15726 SAE J463, J461 |

Millard Wire & Specialty Strip Co.

449 Warwick Industrial Drive • Warwick, RI 02886

Phone: (401) 737-9330 • Fax: (401) 737-9340



Applicable Specifications (cont'd)

| Product | Specification |
|-----------------|---|
| Strip | ASTM B122 MILITARY MIL-C-15726 |
| Tube, Condenser | ASME SB111 ASTM B552, B111 MILITARY MIL-T-15005 SAE J463, J461 |
| Tube, Finned | ASME SB359 ASTM B359 MILITARY MIL-T-22214 |
| Tube, Seamless | ASME SB466 ASTM B466, B469 MILITARY MIL-T-16420 |
| Tube, U-Bend | ASME SB395 ASTM B395 |
| Tube, Welded | ASME SB543 ASTM B543 MILITARY MIL-T-16420 |
| Wire | MILITARY MIL-C-15726 |

Common Fabrication Processes

Forming and Bending, Welding



Fabrication Properties

| Joining Technique | Suitability |
|--------------------------------|-------------|
| Soldering | Excellent |
| Brazing | Excellent |
| Oxyacetylene Welding | Fair |
| Gas Shielded Arc Welding | Excellent |
| Coated Metal Arc Welding | Good |
| Spot Weld | Good |
| Seam Weld | Good |
| Butt Weld | Excellent |
| Capacity for Being Cold Worked | Good |
| Capacity for Being Hot Formed | Good |
| Machinability Rating | 20 |

Thermal Properties

| Treatment | Temp./Time – US | Temp./Time – SI |
|----------------------|-----------------|-----------------|
| Stress Temperature | | |
| Solution Minimum | | |
| Solution Maximum | | |
| Solution Time | | |
| Solution Medium | None | |
| Precipitation Value | | |
| Precipitation Time | | |
| Precipitation Medium | None | |
| Annealing Minimum | 1100 | 594 |
| Annealing Maximum | 1500 | 816 |
| Annealing Time | | |
| Hot Works Minimum | 1550 | 844 |
| Hot Works Maximum | 1750 | 955 |



C70600 Specification Sheet

Mechanical Properties (Measured at Room Temperature, 68°F (20°C))

| Temper | Section Size | Cold Work | Typ/Min | Temp | Tensile Strength | Yield Strength (0.5% ext. under load) | Yield Strength (0.2% offset) | Yield Strength (0.05% offset) | EI | Rockwell Hardness | | | | Vickers Hardness | Brinell Hardness | | | Shear Strength | Fatigue Strength | Izod Impact Strength |
|-------------|--------------|-----------|---------|--------|------------------|---------------------------------------|------------------------------|-------------------------------|----|-------------------|---|-----|-----|------------------|------------------|------|------------|----------------|------------------|----------------------|
| | in. mm. | % | | F C | ksi MPa | ksi MPa | ksi MPa | ksi MPa | % | B | C | F | 30T | 500 | 500 | 3000 | ksi MPa | ksi MPa | ft-lb J | |
| Tube | | | | | | | | | | | | | | | | | | | | |
| OS025 | 0 | 0 | TYP | 68 | 44 | 16 | - | - | 42 | 15 | - | 65 | 26 | - | - | - | - | - | 0 | |
| | 0 | | | 20 | 303 | 110 | - | - | 42 | 15 | - | 65 | 26 | - | - | - | - | - | 0 | |
| H55 | 0 | 0 | TYP | 68 | 60 | 57 | - | - | 10 | 72 | - | 100 | 70 | - | - | - | - | - | 0 | |
| | 0 | | | 20 | 414 | 393 | - | - | 10 | 72 | - | 100 | 70 | - | - | - | - | - | 0 | |

*Fatigue Strength: 100×10^6 cycles, unless indicated as $[N] \times 10^6$.

Physical Properties

| Property | US Customary | Metric |
|----------------------------------|--|--|
| Melting Point - Liquidus | 2100 F | 1149 C |
| Melting Point - Solidus | 2010 F | 1099 C |
| Density | 0.323 lb/in ³ at 68 F | 8.94 gm/cm ³ @ 20 C |
| Specific Gravity | 8.94 | 8.94 |
| Electrical Resistivity | 115 ohms-cmil/ft @ 68 F | 19.12 microhm-cm @ 20 C |
| Electrical Conductivity | 9 %IACS @ 68 F | 0.053 MegaSiemens/cm @ 20 C |
| Thermal Conductivity | 26 Btu · ft/(hr · ft ² · °F) at 68F | 45.0 W/m · °K at 20 C |
| Coefficient of Thermal Expansion | $9.50 \cdot 10^{-6}$ per °F (68-572 F) | $17.1 \cdot 10^{-6}$ per °C (20-300 C) |
| Specific Heat Capacity | 0.090 Btu/lb/°F at 68 F | 377.1 J/kg · °K at 293 K |
| Modulus of Elasticity in Tension | 18000 ksi | 124000 MPa |
| Modulus of Rigidity | 6800 ksi | 46880 MPa |

Tempers Most Commonly Used

| Flat Products | |
|---------------|---------------------------|
| PLATE | M20 |
| SHEET | H01, H02, H04, O60 |
| STRIP, ROLLED | H01, H02, H04, O60, OS025 |

| Other | |
|-------|-------------------|
| PIPE | H55, H80, O60 |
| TUBE | H55, OS015, OS025 |



Typical Uses

Automotive

Brake Lines, Power Steering Tube

Consumer

Screw Lamp Bases

Industrial

Weld Torch Tips, Pump Impellers for Oil Refining, Pressure Vessels, Distiller Tubes, Ferrules, Heat Exchanger Tubes, Evaporator Tubes, Condenser Plates, Condensers, Evaporators, Valve Bodies

Marine

Boat Hulls, Hot Water Tanks, Water Hoses, Tube Sheet for Salt Water Service, Ship Hulls, Propeller Sleeves, Salt Water Pipe Fittings, Salt Water Piling Wrap, Salt Water Baffles, Salt Water Piping Systems

Plumbing

Flanges

Casting Characteristics

No casting characteristics for this alloy.