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| Perth | 08 9258 2600 | 08 9358 6206 |

PRODUCT DATA SHEET

Leaded Gunmetal

UNS C83600

Also known as ounce metal

Copper Alloys

Chemical Composition

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

| | Copper ⁽¹⁾ | Aluminium | Antimony | Iron | Lead | Nickel ⁽²⁾ | Phosphorus ⁽³⁾ | Silicon | Sulphur | Tin | Zinc |
|-----------|-----------------------|-----------|----------|------|-----------|-----------------------|---------------------------|---------|---------|-----------|-----------|
| Min./Max. | 84.0 - 86.0 | 0.005 | 0.25 | 0.30 | 4.0 - 6.0 | 1.0 | 0.05 | 0.005 | 0.08 | 4.0 - 6.0 | 4.0 - 6.0 |
| Nominal | 85.0 | - | - | - | 5.0 | - | - | - | - | 5.0 | 5.0 |

(1) In determining copper minimum, copper may be calculated as copper + nickel.

(2) Nickel value includes cobalt.

(3) For continuous castings, phosphorus shall be 1.5% maximum.

Note: Copper + Sum of Named Elements, 99.3% minimum

Applicable Specifications

| Product | Specification |
|-------------|---|
| Centrifugal | AMS 4855 ASTM B271 SAE J461, J462 |
| Continuous | ASTM B505 SAE J461, J462 |
| Fittings | ASME B16.15, B16.18, B16.23, B16.32, SB62, B16.26 ASTM B62 FEDERAL WW-P-460 |
| Flanges | ASME B16.24, SB62 ASTM B62 |
| Ingot | ASTM B30 |
| Precision | MILITARY MIL-C-11866 |
| Sand | AMS 4855 ASME SB62 ASTM B584, B62 SAE J461, J462 |
| Unions | FEDERAL WW-U-516 |
| Valves | MILITARY MIL-V-18436 |

Fabrication Properties

| Joining Technique | Suitability |
|--------------------------|-----------------|
| Soldering | Excellent |
| Brazing | Good |
| Oxyacetylene Welding | Not Recommended |
| Gas Shielded Arc Welding | Not Recommended |
| Coated Metal Arc Welding | Fair |
| Machinability Rating | 84 |

The technical advice and recommendations made in this Product Data Sheet should not be relied or acted upon without conducting your own further investigations, including corrosion exposure tests where needed. Please consult current editions of standards for design properties.

Austral Wright Metals assumes no liability in connection with the information in this Product Data Sheet.

Mechanical Properties

(measured at room temperature, 68 F (20 C))

| Temper | Cold Work | Typical/Minimum | Temperature | Tensile Strength | Yield Strength (0.5% extension under load) | Elongation | Brinell Hardness | Fatigue Strength at 10 ⁸ cycles* | Izod Impact Strength |
|--------|-----------|-----------------|-------------|------------------|--|------------|------------------|---|----------------------|
| | % | | C | MPa | MPa | % | | MPa | J |
| M02 | 0 | Minimum | 20 | 207 | 97 | 20 | - | - | 0.0 |
| M07 | 0 | Minimum | 20 | 248 | 131 | 15 | - | - | 0.0 |
| M01 | 0 | Minimum | 20 | 205 | 97 | 20 | - | - | 0.0 |
| M01 | 0 | Typical | 20 | 255 | 117 | 30 | 60 | 76 | 14.0 |

Physical Properties

| | US Customary | Metric |
|----------------------------------|---|---|
| Melting Point - Liquidus | 1850°F | 1010°C |
| Melting Point - Solidus | 1570°F | 854°C |
| Density | 0.318 lb/in ³ at 68°F | 8.83 gm/cm ³ @ 20°C |
| Specific Gravity | 8.83 | 8.83 |
| Electrical Resistivity | 69.1 ohms-cmil/ft @ 68°F | 11.49 microhm-cm @ 20°C |
| Electrical Conductivity | 15 %IACS @ 68°F | 0.087 MegaSiemens/cm @ 20°C |
| Thermal Conductivity | 41.6 Btu · ft/(hr · ft ² · °F) at 68°F | 72.0 W/m · °K at 20°C |
| Coefficient of Thermal Expansion | 10.0 · 10 ⁻⁶ per °F (68-392°F) | 18.0 · 10 ⁻⁶ per °C (20-200°C) |
| Specific Heat Capacity | 0.09 Btu/lb/°F at 68°F | 376.0 J/kg · °K at 293°K |
| Modulus of Elasticity in Tension | 13,500 ksi | 93,100 MPa |
| Magnetic Permeability | 1.0 | 1.0 |

Typical Uses

| | |
|---------------|---|
| Architecture: | Ornamental Fixtures |
| Building: | Heating Equipment, Lightning Protection, Trowels for Cement Working, Cooling Equipment |
| Electrical: | Switches, Electrical Equipment, Electrical Hardware |
| Fasteners: | Large Hold Down Screws |
| Industrial: | Pressure Blocks for Steel Industry, Pump Parts, Transducer Housings, Valve Bodies for the Water Meter Industry, Valves for the Water Meter Industry, Pump Fixtures, Impellers, Valve Bodies, Pumps, Bushings, Furnaces, Pumps, Low Pressure Valves, Small Gears, Bearings, Air Actuators, Handles for Dental Equipment, Couplings, Valves, Printing Presses, Valve Bodies, Valves, Rings, Bearing Segments for Steel Industry |
| Marine: | Marine Products, Parts for Boats |
| Plumbing: | Faucets, Pipe Fittings, Fixtures |