Belmont
METALS INC.
330 Belmont Avenue, Brooklyn, New York 11207
(718)-342-4900 • TWX 710-584-2296 • FAX 718-342-0175

DATA SHEET

BELMONT JEWELERS MANGANESE BRONZE ALLOY 4582

Belmont Jewelers Manganese Bronze is a proprietary alloy developed by Belmont with the cooperation of Jewelry Casters to meet their special needs for a base metal alloy to be centrifugally cast into refractory molds. Its characteristics are those of high strength yellow brass;

Melting Range - 1580°F to 1620°F
Pouring Range - 1700°F to 2100°F
Density - .301 lbs. per cubic inch
Specific Gravity - 8.3
Pattern Makers Shrinkage - ¼" per foot
Machinability vs. free cutting brass - 30%

CASTING:

To gain a smooth clean surface and free release from the mold material, some sacrifice to drossing, to fluidity, and to shrinkage has been made in the formulation of the alloy. These negative factors are overcome when the alloy is centrifugally cast. Although, they would be apparent in a statically poured casting where special gating and risering would be needed.

Melting should be rapid and under neutral or slightly oxidizing furnace conditions. At about 1680°F, zinc will boil off from the alloy which will be visible as a white smoke. The alloy should be heated to at least this temperature before trying to cast it even when using a hot mold with centrifugal casting force. Otherwise, the lowest temperature consistent with getting the mold to fill is good pouring practice.

The zinc content of the alloy will act as its own deoxidizer so fluxes are not usually needed for melting and pouring the alloy

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STRESS RELIEVING:

Stress relieving can be done at temperatures of 500°F or 260°C for one hour per inch of section thickness followed by cooling in air. This alloy will not respond to solution heat treatment or precipitation hardening.

SOLDERING:

Belmont Jewelers Manganese Bronze Alloy can be soldered and brazed by conventional methods with some added provisions. Tin Lead solders should contain less than 1% Antimony and less than 0.02% Arsenic. Wire solders in the 50 to 63% Tin range made to Federal or ASTM Specifications by major manufacturers will usually meet this requirement. As a soldering flux use a typical zinc chloride solder flux to which has been added 15 to 25% of organic aluminum soldering flux - fluxing range 350°F to 525°F. Aluminum Company of America #64, or equal, is a suitable aluminum solder flux.

BRAZING:

To braze the alloy, the regular silver brazing alloys used for copper based alloys with 35 to 50% silver content made to American Welding Society's specifications, are all usable. A special brazing flux for use on manganese bronze or aluminum bronze is required. Handy and Harman, Type A-1 Flux, or equal will do this job. The soldering alloys, brazing alloys and fluxes are conventional products available through regular sources.

FORMS AVAILABLE:

20 lb. Foundry Ingot
2 Section - 5 lb. Ingot
Cut Bars, approximately 3/4" wide x 1/2" thick x 2" long are available from stock.
Shorter lengths can be made on special order.