

650 STANDARD YELLOW BRONZE FOR SHEET, PLATE, AND WIRE FABRICATION

United # 650 is a 80 % Copper based Hard Yellow Bronze can be used for fabrication of plate and wire fabrication giving a **Standard Yellow color**. Alloy # 650 Hard Bronze Alloy is **mainly recommended for Investment-Casting**. **For plates or sheets less than 0.5 mm (0.020”), & other applications where this alloy seems hard or exhibits edge cracking, please use alloy # 350 or # 347.**

MELTING

The # 650 Standard Yellow Bronze Alloy should be melted “as is” in a clean crucible. Initial melting temperature should be **1050° C / 1922° F**. Drop temperature by about **5° C** before pouring. Boric acid flux should be used to skim out the dross and slag to keep the metal clean during the melting process. The metal should be mixed well with a stirring rod before pouring to assure a good mix.

POURING TEMP FOR INGOTS

1050° C - 1060° C
1922° F - 1940° F

POURING

Metal should be poured into a pre-heated, vertical graphite or lightly lubricated iron mold. A steady even pouring motion should be used slowing down at the end of the pour to prevent shrinkage in the top of the ingot. Use a round rod mold for wire and a 2 piece L shaped mold (preferably of a width of 3.0 inches and thickness 0.080” inches) for plate and sheet.

QUENCHING

The metal ingot should be removed from the mold and quenched immediately in pickle solution or water. For heavy ingots a one-minute cool down before quenching prevents quench cracking.

FABRICATION

The metal ingot should be cleaned of all adhering oxide or fluxes before rolling. The ingot should be rolled or drawn to a 50% reduction in size before annealing. After annealing continue the reduction at 50% before annealing again. Clean the ingot after each anneal. Keep rolls, dies and metal clean to prevent defects in the finished stock.

ANNEALING

Annealing temperature **485° C / 900° F** for **20 minutes**. **Quench immediately in water or pickle solution**. A boric acid fire coat should be applied before annealing in open atmosphere ovens to protect the metal from heavy oxidation.

REMELTING

Use 50% scrap to fresh mix when re-melting to prevent oxide build up in the metal.

TECHNICAL ASSISTANCE

Always available... Call 1-800-999-3463 / 1-800-999-FINE
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