



INSTRUCTIONS FOR MASTER ALLOY S-88

Covered under one or more of the following #'s. U.S. Patent # 4,973,446, # 5,039,479 or International Publication #'s WO 95/14112, & WO 96/22400

S-88 is a master alloy for adding to fine silver to make Sterling Silver. Based on our proprietary Sterling Silver, this master alloy was developed for those who wish to alloy their own sterling. S-88 will cast without fire scale. The advantages over standard sterling are: Reduced gas porosity. S-88 contains deoxidizers which resist oxygen absorption. Reduced shrinkage porosity. Better solidification characteristics reduce shrinkage. S-88 sterling may be reused indefinitely with a 50% fresh mix, or with old sterling, using our Sterling Silver Replenisher. Less finishing rejects from fire scale and porosity.

Melting: Traditional methods of melting regular sterling silver I.E. (as cool as possible) will cause a variety of problems. Most failures with these sterling products are caused by too low of a melt temperature. Customers familiar with silicon deoxidized gold casting alloys should have less trouble adjusting to the appearance of these silvers.

MIXING	Use 92.5% fine silver & 7.5% S-88. (We recommend using 92.7% fine silver & 7.3% S-88). Example: 500 dwt, add 462.5 dwt of fine silver & 37.5 dwt S-88.
MELTING	Temperature for mixing sterling: 1040° C / 1904° F. Temperature range for casting sterling: 990° - 1020° C / 1814° - 1868° F.
REMELTING	We recommend a 50% fresh mix.
FLUXING	We recommend Boric Acid. Do not use Carbon Containing Fluxes or Charcoal. Skim any surface oxides off the surface before stirring.
QUENCH TIME	15 - 20 minutes.
HARDNESS AND HEAT TREATMENT	This silver as cast will have a hardness similar to traditional sterling silver. It can be hardened further by heat treatment at 300° C / 575° F for one hour.
INVESTMENT REMOVAL	Most standard investment removers will successfully remove the investment powder. The best solutions are the sulfuric and hydrofluoric based products. UNITED's Brite-Cast Investment Remover also works well, although it is less aggressive and will take longer.
FLASK TEMPERATURE	Use your regular flask temperatures.
FIRE SCALE	Fire scale is completely eliminated.
CYANIDE TREATMENT	Not recommended.
TECHNICAL ASSISTANCE	Always available... Call 1-800-999-3463 / 1-800-999-FINE E-mail / doc@unitedpmr.com Web-Site / www.unitedpmr.com

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HELPFUL HINTS FOR STERLING SILVER

BLACKENING UNITED'S DEOXIDIZED STERLING SILVER ALLOYS: May be accomplished using "Silver Black" from Griffith Distributors @ 303-442-8284 or "Black Max" from Rio Grande @ 505-839-3000. It is helpful to use iron or steel hooks for the dipping process with these chemicals as it helps speed the reaction. The normal "Liver of Sulfur" solutions do not blacken United's deoxidized Sterling Silver alloys well. Some of our customers have reported that a photographic chemical called "Rapid Selenium Toner" will blacken our deoxidized Sterling Silver Alloys.

REMOVE ALL INVESTMENT RESIDUES ON STERLING SILVER SCRAP BEING RE-MELTED. Any investment powder residue on scrap being re-melted will decompose at elevated temperatures releasing sulfur compounds into the melt. The sulfur compounds will combine with oxygen forming sulfur dioxide gas that is absorbed by the molten metal causing porosity in the castings.

STERLING SILVER MAY BE HARDENED by the following methods: For hard rolled sheet, plate, and wire, solution anneal at 1200 degrees F. for 20 minutes and quench in a water or pickle solution. The articles are then placed in a pre-heated oven at 300° C / 575° F for 1 hour, and allowed to air cool. For investment cast articles, only the lower temperature heat treatment is required. If the articles are soldered after heat treatment, the heat treatment must be repeated to restore hardness.

ACID GOLD PLATING SOLUTIONS SHOULD BE USED on United's deoxidized Sterling Silver Alloys. The usual cyanide gold plating solutions do not bond well to our deoxidized Sterling Silver Alloys unless various pre-treatments or sub-plating processes are used.

ADVISE YOUR CUSTOMERS NOT TO WEAR STERLING SILVER JEWELRY IN THE SWIMMING POOL. The high Chlorine and /or Bromine contents used in swimming pools can accelerate the tarnishing of Sterling Silver jewelry.

REMOVING THE BLACK TARNISH FROM STERLING SILVER may be accomplished by placing a double layer of aluminum foil in the bottom of a dish pan, adding warm water and 2 – 3 heaping tablespoons of baking soda. Place the black tarnished item in the dishpan to soak for a few minutes and the tarnish will come off. Rinse the items well and buff with soft polishing cloth to restore luster.

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