UNITED® PRECIOUS METAL REFINING, INC.

INSTRUCTIONS FOR NEW-AGE MASTER ALLOY # SD

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**

 # SD is a **New Age -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. **# SD** will cast without fire scale. The advantages over standard sterling are: **Reduced gas porosity.** **# SD** contains deoxidizers which resist oxygen absorption. **Reduced shrinkage porosity.** Better solidification characteristics reduce shrinkage porosity.

MIXING Use 92.5% fine silver & 7.5% **SD**. (We recommend using 92.7% fine silver & 7.3% **SD**). Example: 500 gms, add 462.5 gms of fine silver & 37.5 gms of **SD**.

MELTING We do recommend pre-alloying all master alloy with fine silver followed by aggressive stirring & fluxing to assure a uniform mixture before using it for casting.

Step : 1 Pre- Alloying (Fine silver + master alloy) Temperature **1035° - 1045° C** / **1895° - 1913° F**

Step : 2 Casting Temperature for Sterling Grain **980° - 1020° C** / **1800° - 1865° F**

REMELTING We recommend a 50% fresh mix. Tumble scrap for 2 hours before re-use

FLUXING We recommend Boric Acid. **Do not use Carbon Containing Fluxes or Charcoal.** Skim any surface oxides off the surface before stirring.

QUENCH TIME **20 - 25 minutes**.

HARDNESS AND HEAT This silver as cast will have a hardness similar to traditional sterling silver. It can be hardened further by the following methods: For hard rolled sheet, plate & wire, solution anneal at **1200° 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.

INVESTMENT REMOVAL Most standard investment removers will successfully remove the investment powder. Fluoric-based investment removers are the best for removing the silicon oxide invisible coating. Use of aggressive acids causes stress corrosion and surface damage and is therefore not recommended.
UNITED'S Brite-Cast™ Investment Remover works effectively in removing fire scale as well as preventing stress corrosion or surface damage of the cast piece.

FLASK TEMP Use your regular flask temperatures, In the range of **600C to 675C** depending on the size of flask and style of jewelry.

FIRE SCALE Fire scale is completely eliminated.

TECHNICAL ASSISTANCE Always available… Call 1-800-999-3463 / 1-800-999-FINE
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