

Sterlium® Plus Sterling Silver

Sterlium-Plus is a superior, all-purpose sterling silver alloy that has improved tarnish resistance and maintains a bright snow-white color. Unlike other germanium based sterling silvers, Sterlium-Plus is an extremely user-friendly formulation with de-oxidizers which is specifically formulated to provide excellent quality castings and fabricated wrought products with ease. This formulation provides excellent fluidity and excellent reusability. The metal may be age hardened to achieve enhanced durability & hardness to around 120 HV, thus providing the best prong-strength for gemstone setting. Castings made with Sterlium-Plus will be free of fire-scale and will develop a high surface luster upon finishing. Sterlium-Plus is made in the USA, manufactured with "re-defined" silver and is exclusively sold through United Precious Metal Refining, Inc. and Stuller Inc. And, to show how much we believe in this silver alloy, Stuller now manufactures all sterling silver products, fabricated and casted in-house with Sterlium Plus.

Physical Properties:

- Color: Grade 1 white
- Density: 10.33 g/cc
- Melt Range: 1560°F - 1655°F

Mechanical Properties:

- As Cast Hardness: 65 - 70 HV
- Annealed Hardness: 60 HV
- Age Hardened: 110 - 120HV
- Ultimate Tensile Strength: 30,000 psi
- Yield Strength: 13,500 psi
- Elongation after annealing: 55%
- Elongation after age-hardening: 40 %

Age Hardening:

- Solution anneal - 1300°F for 30 minutes followed by immediate water quenching
- Age harden - 600°F for 30 minutes, no special cooling requirements

Annealing:

- Coat with boric acid or any oxidation preventing solution
- Oven anneal - 1200°F - 1300°F for 20 minutes followed by immediate quench in water

Cold Working Considerations:

- Can be worked much like typical sterling silver
- Maximum recommended total reduction during cold working is 60%

Brazing:

- Same guidelines for brazing as used with standard sterling silver alloys; silver braze alloys can be used

Mold Material:

- Typical calcium sulfate (gypsum) bonded investment can be used

Investment Casting Recommendations:

- Similar to that of any other sterling silver

Appropriate Flask Temperatures (Range/Guideline):

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|-------------|--------------|-------------|
| • Filigree: | 1150 -1200°F | 620 - 650°C |
| • Light: | 1100 -1150°F | 595 - 620°C |
| • Medium: | 900 - 1000°F | 480 - 535°C |
| • Heavy: | 850 - 925°F | 455 - 500°C |

Approximate Melt Temperatures:

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|-------------|---------------|
| • Filigree: | 1800 - 1875°F |
| • Light: | 1850°F |
| • Medium: | 1775 - 1800°F |
| • Heavy: | 1775 - 1800°F |

Pickling:

- Hot Sparex solution (sodium bisulfate) or 10% Sulfuric Acid can be used

Protective Cover:

- When melting in casting equipment we recommend that an inert gas, such as argon, be used as protective cover.

Quenching:

- Recommend quenching in water 20 -25 minutes after casting

Replenishing:

- For re-use, a 50/50 ratio is recommended. Cleaned scrap should be re-grained for re-use. Buttons and rods should be free of investment and other contaminants.

For the Bench Jeweler:

- Can be fused without using solder
- Wire can be balled with a torch
- Sheet cannot be reticulated

