

ARGENTIUM 960 PRO SILVER (casting alloy)

Argentium 960 Pro is a superior silver casting alloy, suitable for small to high volume casting applications. It is highly tarnish resistant, firestain free and can be heat-treated to optimise its durability.

Alloy Information / Properties

This patented alloy contains 96% fine silver (exceeding the Britannia Standard), copper, germanium and silicon.

Relative density: 10.3 g/cm³

Melting range: 885-925°C / 1625-1697°F

Cast hardness: 55 HV

Casting Instructions (for average sized pieces - melt size 150 grams - 1 Kg)

	Thin Castings	Medium Castings	Thick Castings
Flask temperature:	650°C / 1202°F	650°C / 1202°F	600-650°C / 1112-1202°F
Metal temperature:	1050°C / 1922°F	1005-1025°C / 1841-1877°F	985-1005°C / 1805-1841°F
Melt under an inert atmosphere			

In keeping with standard trade practice, the suggested temperatures above are only intended as a guide due to: variations in machines, potential differences in thermocouples, the way pieces are sprued, sizes of flasks and the number of items on a tree. We would therefore advise that initial trials are carried out to establish optimum parameters.

The most important difference between traditional Sterling silver and Argentium Silver is that Argentium must be allowed to cool to below 550°C / 1022°F before it is quenched, or cracking can occur. It is therefore recommended that after casting, leave the flask in the casting machine for 3-4 minutes before removing, then allow the flask to cool for 20 minutes in air before quenching.

It should be noted that cracking can also occur if the flask temperature is too low - we therefore strongly recommend our advised temperatures are used as a starting point. When torch melting, please be aware that Argentium Silver displays a paler colour glow than traditional Sterling silver at the same temperature - heat/metal colour recognition is easier to judge when working in a shaded area.

When re-melting, ensure the scrap Argentium Silver has been thoroughly cleaned, pickled and is free from any contamination. Always use 50% new metal.

Pickling

After casting, the tree should be clean and white. If required, a 10% sulphuric acid solution is recommended for pickling. Other suitable pickle solutions are sodium bisulphate, weak Sparex and phosphoric acid (diluted as per supplier's instructions). Please keep pickling time to a minimum. It is important **not** to use hydrofluoric acid with Argentium Silver, as this will dissolve the protective germanium oxide layer (see 'Optimising Tarnish Resistance' below).

Heat-Hardening

Before applying the final polishing and finishing processes, Argentium 960 Pro castings can be hardened by a simple heat-treatment, whereby articles should be placed in a clean oven set to 300°C / 572°F for a minimum of 1.5 hours then...

- remove items from the oven and allow to cool in air or
- for a slightly greater hardness, switch off the oven and allow the items to slowly cool to room temperature inside the enclosed oven (it may be convenient to do this at the end of the working day).

Polishing, Degreasing and Rinsing

The use of separate polishing media and mops for Argentium Silver items is recommended - this prevents cross-contamination of another metal/alloy onto the surface of Argentium pieces, which can diminish tarnish resistance.

Castings should be cleaned in an ultrasonic bath at 50°C / 122°F for 2 minutes using a neutral (pH 7-9) aqueous soap solution made with distilled water. After degreasing, pieces should be rinsed with distilled water at room temperature and dried (if using hot air this should ideally be below 70°C / 158°F).

*NB. Use of distilled water for degreasing solutions and rinsing is recommended to prevent water marks. It is important **not** to use deionised/reverse osmosis water as this can damage Argentium's protective germanium oxide and reduce tarnish resistance.*

Optimising Tarnish Resistance

Argentium Silver has the unique property where a layer of germanium oxide naturally develops on the surface of the metal to form a protective barrier - this oxide is self-replenishing if the surface is abraded. The formation of the germanium oxide layer can be accelerated by heating in air at 100°C / 212°F for 3 hours. It is important that careful cleaning is initially undertaken to optimise this process.

For technical assistance please contact

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