

TECHNICAL INFORMATION SHEET

ARGENTIUM 960 SILVER - CASTING



Updated: March 2025

GENERAL INFORMATION

COMMERCIAL COMPOSITION

Silver:	96.2%
Copper	
Germanium	

MELTING TEMPERATURES

Liquidus:	920°C / 1688°F
Solidus:	890°C / 1634°F
Melting range:	30°C / 86°F

FULL CHARACTERISATION DATA

COLOUR COORDINATES

L*	95.7
A*	-0.3
B*	3.5
C*	3.5
Yellow Index	6.3

AS CAST GRAIN SIZE [µm]: 190

DENSITY [g/cm³]: 10.4

MECHANICAL CHARACTERISTICS

As cast hardness [HV 0.2]:	55
Hardness after 70% area reduction [HV 0.2]:	155
Hardness after annealing [HV 0.2]:	55
Single step precipitation hardening hardness [HV 0.2]:	100
Double step precipitation hardening hardness [HV 0.2]:	120
Tensile strength (Rm) [MPa]:	227
Yield strength: (Rp0.2) [MPa]:	147
Elongation at rupture: (A) [%]	36

PRODUCT APPLICATIONS

Casting in open systems
Casting in closed systems
Casting without stones
Stone-in-place casting

IMPORTANT: MAXIMISING ARGENTIUM SILVER'S TARNISH RESISTANCE

To initiate and optimise tarnish resistance the following processes are mandatory...

- 1) A low-temperature heat treatment must be applied to increase hardness and optimise the surface for finishing - see 'HEAT HARDENING PARAMETERS' instructions, page 2.
- 2) A grease-free surface must be achieved as a final finishing process - see 'CLEANING & RINSING' instructions, page 2.

IMPORTANT: HEAT/COLOUR RECOGNITION & COOLING ARGENTIUM SILVER

Argentium Silver glows a paler colour than standard Sterling silver at red-hot temperatures.

Take care not to overheat the metal (temperature/metal colour recognition is easier to judge working in a shaded area).

*** Argentium Silver retains its heat for longer than standard Sterling silver.**

Following heating processes, always wait until the red colour glow has completely disappeared before touching or quenching Argentium Silver (this is easier to see in a shaded area).

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CASTING PROCESSING PARAMETERS

CASTING TEMPERATURES	Flask from [°C / °F]	Flask to [°C / °F]	Metal from [°C / °F]	Metal to [°C / °F]
Less than 0.5mm:	600 / 1112	640 / 1184	1020 / 1868	1050 / 1922
0.5 - 1.2mm:	560 / 1040	600 / 1112	1000 / 1832	1020 / 1868
More than 1.2mm:	540 / 1004	580 / 1076	980 / 1796	1000 / 1832

CASTING ATMOSPHERE: Melt under an inert atmosphere (nitrogen or argon).

CASTING TREES WITHOUT STONES: It is important to remove the flask from the casting machine within one minute of the alloy being poured. The flask should be set down gently and allowed to cool for 10-12 minutes before quenching.

STONE-IN-PLACE CASTING TREES: Remove the flask from the casting machine within one minute of the alloy being poured. Allow the flask to cool down to room temperature before removing investment.

REMELTING / RECYCLING: 50:50 old/new material. Ensure previously cast Argentium is clean and free of investment residues.

PICKLING: 10% Sulphuric Acid solution or Sodium Bisulphate, weak Sparex, Phosphoric Acid (diluted as per supplier's instructions). Keep pickling time to a minimum. **DO NOT** use Hydrofluoric Acid.

HEAT HARDENING PARAMETERS (to be carried out before final finishing processes)

SINGLE STEP HEAT HARDENING TREATMENT	Temp. [°C / °F]	Time	Cooling
Heat harden in air atmosphere:	300 / 572	60-90 mins	Slow cool in air or furnace
DOUBLE STEP HEAT HARDENING TREATMENT	Temp. [°C / °F]	Time	Cooling
Step 1) Heat in a protective atmosphere:	700 / 1292	40 mins	Quench in water *
Step 2) Heat harden in air atmosphere:	300 / 572	60-90 mins	Slow cool in air or furnace

FINISHING PROCESSES

POLISHING

Argentium Silver can be polished using traditional wheels or mass finishing processes. The use of separate polishing wheels for Argentium Silver items is advised - this prevents cross-contamination of another metal/alloy onto the surface of Argentium pieces, which can compromise tarnish resistance.

CLEANING & RINSING

To maximise Argentium Silver's tarnish resistance, a grease-free surface must be achieved using ultrasonic cleaning. We **DO NOT** recommend electrolytic cleaning or steam cleaning.

Use of distilled water for cleaning / rinsing is recommended to prevent water marks. Please **DO NOT** use deionised / reverse osmosis water with Argentium Silver.

NB. For high volume production, please refer to the 'Argentium Finishing & Cleaning Guide' on our website:
<https://www.argentiumsilver.com/user-guides-downloads>