

# TECHNICAL INFORMATION SHEET

## ARGENTIUM 940 CASTING SILVER



Dated: August 2023

---

### GENERAL INFORMATION

#### COMMERCIAL COMPOSITION

Silver: 94.2%  
Copper  
Germanium

#### MELTING TEMPERATURES

Liquidus: 900°C / 1652°F  
Solidus: 870°C / 1598°F  
Melting range: 30°C / 86°F

---

### FULL CHARACTERISATION DATA

#### COLOUR COORDINATES

L\* 95.4  
A\* -0.3  
B\* 3.9  
C\* 3.9  
Yellow Index 7.2

#### MECHANICAL CHARACTERISTICS

As cast hardness [HV 0.2]: 65  
Hardness after 70% area reduction [HV 0.2]: 170  
Hardness after annealing [HV 0.2]: 65  
Single step precipitation hardening hardness [HV 0.2]: 120  
Double step precipitation hardening hardness [HV 0.2]: 140  
Tensile strength (Rm) [MPa]: 250  
Yield strength: (Rp0.2) [MPa]: 91  
Elongation at rupture: (A) [%] 30

AS CAST GRAIN SIZE [ $\mu\text{m}$ ]: 185

DENSITY [ $\text{g}/\text{cm}^3$ ]: 10.3

#### 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, a grease-free surface must be achieved as a final finishing process - see 'CLEANING & RINSING' instructions, page 2.

# TECHNICAL INFORMATION SHEET

## ARGENTIUM 940 CASTING SILVER



Dated: August 2023

---

### 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	1010 / 1850	1040 / 1904
0.5 - 1.2mm:	560 / 1040	600 / 1112	990 / 1814	1010 / 1850
More than 1.2mm:	540 / 1004	580 / 1076	960 / 1760	990 / 1814

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

**CASTING TREES WITHOUT STONES:** Let the flask cool down in the chamber for 1 minute after pouring. Take the flask out of the machine without shaking it, let it cool for 20 minutes in air, then quench in water.

**STONE-IN-PLACE CASTING TREES:** Let the flask cool down for 30-45 minutes, then quench in water.

**RE MELTING / 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.

---

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

SINGLE STEP PRECIPITATION HARDENING TREATMENT	Temp. [°C / °F]	Time	Cooling
Heat harden in air atmosphere:	300 / 572	90 mins	Slow cool in air or in furnace

DOUBLE STEP PRECIPITATION 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 mins	Slow cool in air or in furnace

---

### 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 - allowances for a slower cool must be made when quenching.

---

### 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 'Argentium Cleaning Guidelines' document by Legor Group.

ARGENTIUM INTERNATIONAL LIMITED

3-5 Dunn Street, London E8 2DG, UK

Tel: +44 (0)20 4542 7031 | Email: [info@argentium.com](mailto:info@argentium.com) | Web: [www.argentiumsilver.com](http://www.argentiumsilver.com)