



TECHNICAL DATASHEET

Galinstan Liquid Metal Alloy

PRODUCT IDENTIFICATION

Product Name: Galinstan Liquid Metal Alloy

Chemical Type: Eutectic Gallium-Indium-Tin Alloy (Ga-In-Sn)

Physical Form: Liquid metal

PRODUCT DESCRIPTION

Galinstan is a non-toxic, silver metallic room temperature of liquid alloy (melting point near about -19°C designed as a safe replacement for mercury in thermal and electronic applications. It offers high electrical and thermal conductivity, excellent fluidity, and the ability to wet a wide range of surfaces due to a thin Ga_2O_3 oxide layer formed on exposure to air. Its stability, safety, and performance make it suitable for advanced electronic application.

CHEMICAL COMPOSITION (TYPICAL)

- Gallium (Ga): 68 – 69 %
- Indium (In): 21 – 22 %
- Tin (Sn): 9.5 – 10.5 %

PHYSICAL & CHEMICAL PROPERTIES

- Appearance: Bright, silver metallic liquid
- Melting Point: -19°C (approx.)
- Boiling Point: $>1300^{\circ}\text{C}$
- Density (20°C): $\sim 6.44\text{ g/cm}^3$
- Viscosity (20°C): $\sim 0.0024\text{ Pa}\cdot\text{s}$
- Thermal Conductivity: $\sim 16.5\text{ W/m}\cdot\text{K}$
- Electrical Conductivity: $\sim 3.4 \times 10^6\text{ S/m}$
- Surface Tension: $0.53 - 0.72\text{ N/m}$ (20°C)
- Specific Heat Capacity: $\sim 296\text{ J/kg}\cdot\text{K}$
- Vapor Pressure: $<10^{-8}\text{ Torr}$ at 500°C
- Solubility: Insoluble in water and most organic solvents

STORAGE & HANDLING

- Store in tightly sealed glass or polymer containers.
- Avoid prolonged contact with light metals.
- Use clean, dry tools made of glass, PTFE, HDPE, or high-grade stainless steel.
- No refrigeration required (stable at room temperature).
- Prevent contamination with dust or reactive metals.

TYPICAL APPLICATIONS

- Clinical thermometers (mercury replacement)
- Heat-transfer fluids & thermal interface materials
- LED cooling modules
- Semiconductor and power device cooling
- Flexible and stretchable electronics
- Soft robotics actuation systems
- Microfluidics & lab-on-chip devices
- Conductive inks and printed electronics

MATERIALS TO AVOID

- Aluminum (strong attack)
- Copper, zinc, tin, lead (amalgam-like interaction)
- Strong oxidizers and acids
- Halogens

PACKAGING

- Supplied in glass bottles, polymer containers, sealed vials or Argon filled Bottles.
- Standard pack sizes: 10 g, 50 g, 100 g, 250 g, 500 g, 1 kg.

DISCLAIMER: This Technical Data Sheet provides on the basis of physical and chemical evidence and study material specifications.

Contact us for technical support to specify the best Galinstan to meet your assembly requirements

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