

# LINQALLOY SAC405

## SAC405 Solder Spheres



- Pb-free solder spheres
- Excellent solder joint reliability
- Superior wetting performance among SAC alloys

**LINQALLOY SAC405** solder spheres are Pb-free alloys composed of 95.5% Sn, 4.0% Ag, and 0.5% Cu (Sn95.5Ag4.0Cu0.5). SAC405 solder spheres are one of the industry-standard Pb-free solder alloys, alongside SAC305, and are used in BGA, CSP, LBGA, PBGA, and CBGA components for lead-free soldering.

**LINQALLOY SAC405** solder spheres are compatible with a wide range of industry-standard flux systems and formulations. They provide excellent solder joint reliability and strong resistance to thermomechanical fatigue. With their rapid wetting characteristics, these solder spheres ensure consistent solderability and robust joint formation across various assembly processes.

### Elemental Composition (in wt%)

| Sn      | Ag        | Cu        | Sb     | Cd     | Al     | Bi     | As     | Fe     | Zn     | Pb     |
|---------|-----------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|
| Balance | 3.90–4.10 | 0.45–0.55 | ≤0.120 | ≤0.005 | ≤0.005 | ≤0.150 | ≤0.010 | ≤0.020 | ≤0.005 | ≤0.100 |

### Technical Specifications

| Property                       | Value              | Unit              |
|--------------------------------|--------------------|-------------------|
| Alloy Composition              | Sn96.5 Ag4.0 Cu0.5 | —                 |
| Solidus / Liquidus Temperature | 217 / 219          | °C                |
| Peak Reflow Temperature        | 245–250            | °C                |
| Density                        | 7.42               | g/cm <sup>3</sup> |
| Vickers Hardness               | 16                 | Hv                |
| Tensile Strength               | 53                 | MPa               |
| Young's Modulus                | 49                 | GPa               |
| Elongation                     | 35                 | %                 |
| Electrical Resistivity         | 13                 | μΩ·cm             |
| Thermal Conductivity           | 74                 | W/m·K             |

**Europe**  
Industrieweg 15E,  
1566JN Assendelft  
The Netherlands  
Phone: +31 (20) 893 2224  
Email: [info@caplinq.com](mailto:info@caplinq.com)

**Canada**  
80 Sirocco Crescent  
Ottawa ON, K2S 2C9  
Canada  
Phone: +1 (613) 482-2215  
Email: [info@caplinq.com](mailto:info@caplinq.com)



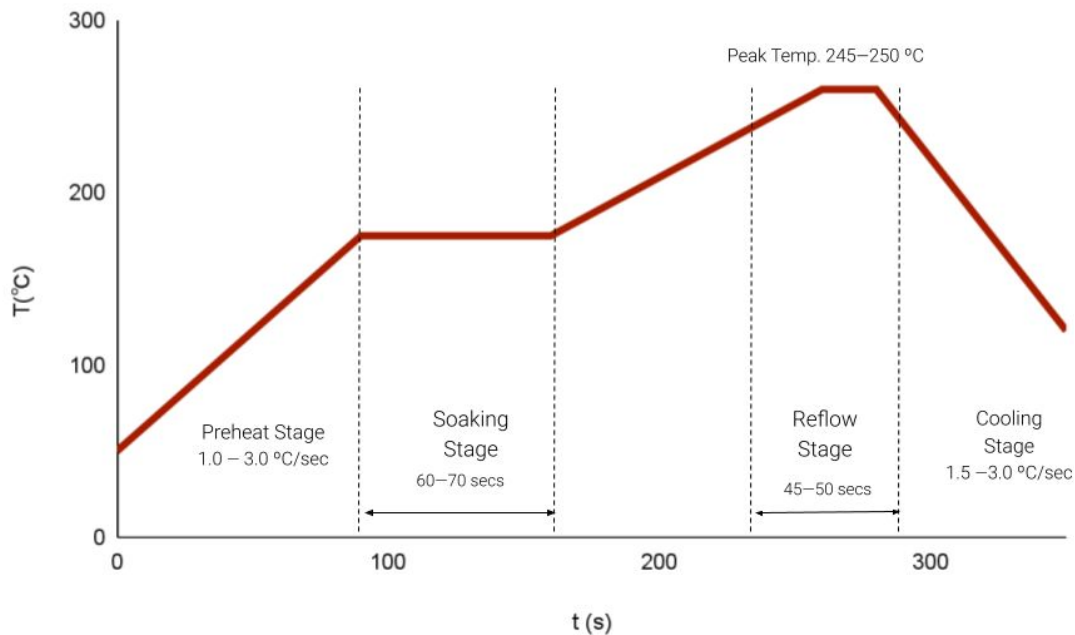
**North America**  
36927 Schoolcraft Rd  
Livonia, MI 48150  
United States  
Phone: +1 (313) 558-8243  
Email: [info@caplinq.com](mailto:info@caplinq.com)

**South East Asia**  
S-08-07 Persiaran Triangle  
B Lepas, Penang 11900  
Malaysia  
Phone: +60 (12) 4302223  
Email: [info@caplinq.com](mailto:info@caplinq.com)

## Recommended Reflow Process

| Preheating Stage    |                          | Soaking Stage    |                          | Reflow Stage    |                       | Cooling Stage       |
|---------------------|--------------------------|------------------|--------------------------|-----------------|-----------------------|---------------------|
| Preheat Rate [°C/s] | Preheat Temperature [°C] | Soaking Time [s] | Soaking Temperature [°C] | Reflow Time [s] | Peak Temperature [°C] | Cooling Rate [°C/s] |
| 1.0 – 3.0           | 170                      | 60–70            | 170–180                  | 45–50           | 245–250               | 1.5–2.0             |

## Reflow Profile



## Storage and Handling

**LINQALLOY SAC405 solder spheres** are available in jars containing either 250,000 or 1 million spheres. To maintain their quality, the jars should be stored in a clean, dry environment and kept in sealed containers. The product should not be refrigerated. Avoid probing the spheres with fingers or other implements, as this can alter their shape, score their surface, or introduce contaminants, potentially causing placement difficulties.

**SAC405 solder spheres** are originally packed in jars with inert gas (nitrogen) and are sealed with shrink-wrapped plastic to prevent oxidation. When stored properly in sealed jars and without agitation, the shelf life of the solder spheres is 2 years.

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

### Europe

Industrieweg 15E,  
1566JN Assendelft  
The Netherlands  
Phone: +31 (20) 893 2224  
Email: [info@caplinq.com](mailto:info@caplinq.com)

### Canada

80 Sirocco Crescent  
Ottawa ON, K2S 2C9  
Canada  
Phone: +1 (613) 482-2215  
Email: [info@caplinq.com](mailto:info@caplinq.com)



### North America

36927 Schoolcraft Rd  
Livonia, MI 48150  
United States  
+1 (313) 558-8243  
Email: [info@caplinq.com](mailto:info@caplinq.com)

### South East Asia

S-08-07 Persiaran Triangle  
B Lepas, Penang 11900  
Malaysia  
Phone: +60(12)4302223  
Email: [info@caplinq.com](mailto:info@caplinq.com)