

- Microalloyed lead free solders
- Good wetting properties
- Smooth and shiny surface
- Reduced copper leaching
- Significantly diminished dross formation

### ■ Description

ELSOLD SN100 MA-S solders are designed to replace commercially available tin/lead alloys by lead-free alloys in existing production processes of electronic manufacturing with the pretension to improve properties of lead-free alloys. ELSOLD SN100 MA-S solder provide all the advantages of Ni, Ge micro-alloyed solder alloys with the additional benefit of high stability and low dross rates. SAC305 is the mostly accepted alloy of the SnAgCu group. However, high metal prices have caused introduction and increasingly interest in solders with lower or no silver contents, which provide good results in many applications at lower cost.

### ■ Application

As it is the case for lead-free alloys, changes of the temperature profile at the soldering equipment are required for ELSOLD SN100 MA-S solders as well. Typical soldering temperatures are in the range of 255 – 265 °C (up to 320 °C for selective soldering). The quality of the resulting solder joints is in many aspects comparable to traditional SnPb and all conventional lead free solders. In some respect ELSOLD micro alloyed lead free solders exceed quality of SnPb solders.

Physical properties are not changed by the micro-alloy additions. The differences between non-micro-alloyed and ELSOLD SN100 MA-S are as follows:

- Finer grains, resulting in smoother and shinier surface, caused by changed solidification behaviour.
- Reduced copper leaching
- Extended useful life of the solder baths due to reduced copper absorption
- Reduced wear on the soldering equipment
- Much lower cost, significantly diminished dross formation

### ■ Storage/Shelf Life

The material can be stored for a minimum of 60 months from the date of manufacturing. Care should be taken, however, to store the material in a clean environment. Using the material beyond the official shelf life is possible without any problem in most cases. However, this should be confirmed by adequate trials before actual usage.

### ■ Health and Safety

ELSOLD SN100(Ag) MA-S solder alloys are not considered to be harmful. Information relating to health and safety should be taken from the respective material safety data sheet.

### ■ Forms of Supply

ELSOLD SN100 MA-S alloys are available in the form of ingots/bars and solid wires for wave, dip, and selective soldering for manual and automatic soldering processes.

Description	Dimensions [mm]	Weight /Piece
Ingots with suspension eyelets	50 (W) x 18 (H) x 600 (L)	Approx. 4 kg
	50 (W) x 20 (H) x 490 (L)	Approx. 3 kg
1-kg bar	20 (W) x 20 (H) x 335 (L)	1 kg
Triangular bars	8 (W) x 10 (H) x 400 (L)	Approx. 200 g
Clippings	8 (W) x 10 (H) x 30 (L)	Bulk
Solid wires	Various diameters 0.5 – 6	On spools of 500 g, 1 kg, 4 kg, 15 kg

The purity of the alloys meets the requirements of norms EN 61190-1-3 and EN ISO 9453, respectively, with exception of Ni.

### ■ Physical properties of ELSOLD SN100(Ag) MA-S solders (alloys SAC0307, SAC107, SC305)

Properties	ELSOLD SN100 MA-S SC07	ELSOLD SN100 MA-S REFILL SC02 <sup>*</sup>	ELSOLD SC07
Composition [%]	Sn 99.3	Sn 99,8	Sn 99.3
	Cu 0.7 ± 0.2	Cu 0.2 ± 0.1	Cu 0.7 ± 0.2
	Ni 0.03-0.04	Ni 0.02-0.03	Ni 0.01 max.
	Ge 0.003-0.007	Ge 0.006-0.01	Ge -
	P 0.001-0.005	P 0.012-0.02	P -
Melting point/Range [°C]	227 – 230	232 – 234	227
Density [g/cm <sup>3</sup> ]	7.32	7.31	7.32

*\* Copper reduced alloy for refilling of Copper enriched solder baths*

### ■ Lead-Free Marking

Lead-Free ELSOLD alloys are marked by the ELSOLD lead-free Smiley in order to avoid mingling with lead-bearing material.



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