Technical Product Information

ELSOLD SN100(Ag) MA Solder

Micro-alloyed lead free solders
Good wetting properties
Smooth and shiny surface
Reduced copper leaching

Description

ELSOLD SN100(Ag) MA 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(Ag) MA solders provide the lowest leaching rates for Copper.
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(Ag) MA 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 conventional lead free solders.
Physical properties are not changed by the micro-alloy additions (Co, Ni, Ce). The differences between non-micro-alloyed and ELSOLD SN100(Ag) MA are as follows:

- Finer grains, resulting in smoother and shinier surface, caused by changed solidification behaviour
- Clearly reduced copper leaching
- Extended useful life of the solder baths due to reduced copper absorption
- Reduced wear on the soldering equipment

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 solder alloys are not considered to be harmful. Information relating to health and safety should be taken from the respective material safety data sheet.

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Forms of Supply

ELSOLD SN100(Ag) MA 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 solders (micro-alloyed alloys SAC0307, SAC107, SAC305) in comparison to Sn63Pb37 and SC07.

Properties	ELSOLD Sn63 Pb37	ELSOLD SN100 Ag0.3 MA	ELSOLD SN100 Ag1 MA	ELSOLD SN100 Ag3 MA	ELSOLD SN100 MA	ELSOLD SC07
Composition [percent by weight %]	Sn63 Pb37	Sn 99.0 Ag 0.3 Cu 0.7 Co 0.03 Ni 0.02 Ce 0.001	Sn 98.3 Ag 1.0 Cu 0.7 Co 0.03 Ni 0.02 Ce 0.001	Sn 96.5 Ag 3.0 Cu 0.5 Co 0.03 Ni 0.02 Ce 0.001	Sn 99.3 Ag 0.05 max Cu 0.7 Co 0.03 Ni 0.02 Ce 0.001	Sn 99.3 Ag 0.05 max Cu 0.7 Co nil Ni 0.01 max Ce nil
Melting point/ Range [°C]	183	217 – 227	217 – 223	217 – 219	227	227
Density [g/cm^3]	8.42	7.33	7.36	7.38	7.32	7.32

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