

TAMURA ELSOLD SN100Ag MA-S Alloys

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

Description

TAMURA ELSOLD SN100Ag 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. TAMURA ELSOLD SN100Ag MA-S solders provide all the advantages of Ni, Ge micro-alloyed solder alloys with the additional benefit of high stability and extra 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 TAMURA ELSOLD SN100(Ag) 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 conventional lead free solders. In some respect TAMURA 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 TAMURA ELSOLD SN100(Ag) 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

TAMURA ELSOLD SN100Ag MA-S solders are designed especially for first filling of wave soldering machines. For refilling TAMURA ELSOLD SN100Ag MA-S REFILL or REFILL Plus should be used for permanently optimal solder bath compositions with best properties.

TAMURA ELSOLD SN100Ag MA-S solders are perfectly suited for wave soldering processes and also available as solid wires & flux cored wires - for shiny solder joints, better wetting and reduced soldering tip wear.

For selective soldering systems with a good inert gas atmosphere, non-micro-alloyed solders are recommended - also according to the recommendation of the system manufacturers - with regard to nozzle coatings, i.e. our standard alloys such as SnCu0.7 or SAC305 of highest quality.

Conform to International Standards

The specification is in accordance with EN 61190-1-3, ISO 9453 and IPC J-STD 006C or is narrower, with nickel as an alloying element and not as an impurity.

Technical Product Information

TAMURA ELSOLD SN100Ag MA-S Alloys

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

TAMURA ELSOLD SN100Ag 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

TAMURA ELSOLD SN100Ag 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
1-kg bar	50 (W) x 20 (H) x 490 (L)	Approx. 3 kg
Triangular bars	20 (W) x 20 (H) x 335 (L)	1 kg
Clippings	8 (W) x 10 (H) x 400 (L)	Approx. 200 g
Solid wires	8 (W) x 10 (H) x 30 (L)	Bulk
	Various diameters 0.5 – 6	On spools of 500 g, 1 kg, 4 kg, 15 kg

Physical properties of TAMURA ELSOLD SN100Ag MA-S solders (alloys SAC0307, SAC107, SAC305)

Properties	SN100Ag0.3 MA-S	SN100Ag1 MA-S	SN100Ag3 MA-S
Composition [%]	Sn 99.0	Sn 98.3	Sn 96.5
	Ag 0.3 ± 0.2	Ag 1.0 ± 0.2	Ag 3.0 ± 0.2
	Cu 0.7 ± 0.2	Cu 0.7 ± 0.1	Cu 0.5 ± 0.2
	Ni 0.03-0.04	Ni 0.03-0.04	Ni 0.03-0.04
	Ge 0.003-0.007	Ge 0.003-0.007	Ge 0.003-0.007
	P 0.001-0.005	P 0.001-0.005	P 0.001-0.005
Melting Point / Range [°C]	217 – 227	217 – 223	217
Density [g/cm ³]	7.33	7.36	7.38

Copper-free versions available on request:

Sn99.7Ag0.3 MA-S SA03: SnAg0.3 + Ni + Ge + P

Sn97Ag3 MA-S SA3: SnAg3 + Ni + Ge + P

The information contained herein is based on technical data that we believe to be reliable and is intended for use by persons having technical skill, at their own risk. Users of our products should make their own tests to determine the suitability of each product for their particular process. TAMURA ELSOLD will assume no liability for results obtained or damages incurred through the application of the data presented.