

Technical Product Information

Lead-free Cored Solder Wires for Electronics

TAMURA ELSOLD manufactures a wide range of flux-cored wires for manual and automatic soldering processes to assist the user in the transition from Tin/Lead to lead-free solders. The fluxes used – on the basis of natural rosin, synthetic resins, or organic substances – facilitate the wetting of the surface to be soldered and improve the spreading of the solder which, for physical reasons, is worse for lead-free solders than it has been for SnPb solders. The right combination of activators of TAMURA ELSOLD Cored Wires guarantees a wide process window due to a high level of activity paired with a very low risk of corrosion

Areas of Use

TAMURA ELSOLD Cored Wires are used for automatic and manual soldering as well as for solder repair work in all areas of the electrical and electronic industry, especially in automotive electronics, telecommunication and general industrial electronics. As the only European manufacturer TAMURA ELSOLD is listed as approved source for Sn94Ag4 (TAMURA ELSOLD brand name SA40) in the catalogue of qualified construction materials of the ESA (European Space Agency).

The Alloys

All TAMURA ELSOLD alloys are made exclusively from carefully selected virgin base metals from first melt. The following standard alloys are supplied. Other alloys can be manufactured on special request.

Alloy Designation	Sn [%]	Ag [%]	Cu [%]	Others	Density [g/cm ³]	Melting point / range [°C]
SC07	99.3		0.7		7.32	227
Micro alloyed solders						
SN100 MA, SN100 MA-S	99.3		0.7	Co, Ni, Ce Ni, Ge, P	7.32	227
SC30	97.0		3.0		7.35	230 – 250
SA30	97.0	3.0			7.35	221 – 240
SA35	96.5	3.5			7.35	221
SA40	96.0	4.0			7.38	221 – 238
SAC305	96.5	3.0	0.5		7.37	217 – 219
SAC3507	95.8	3.5	0.7		7.40	217 – 219
SAC2807	96.5	2.8	0.7		7.37	217 – 220
W2	94.88	5.0		0.12 % Indium	7.40	220 – 235

Alloy tolerances, if not stated otherwise, for elements up to 5 % ± 0.2 %, over 5 % ± 0.5 %.

Impurities per EN 61190-1-3 / ISO 9453 and ELSOLD house norms.

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SC07: Low-Cost lead-free solder, suitable for a wide range of applications. Eutectic solder.

Micro alloyed Solders: Micro-alloyed versions of SC07, protect soldering tips, reduced Cu-leaching, fine grain size, shiny appearance

SC30 Temperature-resistant tin copper version with good creep resistance

SA35: Eutectic tin silver alloy with proven reliability

SA40: Only lead-free alloy approved by ESA (European Space Agency)

SAC305: The standard tin-silver-copper (TSC) alloy

W2: Temperature-stable solder with high creep strength and high resistance against centrifugal forces.

The Fluxes

Type	Classification per DIN EN		Halide content	No Clean	Short description
	ISO 9454-1	61190-1-1			
105-19	2223	ORM1	< 2.0 %	x	Very low residues. Excellent for automatic soldering.
A3 and A4	1123	ROH1	0.75 and 1 %	(x)	For applications requiring active fluxes (effective on brass, nickel, bronze)
B1	1122	REL1	< 0.5 %	x	Developed in particular for lead-free SnAgCu solders. Very good spreading.
C3	1131	ROLO	-	x	Halide-free flux for all electronic applications.
C3-M2	1131	ROLO	-	x	Reduced spattering version of C3 with ROLO classification
E1	1131	RELO	-	x	Good temperature stability and very low spattering
ELTIN 3064 BF	1123	ROM1	1 %	(x)	For surfaces which are difficult to solder, also suitable on nickel, brass, and bronze.
ELTIN 3066 BF	1123	ROM1	1.5 %	(x)	Higher degree of activation than ELTIN 3064 BF
H	2131	ORM0	-	x	Urea-based, very effective flux without addition of rosin, e.g. for the production of transformers or capacitors
K	1111	ROLO	-	x	Non-activated rosin. For easy-to-solder surfaces with highest demands on reliability
T	2223	ORM1	< 2 %		For strongly oxidised surfaces, rosin-free, halide-activated. Is used e.g. in the production of light bulbs

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Available Alloy / Flux combinations and relevant Flux Content

(Tolerances of the flux content meet the requirements of norm EN ISO 12224-1)

	105-19	A3 / A4	B1	C3	C3-M2	E1	ELTIN 3064BF	ELTIN 3066BF	H	K	T
SC07	1.4%	2.5%	1.4%	2.5%			1.4% 2.2% 3.3%	1.4%	2.0%		
Micro alloyed Solders Sn100 MA, Sn100 MA-S				2.5%		2.5%	2.2%				
SC30		2.5% 3.5%		3.5%				2.2%			
SA30											2.0% 3.0%
SA35		1.5%					2.2%				
SA40				2.5% 3.5%					3.5%		3.0%
SAC305				1.5% 2.5% 3.5%		2.5%	0.5% 2.2% 3.3%	2.2%			
SAC3507		2.5%	1.4%	2.5%	2.5%		2.2%				
SAC2807							2.2%				
W2		3.5%									

The table shows the combinations which are at present in frequent use. In case of sufficient demand other combinations are possible at any time. Please ask your sales agent or contact our sales department.

Core Design

The cored wires are normally available in single core versions. Multi-core versions (3) are available upon special request.

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Diameter and Tolerances

(per EN ISO 12224-1)

Diameter [mm]	Tolerance [mm]
0.30	± 0.03
0.50	± 0.05
0.75	± 0.05
1.00	± 0.05
1.20	± 0.05
1.50	± 0.05

Spool Dimensions [mm]

	250 - 500 g Spool	1000 g Spool
Flange Diameter	69.5	70
Barrel Diameter	33.5	33
Bore	30	30
Total Width	41.5	78
Traverse Width	38	68

Packing Units

Spools of 250 g – 500 g – 1000 g
2.25 kg
3.5 kg
4.5 kg
10.0 kg

Spool Colours: Neon Yellow (500 g / 1000 g)
Black (2.5 kg)
Black (4 kg)
Wood (5 kg)
Black (10 kg)

Shelf Life

We guarantee a minimum shelf life of 36 months if the material is stored properly in a clean environment. In many cases the cored wires can be used without problems beyond the guaranteed shelf life. However, the user should check this on his own responsibility by making appropriate tests.

Health and Safety

For safety and health information please refer to the relevant material safety data sheets.

Important Information: 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.