



## TECHNICAL DATA SHEET

### Sn96.5-Ag3-Cu0.5 (ECO 4) flux-cored solder



UNIVERSITAT DE  
BARCELONA

ECO 4 Sn96.5Ag3Cu0.5. Tin-Copper-Silver solder according to EN-ISO 9453, Alloy 711

#### TECHNICAL DATA – ECO 4

Melting point (°C)	217/220
Density at 20°C (gcm <sup>-3</sup> )	7.38
Tensile strength (MPa)	49
Elongation (%)	19 (figure 1a)
Hardness (HB)	15

#### RANGE FLUX

PW13	(Flux with halogens with resin) ROL1
PW12	(Flux with resin without halogens) ROL0
PW25	(Flux without rosin with halogens) REM1
PW24	(Flux without rosin without halogens) REM0
PW15	(Flux with halogens with resin) ROM1
PW14	(Flux with resin without halogens) ROM0
PW23	(Flux without rosin with halogens) REL1
PW22	(Flux without rosin without halogens) RELO

\*All the characterizations and procedures done to obtain the physical properties of the solder were carried out in collaboration with the University of Barcelona.

#### GENERAL INFORMATION

ECO 4 is a high-performance lead-free tin-copper-silver (figure 1b) solder alloy. The composition of this solder complies with the ISO 9453:2015 (Alloy 711) standards and RoHS directive. This makes the ECO 4 suitable for a wide variety of applications in which lead is prohibitive. This solder can be used in wave, selective, hand and SMT reflow soldering.

Revision date: 18/03/2020

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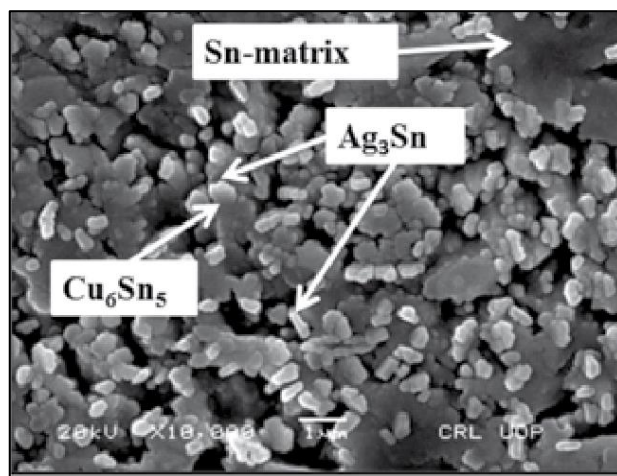
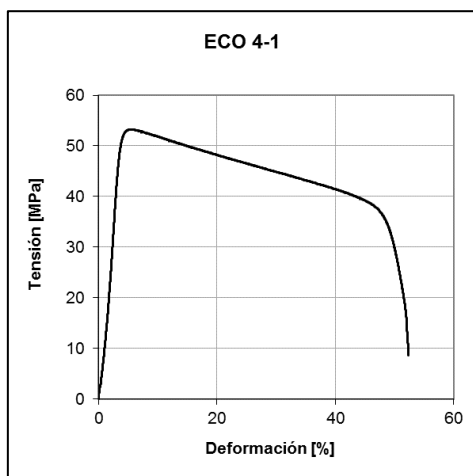


Figure 1. a) Stress-Strain curve and b) SEM image for ECO 4 alloy.

#### CUSTOMER ADDED VALUE

- Excellent wetting and fluidity.
- Excellent solderability due to fast wetting.
- Low bridging levels.
- Excellent performance and compatibility across a wide range of flux technologies.
- Compatible with all fluxes used in electronic applications.

#### COMPATIBILITY AND CLEANING

This ECO 4 alloy is compatible with a wide variety of flux types that we also offer in our catalogue. For more information ask us for the corresponding technical data sheet.

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#### ALLOY COMPOSITION (Sn96.5Ag3Cu0.5)

COMPOSITION	
Tin (Sn)	Rem.
Silver (Ag)	2.8-3.2
Copper (Cu)	0,3-0,7
MAXIMUM IMPURITY LEVELS ACCORDING TO ISO 9453:2015	
Antimony (Sb)	0,10
Bismuth (Bi)	0,10
Gold (Au)	0,05
Lead (Pb)	0,07
Indium (In)	0,10
Aluminum (Al)	0,001
Arsenic (As)	0,03
Cadmium (Cd)	0,002
Iron (Fe)	0,02
Nickel (Ni)	0,01
Zinc (Zn)	0,001

#### STORAGE AND HANDLING

To avoid any undesirable damage, please follow these advice:

- Do not fire anything near storage area.
- Store in dry, cool and non-corrosive environment.
- While handling and processing, wear the personal protective equipment.
- Refer to the accompanying Material Safety Data Sheet (MSDS) for any specific emergency information.

#### SHELF LIFE

Following the previously named advice, the durability of this alloy when solid (without flux) is indefinite at room temperature. Consult the MSDS for additional precautions and procedures.

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#### AVAILABLE FORMATS

Diameters from 0.5mm to 6mm.

#### PLASTIC REELS OF:

- 100 g.: 30 units/box
- 250 g.: 20 or 50 units/box
- 500 g.: 20 units/box
- 1 kg.: 10 units/box
- 2 kg and 4 kg: Under demand

Our recommendation is based on technical studies and practical experience. However, due to the wide variety of materials and working conditions in which our products are used, we do not assume any responsibility over the obtained result or caused damage due to misuse.

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