



# STANNOL®

Wenn's ums Löten geht  
When it's about soldering  
Quand il s'agit du soudage

## Technical Data Sheet

### STANNOL® Solder FLOWTIN® TSC

#### New Lead-Free Solder Alloy for Electronic Application

- Eutectic Solder (melting point at 217°C)
- Good wetting performance
- Fine grain and smooth surface better than **ECOLOY® TSC** (S-Sn95Ag4Cu1)
- Reduced dissolution of substrate metal compared with **ECOLOY® TSC** (S-Sn95Ag4Cu1)
- Easy disposal – no lead containing waste

#### Description

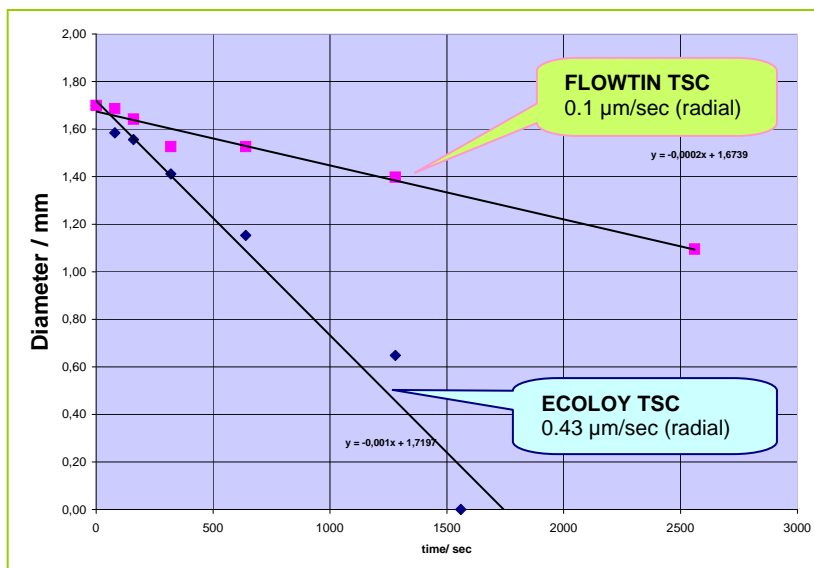
**STANNOL® FLOWTIN® TSC** was designed to eliminate the use of lead containing solders in electric and electronics manufacturing.

#### Application

Like with **ECOLOY® TSC** solder it is necessary to adjust machine settings, temperature profiles, and other parameters to the requirements of a lead free process. But there is nothing to do when switching from **ECOLOY® TSC** to **FLOWTIN® TSC**, all settings and parameters remain the same. The properties of the solder joints are at least comparable or even better than tin/lead.

The physical properties of **FLOWTIN® TSC** do not change compared to common tin/silver/copper solder. But there are differences between **ECOLOY® TSC** and **FLOWTIN® TSC** with micro additives.

- The solder joint solidifies as fine grain metal; therefore the surface is shinier
- The dissolution of substrate metal is reduced
- The service life of solder baths is extended due to smaller copper enrichment



#### Radial dissolution of copper wire in FLOWTIN® TSC solder bath @300°C

The above values are typical and represent no form of specification. The Data Sheet serves for information purposes. Any verbal or written advise is not binding for the company, whether such information originates from the company offices or from a sales representative. This is also in respect of any protection rights of third parties, and does not release the customer from the responsibility of verifying the products of the company for suitability of use for the intended process or purpose. Should any liability on the part of the company arise, the company will only indemnify for loss or damage to the same extent as for defects in quality.



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## Physical and Mechanical Properties of ECOLOY® and FLOWTIN® solders compared with Sn63Pb37:

Properties	S-Sn63Pb37*	STANNOL® ECOLOY TSC (S-Sn95Ag4Cu1)*	STANNOL® ECOLOY TS (S-Sn96Ag4)*	STANNOL® ECOLOY TC (S-Sn99Cu1)*	STANNOL® FLOWTIN TSC (S-Sn95Ag4Cu1)**
Melting Point, °C	183	217	221	227	217
Electrical Conductivity %IACS	11.9	13	14	15,6	-
Electrical Resistivity, $\mu\Omega\text{cm}$	14.5	13	12.3	12,6	-
Brinell Hardness, HB	17	15	15	9	-
Density, $\text{g/cm}^3$	8.4	7.5	7.5	7.3	7.5
Tensile Strength, (20°C) / $\text{N mm}^{-2}$ at 0.004 $\text{s}^{-1}$ Shear Rate	40	48	58	48	-
Shear Strength $\text{N mm}^{-2}$ at 0.1 $\text{mm}^{-1}$ , 20°C at 0.1 $\text{mm}^{-1}$ , 100°C	23 14	27 17	27 17	23 16	27 16
Creep Resistance* $\text{N mm}^{-2}$ 20°C 100°C	3.3 1.0	13.0 5.0	13.7 5.0	13.7 5.0	13 5.0

\*Complying with ISO 9453:2006

\*\* Complying with ISO 9453:2006 with micro additives <0.05%.

## Recommended Conditions of Use

### Wave soldering

The recommended operation conditions for wave soldering are the same like normal ECOLOY® TSC solders, since the melting point remains the same.

## Purity

Sn95.5Ag3.8Cu0.7 like S-Sn95Ag4Cu1 according to DIN EN 61190-1-3 and ISO 9453:2006, but with micro-additive <0.1%.

## Supply forms

Solder Wire (solid and flux cored)  
Triangular bars  
Kg-bars  
Ingots with hanging hole

## Health and Safety

Before using please read the material safety data sheet carefully and observe the safety precautions described.

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