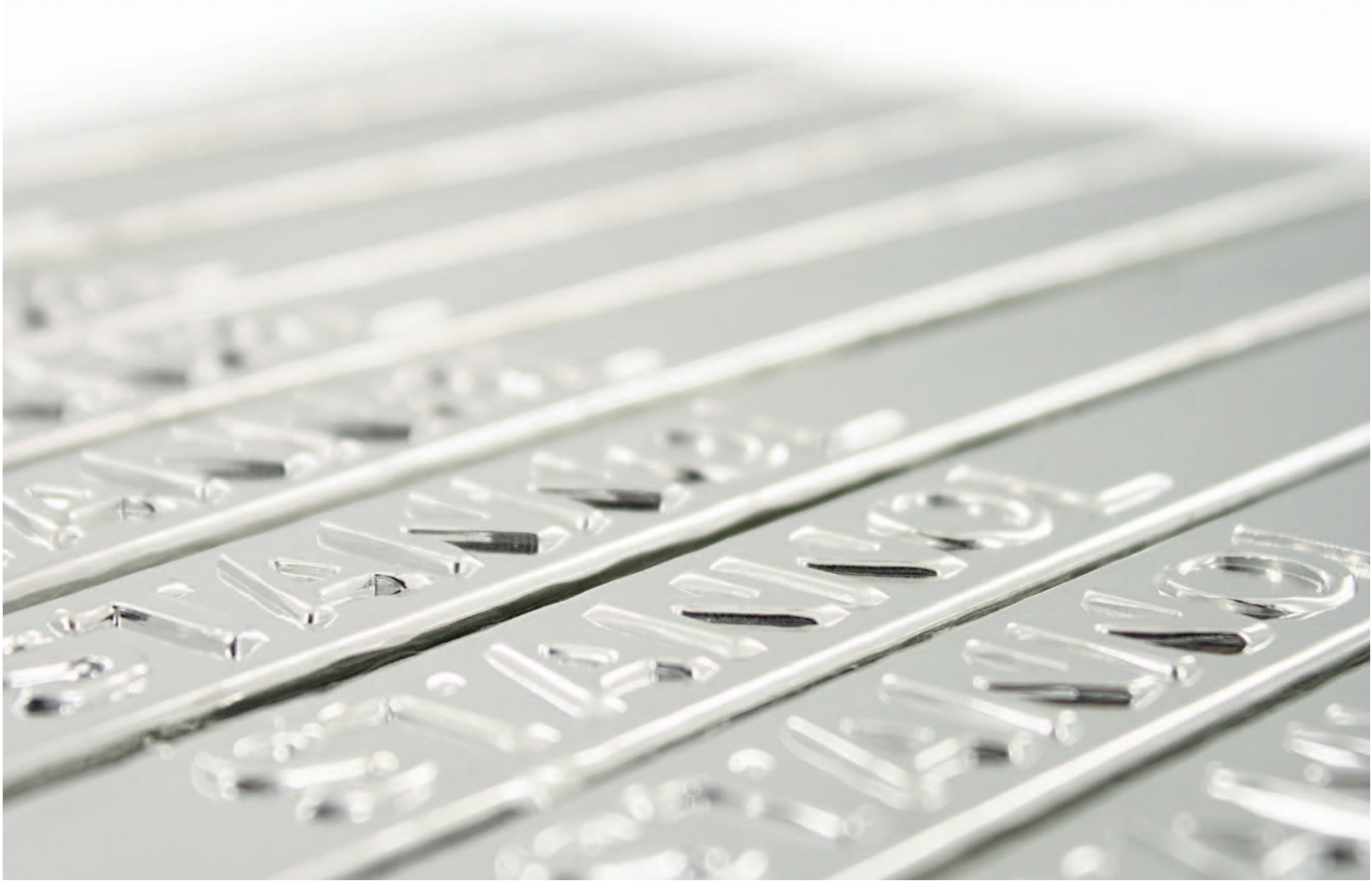




STANNOL



SOLDER WIRES	SOLDER PASTES	FLUXES	SOLDER BARS
SOLDERING EQUIPMENT	MEASUREMENT AND TESTING SYSTEMS	CONFORMAL COATINGS	ACCESSORIES

SOLDER BARS

FOR ELECTRONICS MANUFACTURING



WE HAVE THE RIGHT SOLDER FOR EVERY APPLICATION.

SOLDER BARS AND SOLID SOLDER WIRES ARE USED IN DIFFERENT ALLOYS AS BASE AND REFILL SOLDERS FOR WAVE AND SELECTIVE SOLDERING IN ELECTRONICS MANUFACTURING. STANNOL SOLDERS FOR PRINTED CIRCUIT BOARDS ARE PRODUCED FROM VIRGIN METALS ONLY. FOR THIS, WE USE, FOR EXAMPLE, TIN WITH A MINIMUM PURITY OF 99.9%.

For leaded and lead-free applications, Stannol manufactures many different high purity solders for electronics manufacturing. These are solders produced to international standards or with special characteristics such as minimised dross and minimised copper leaching. The ongoing development of our solders is our highest priority at Stannol. We would like to introduce some of these optimised alloys in this catalogue, as well as the most important solders for use in electronics manufacturing.

We would be pleased to present our complete portfolio, including optional special alloys and special dimensions, during a personal meeting.

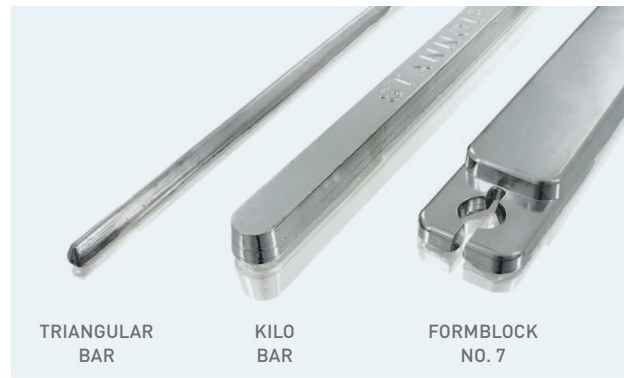
ECOLOY – LEAD-FREE SOLDERS BY STANNOL

Lead-free solders, based on pure tin with an addition of silver and/or copper, are suitable for all lead-free applications in electronics manufacturing.

For the production of electronics, **ECOLOY TSC** alloys (Tin, Silver, Copper) are a reliable lead-free option. TSC alloys are available in different compositions and vary by the ratio of tin, silver and copper. The eutectic alloy TSC with Sn95.5Ag3.8Cu0.7 should be highlighted due to its low melting point of 217°C and excellent wetting properties.

The alloy **TSC305** (Sn96.5Ag3.0Cu0.5) with a lower silver content, which results in a longer service life due to the low copper percentage, is also very popular.

Even more favourable is the alloy **TSC0307**, which comprises 99% tin and only 0.3% silver and 0.7% copper. Here, up to 90% of the costly silver can be saved, although the properties are virtually the same during the soldering process.



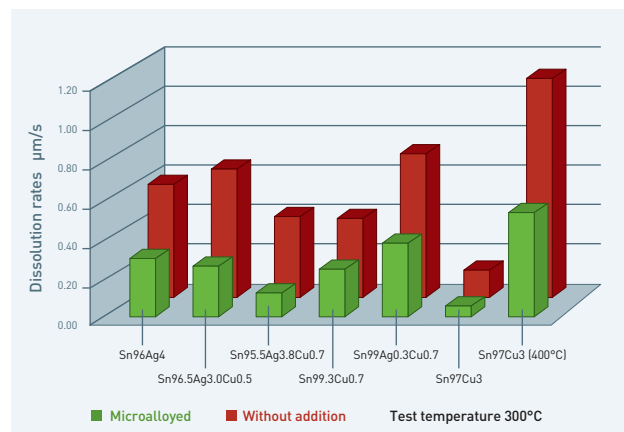
The **TC** alloy (Sn99Cu1 respectively Sn99.3Cu0.7) is a lead-free solder which can replace eutectic or almost eutectic tin-lead alloys.

The main advantage of the product is that it contains no silver which leads to extensive cost savings, as well as a defined melting point of 227°C and good wetting properties.

FLOWTIN – DEVELOPED BY STANNOL

For production areas where preferably a low dissolution rate of copper and iron plays an important role for a reliable soldering process, microalloyed solders have been developed in our laboratory. Due to the addition of small amounts of metal dopants, the solders have a considerably lower copper and iron dissolution. **FLOWTIN** solders by Stannol are patent pending.

FLOWTIN solders show a finer grain structure which leads to an optimised shiny surface of the solder joint. This is an additional advantage compared to lead-free standard solders.



Different dissolution rates in comparison

EUTECTIC

An alloy is eutectic when it has a defined melting temperature, e.g. TSC with a melting point of 217°C. A non-eutectic alloy has a melting range, e.g. TSC305 with 217–220°C.

STANDARD

A standard defines amongst others how an alloy is designated. In some cases, the alloy designation differs from the actual alloy composition, e.g. Sn99Cu1 as designation according to the standard, but the composition is Sn99.3Cu0.7.

FLOWTIN UPGRADE

The changeover from conventional solders to microalloyed solders in wave and dip soldering baths was rather costly and time-consuming in the past. The Stannol **FLOWTIN UPGRADE** alloy has been developed to enable a quick and inexpensive changeover from lead-free standard solders to microalloyed FLOWTIN solders for all users of wave and selective soldering machines. This allows all solder machine operators to profit from the benefits of the microalloyed FLOWTIN solders directly, without having to replace the complete soldering bath. The advantages of the microalloyed solders can also be found in our soldering wires. Further information can be found in our **soldering wire catalogue**.

FLOWTIN+ ADVANCED

FLOWTIN+ is a solder with the addition of microalloying elements. It combines the advantages of FLOWTIN (low copper leaching) with the optimised application characteristics of low dross formation in wave and selective soldering processes at 260°C – 270°C. FLOWTIN+ has been optimised for soldering under standard atmospheric conditions. The oxidation of tin is drastically reduced, meaning a very high reduction of dross formation. This results in less maintenance and the lowest possible cost of ownership.

STRATOLOY, STANNOLOY, WSL3

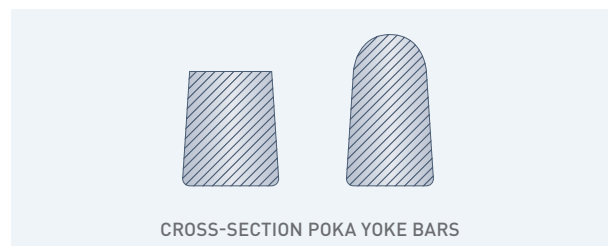
The high purity lead containing solders **STRATOLOY** and **STANNOLOY** are produced from first melt, pure metals only. The limits for the permitted impurities are far below the maximum values defined in ISO EN 9453:2006. The high purity reduces the oxidation speed and leads to dross reduction, compared to standard solders. Additionally, these solders

are refined to remove non-metallic impurities. The solders are suitable for wave and selective soldering processes.

The **WSL3** solder contains additional de-oxidation additives. This allows usage at higher temperatures as well as for use in a static solder baths and in wave soldering machines.

POKA YOKE

The Japanese expression **Poka Yoke** means „Avoiding the unfortunate mistake“. When lead-containing solder is added to a large lead-free solder bath by mistake and has to be cleaned and completely refilled due to lead contamination, this may result in major losses due to production downtimes. To avoid this mistake physically, new distinctive forms of solder bars are available for safe production processes.



Mixing up solder bars is not possible with the newly developed Poka Yoke forms.

TSC & SAC

The designations TSC and SAC refer to the same alloy. The designation TSC is derived from the English element names (**T**in **S**ilver **C**opper) and the designation SAC originates from Latin (**S**tannum **A**rgentum **C**uprum).

FLOWTIN OR FLOWTIN+

FLOWTIN has been developed to reduce the dissolution rate of copper at higher process temperatures. The focus for the alloy FLOWTIN+ was put on dross reduction at low processing temperatures.

COMPOSITION OF SOLDERS

ALLOY NAME	ALLOY NUMBER	ALLOY COMPOSITION	INTERNAL NAME Tin Silver Copper Bismuth	ROHS	MELTING POINT MELTING RANGE (approximate values)
Sn99,9 ¹	---	Sn99.9	ECOLOY T	lead-free	223°C
S-Sn99Cu1 ²	401	Sn99.3Cu0.7	ECOLOY TC	lead-free	227°C
S-Sn97Cu3 ²	402	Sn97Cu3	ECOLOY TC300	lead-free	227–310°C
S-Sn96Ag4 ²	701	Sn96Ag4	ECOLOY TS	lead-free	221°C
S-Sn97Ag3 ²	702	Sn97Ag3	ECOLOY TS300	lead-free	221–224°C
S-Sn95Ag4Cu1 ²	713	Sn95.5Ag3.8Cu0.7	ECOLOY TSC	lead-free	217°C
S-Sn96Ag3Cu1 ²	711	Sn96.5Ag3.0Cu0.5	ECOLOY TSC305	lead-free	217–220°C
Sn97,1Ag2,6Cu0,3 ³	---	Sn97.1Ag2.6Cu0.3	ECOLOY TSC263	lead-free	217–224°C
S-Sn98Cu1Ag ²	501	Sn99Ag0.3Cu0.7	ECOLOY TSC0307	lead-free	217–227°C
S-Bi58Sn42 ²	301	Bi58Sn42	ECOLOY TB	lead-free	139°C
Bi57Sn42Ag1 ³	---	Bi57Sn42Ag1	ECOLOY TBS	lead-free	139°C
FLOWTIN Sn99Cu1 ⁴	---	Sn99.3Cu0.7 + FLOWTIN	FLOWTIN TC	lead-free	227°C
FLOWTIN Sn97Cu3 ⁴	---	Sn97Cu3 + FLOWTIN	FLOWTIN TC300	lead-free	227–310°C
FLOWTIN Sn96Ag4 ⁴	---	Sn96Ag4 + FLOWTIN	FLOWTIN TS	lead-free	221°C
FLOWTIN Sn95,5Ag3,8Cu0,7 ⁴	---	Sn95.5Ag3.8Cu0.7 + FLOWTIN	FLOWTIN TSC	lead-free	217°C
FLOWTIN Sn96,5Ag3,0Cu0,5 ⁴	---	Sn96.5Ag3.0Cu0.5 + FLOWTIN	FLOWTIN TSC305	lead-free	217–220°C
FLOWTIN Sn97,1Ag2,6Cu0,3 ⁴	---	Sn97.1Ag2.6Cu0.3 + FLOWTIN	FLOWTIN TSC263	lead-free	217–224°C
FLOWTIN Sn99Ag0,3Cu0,7 ⁴	---	Sn99Ag0.3Cu0.7 + FLOWTIN	FLOWTIN TSC0307	lead-free	217–227°C
FLOWTIN+ Sn99Cu1 ⁵	---	Sn99.3Cu0.7 + FLOWTIN+	FLOWTIN+ TC	lead-free	227°C
S-Sn63Pb37 ²	101/102	Sn63Pb37	SN63	lead-containing	183°C
S-Sn62Pb36Ag2 ²	171	Sn62Pb36Ag2	SN62	lead-containing	179°C
S-Sn60Pb40 ²	103	Sn60Pb40	SN60	lead-containing	183–190°C
S-Pb93Sn5Ag2 ²	191	Pb93Sn5Ag2	HMP (high melting point)	lead-containing	296–301°C

¹ According to
DIN EN 61190-1-3

² According to
ISO EN 9453:2006

³ According to ISO EN 9453:2006 and internal
specification based on ISO EN 9453:2006

⁴ Analogous to ISO EN 9453:2006
or internal specification
+ FLOWTIN addition

⁵ Analogous to ISO EN 9453:2006 or internal
specification + FLOWTIN addition and
Deoxidation addition

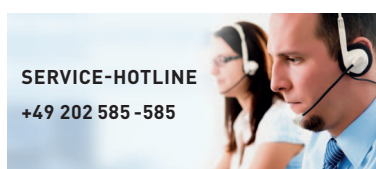
SOLDER ANALYSIS

We offer our customers the option of a periodic monitoring of the solder quality of their soldering machines. This analysis and evaluation of impurities are performed in our laboratory. Further details can be found on our website: www.stannol.de

RECYCLING

Spent solder contains valuable metals. Stannol offers an appropriate disposal. All solders must be sorted by type (leaded and lead-free solders) for remuneration purposes. Further details about this process can be found on our website: www.stannol.de

OUR SERVICE FOR YOU



SERVICE-HOTLINE
+49 202 585 - 585

When using FLOWTIN and FLOWTIN+, make use of free information provided by our application engineers, who accompany the changeover of the solder bath and give you helpful and valuable advice.

More information, as well a new and innovative product selector, can be found at www.stannol.de. You can use the different criteria for filtering the required products according to your requirements.



STANNOL

TRADITION AND INNOVATION

SOLDERING TECHNOLOGY SINCE 1879 – MADE IN GERMANY



SOLDER WIRES



FLUXES



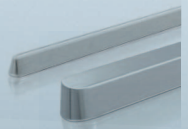
SOLDERING IRONS



SOLDER PASTES



ACCESSORIES



SOLDER BARS



STANNOL

STANNOL GmbH
Oskarstr. 3-7, D-42283 Wuppertal
Tel: +49 202 585 -0, Fax: +49 202 585 -111
info@stannol.de, www.stannol.de