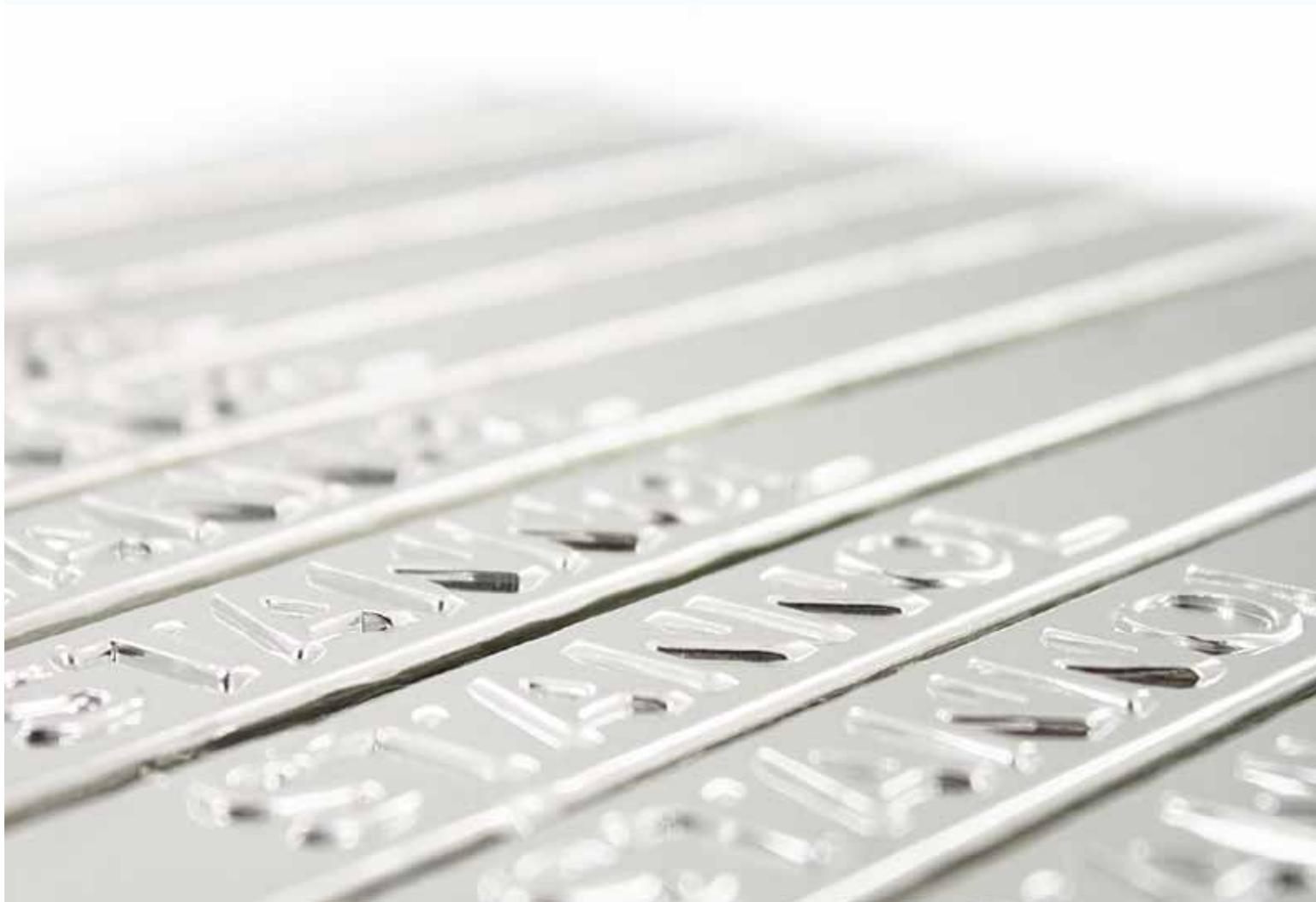




STANNOL



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 lead-containing and lead-free applications, Stannol manufactures many different high purity solders for electronics manufacturing. These solders are produced to international standards or with special properties such as minimised dross formation and minimised copper dissolution. The ongoing development of solders for the electronic industry has highest priority at Stannol. We would like to introduce some of these optimised solders 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 is also very popular. Lower copper content will ensure less maintenance.

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

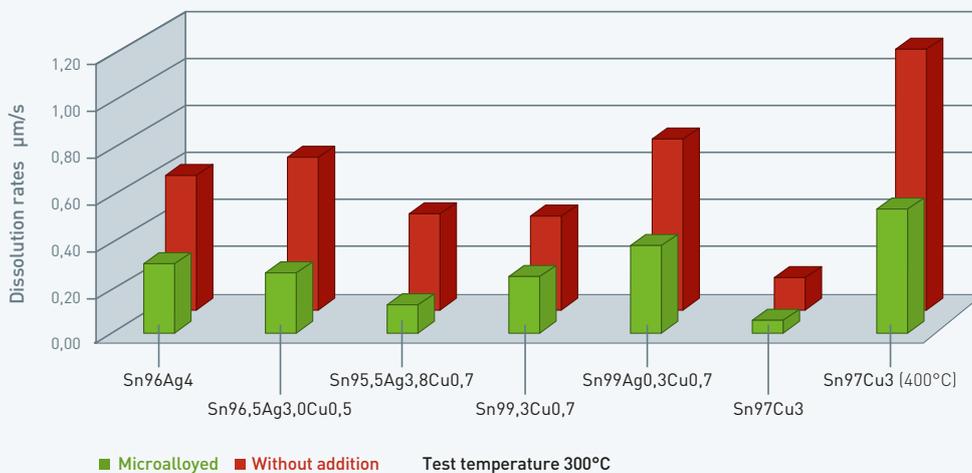
The **TC** alloy (Sn99Cu1 respectively Sn99.3Cu0.7) is a lead-free solder which can replace eutectic or almost eutectic tin-lead alloys at the lowest possible cost.

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 manufacturing sites where a low dissolution rate of copper and iron is an important issue 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. This results in less control and maintenance of the soldering equipment. **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

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 utilized by using 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 without nitrogen. **The oxidation of tin is drastically reduced, resulting in a very high reduction of dross formation.** This results furthermore in less maintenance and the lowest possible cost of ownership.

SN100C® – SILVER-FREE INDUSTRIAL STANDARD

SN100C® is another silver-free microalloyed solder with unique properties. Due to its acceptance and usage in many thousand different wave- and selective soldering equipment, it has become an worldwide accepted industrial standard. It is also well established solder for HASL-equipment in the PCB manufacturing. Based on S99.3Cu0.7 with additions of Ni and Ge this solder has economic advantages due to the missing expensive silver. The addition of nickel and germanium ensure a highly reduced dissolution rate of copper. Additionally the dross formation is much lower than with standard solders.

This alloy is worldwide patented by the company NIHON SUPERIOR (e.g. patent no. EP 0985486) and licensed by Stannol. Therefore we can offer our customers SN100C® and its variations in the expected Stannol quality! Different solder wires are available in SN100C®, to ensure our customers the usage of one alloy all over the whole manufacturing line.

SN100C®

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.

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.

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/en/service/test-analysis-service/

SOLID SOLDER WIRE

Solid wires are used, e.g. for the refill of solder baths in selective solder machines. Stannol offers all common alloys, diameters and reel sizes.

RECYCLING

Used solder and dross contain valuable metals. Stannol offers an appropriate recycling with financial compensation calculated according to the current metal prices of the LME (London Metal Exchange). All solders must be sorted by type (lead containing and lead-free solders) for remuneration purposes. We provide appropriate material containers free of charge.

Further details about this process can be found on our website: www.stannol.de/en/service/environment-disposal/



EUTECTIC

An alloy is eutectic when it has a defined melting point, 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.

COMPOSITION OF SOLDERS

ALLOY NAME	ALLOY NUMBER ²	ALLOY COMPOSITION	INTERNAL NAME Tin Silver Copper Bismuth	ROHS	MELTING POINT MELTING RANGE (approximate values)
Sn99.9 ¹	---	Sn99.9	ECOLOY T	lead-free	232°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-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	139–142°C
FLOWTIN Sn99Cu1 ⁴	---	Sn99.3Cu0.7 + FLOWTIN	FLOWTIN TC	lead-free	227°C
FLOWTIN Sn99.6Cu0.4 ⁴	---	SN99.6Cu0.4 + FLOWTIN	FLOWTIN TC04	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 Sn98.5Ag0.8Cu0.7 ⁴	---	SN98.5Ag0.8Cu0.7 + FLOWTIN	FLOWTIN TSC0807	lead-free	217–226°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
FLOWTIN Sn98Ag1Cu1 ⁴	---	Sn98.5Ag0.8Cu0.7+FLOWTIN	FLOWTIN TSC0807	lead-free	217–226°C
TSCX0307 ³	---	Sn99Ag0.3Cu0.7+X	TSCX0307	lead-free	217–227°C
SN100C ⁶	---	Sn99.3Cu0.7NiGe	SN100C	lead-free	227°C
SN100Ce ⁶	---	Sn99.9NiGe	SN100Ce	lead-free	227–232°C
SN100CS ⁶	---	Sn99.3Cu0.7NiGe	SN100CS	lead-free	227°C
SN100CeS ⁶	---	Sn99.9NiGe	SN100CeS	lead-free	227–232°C
SN100CS+ ⁶	---	Sn99.3Cu0.7NiGe	SN100CS+	lead-free	227°C
SN100CeS+ ⁶	---	Sn99.9NiGe	SN100CeS+	lead-free	227–232°C
S-Sn63Pb37E ³	102 ³	Sn63Pb37	STANNOLOY SN63	lead-containing	183°C
S-Sn63Pb37E ³	102 ³	Sn63Pb37	STRATOLOY SN63	lead-containing	183°C
Sn63Pb37 ³	---	Sn63Pb37P	WSL3 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

⁶ Variations in the SN100C® solders are mainly based on different Ni and Ge contents. Further details can be found in the technical datasheet or you may ask our team of application engineers about the best option for your application.

All the above mentioned lead-free alloys are available as copper-free versions, too. The copper-free versions can be sometimes required to maintain the copper content or reduce higher copper contents during the usage of the solder in the soldering equipment. The listed alloys represent only a small selection; other alloys are available on request. Some alloys are subject to production-related MOQs.

OUR SERVICE FOR YOU

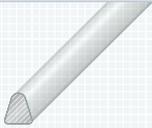
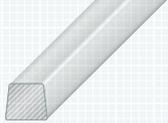
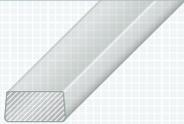
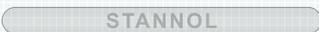
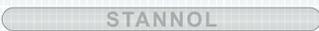
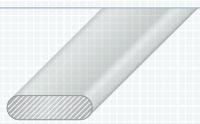
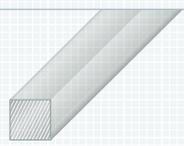
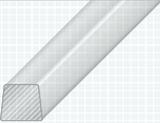


SERVICE-HOTLINE
+49 2051 3120-312

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

More information, as well a comprehensive product selector, can be found at www.stanno.de. You can use different criteria for setting filters according to your requirements.

AVAILABLE DELIVERY FORMS OF STANNOL SOLDER

<p>TRIANGULAR BAR¹</p> <p>Dimensions (LxWxH) 443 x 11.5 x 14.5 mm approx. 0.36 kg² in Sn99Cu1</p>		
<p>FORMBLOCK 330¹ (kg-Stange)</p> <p>Dimensions (LxWxH) 328 x 20 x 20 mm approx. 1 kg² in Sn63Pb37</p>		
<p>FORMBLOCK 325 E</p> <p>Dimensions (LxWxH) 325 x 30 x 15 mm approx. 0.88 kg² in SN100C®</p>		
<p>FORMBLOCK NR. 7¹</p> <p>Dimensions (LxWxH) 540 x 48 x 20 mm approx. 3.7 kg² in Sn63Pb37</p>		
<p>FORMBLOCK NR. 8</p> <p>Dimensions (LxWxH) 540 x 48 x 20 mm approx. 3.7 kg² in Sn63Pb37</p>		
<p>FORMBLOCK 300 (Poka Yoke)</p> <p>Dimensions (LxWxH) 300 x 25 x 28.5 mm approx. 1.6 kg² in Sn63Pb37</p>		
<p>FORMBLOCK 300 LF (Poka Yoke)</p> <p>Dimensions (LxWxH) 300 x 22 x 40 mm approx. 1.6 kg² in Sn99Cu1</p>		
<p>FORMBLOCK NR 285-0</p> <p>Dimensions (LxWxH) 285 x 42 x 12 mm approx. 1 kg² in Sn95.5Ag3.8Cu0.7</p>		
<p>FORMBLOCK 20X20</p> <p>Dimensions (LxWxH) 340 x 20 x 20 mm approx. 1 kg² in SN100C®</p>		
<p>FORMBLOCK 160 E</p> <p>Dimensions (LxWxH) 164 x 24 x 20 mm approx. 0.54 kg² in Sn63Pb37</p>		
<p>FORMBLOCK 330 E</p> <p>Dimensions (LxWxH) 330 x 21 x 20 mm approx. 1 kg² in Sn96.5Ag3.5</p>		

Other sizes and delivery forms are available upon request. The dimensions specified in the catalogue may vary due to production techniques.

¹ preferred bar form

² average weight of the specified alloy



STANNOL

TRADITION AND INNOVATION.

SOLDERING TECHNOLOGY SINCE 1879 – MADE IN GERMANY



SOLDER WIRES



FLUXES



SOLDERING STATIONS



SOLDER PASTES



ACCESSORIES



SOLDER BARS



STANNOL

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