



FLOWTIN+ TC05

New Micro Alloyed Lead-Free Solder for Electronic Application

DESCRIPTION

Stannol Flowtin+ TC05 is a solder alloy on basis of tin/copper Sn99Cu1 with a reduced copper content. And has been developed from Flowtin TC and Flowtin TC04 to avoid or minimize dross formation on solder bath surfaces when operated on air. As soldering under nitrogen is also not totally free of oxygen, the solder surface stays longer clean with Flowtin+ TC05.

CHARACTERISTICS

Flowtin+ TC05 offers the following advantages:

- **Advanced solder for wave soldering**
- **Less dross formation**
- **Less solder bath maintenance**
- **Avoids oxide related soldering defects**
- **Eutectic solder (melting point between 227-232 °C)**
- **Operates best at 260-270°C solder bath temperatures**

APPLICATION

Switching from any lead-free solder to Flowtin+ TC05 all operating conditions can be set to the same level as it would be appropriate for tin-copper solder. Physical Properties don't change by micro-addition of elements to prevent copper dissolution and additives for dross prevention.

There are some differences between common Ecoloy TC and advanced Flowtin+ TC05:

- **Solidification of the solder joint with fine grain structure**
- **Smooth and shiny surface**
- **Reduced copper dissolution**
- **Prolonged lifetime of solder bath**
- **Flowtin+ prevents tarnishing of the solder surface and prevents dross formation**
- **Less soldering defects**
- **Far less maintenance of soldering equipment**

PHYSICAL PROPERTIES AND DATA

GENERAL PROPERTIES	S-Sn63Pb37*	STANNOL ECOLOY TC (S-Sn99.3Cu0.7)*	STANNOL FLOWTIN TC (S-Sn99.3Cu0.7)**	STANNOL FLOWTIN+ TC05 (S-Sn99.3Cu0.7)***
Melting Point, °C:	183	227	227	227-232
Electrical Conductivity, %IACS:	11.9	---	15.6	15.6
Electrical Resistivity, $\mu\Omega\text{cm}$:	14.5	---	12.6	12.6
Brinell Hardness, HB:	17	---	9	9
Density, g/cm^3 :	8.4	7.3	7.3	7.3

* Complying with DIN EN ISO 9453

** Complying with DIN EN ISO 9453 with micro additives <0.1%

*** Complying with DIN EN ISO 9453 with micro additives <0.05%, desoxidation-additive and reduced copper content

RECOMMENDED CONDITIONS OF USE

Wave soldering: The recommended operation conditions for Flowtin+ TC05 in wave soldering are the same like normal Ecoloy TC, as the melting point (227-232 °C) remains unchanged. Optimum operating temperatures are about 265°C, while the optimum effectiveness of Flowtin TC is at higher temperatures >270°.

PURITY

Like Sn99.3Cu0.7 according to DIN EN ISO 9453, but with micro-additive <0.05% and desoxidation-additive.

SUPPLY FORMS

Triangular bars, kg-bars, Ingots with hanging hole

NOTICE

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.