SOLDER WIRES OF THE KRISTALL-SERIES

No-Clean solder wires with clear residues

PRODUCT DESCRIPTION

Stannol Kristall solder wires have been specially formulated to complement No Clean wave and reflow soldering processes. They are also applicable to repair operations carried out after a cleaning process, eliminating the need for further cleaning.

Stannol Kristall solder wires provide fast soldering on copper and brass surfaces as well as solder coated materials. Activity of the halide activated versions on nickel is also good depending on the state of oxidation of the nickel finish. The good thermal stability of Stannol Kristall fluxes means they are also well suited to soldering applications requiring high melting temperature alloys. The resin and flux systems are designed to leave relatively low residues and to minimise residual activity. This is achieved by ensuring some decomposition and volatilisation takes place during the soldering process. In some situations, this may generate visible fuming but in all cases, rosin fumes must be removed from the breathing zone of operators.

CHARACTERISTICS

Stannol Kristall 400 is designed for users who require a halide free formulation.
Stannol Kristall 502, 505 and 511 contain different halide levels with maximised soldering power.
Stannol Kristall 400, 502, 505 and 511 cored wires are manufactured with a range of flux contents.

Although users will normally be using products with a nominal flux content of 3%, the superior performance of the Kristall products may allow a lower flux content to be specified e.g. 2.2%. This will further improve residue appearance by reducing the quantity. All are available in alloys conforming to national and international standards, including lead free alloys. Some alloys and flux contents may be manufactured to special order.

Stannol Kristall solid fluxes are based on modified rosins and carefully selected activators. In use they exhibit a mild rosin odour and leave a small quantity of clear residue.

The used activated resin shows the following advantages:

- **halide free version** (Kristall 400)
- **fast soldering** (wide range of activities to suit all applications)
- **good spread** (on copper, brass and nickel)
- **clear residues**
- **heat stable** (low spitting)
- **mild odour**

APPLICATION

Soldering Iron: Good results should be obtained using a range of tip temperatures. However, the optimum tip temperature and heat capacity required for a hand soldering process is a function of both soldering iron design and the nature of the task and care should be exercised to avoid unnecessarily high tip temperatures for excessive times. A high tip temperature will increase any tendency to flux spitting and it may produce some residue darkening.

The soldering iron tip should be properly tinned and this may be achieved using Stannol Kristall cored wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using Stannol Tippy, then wiped on a clean, damp sponge before re-tinning with Kristall cored wire.

Soldering process: Stannol Kristall flux cored wires contain a careful balance of resins and activators to provide clear residues, maximum activity and high residue reliability, without cleaning in most situations. To achieve the best results from Stannol Kristall solder wires, recommended working practices for hand soldering should be observed as follows:

a) Apply the soldering iron tip to the work surface, ensuring that it simultaneously contacts the base material and the component termination to heat both surfaces adequately. This process should only take a fraction of a second.
b) Apply Kristall flux cored solder wire to a part of the joint surface away from the soldering iron and allow to flow sufficiently to form a sound joint fillet - this should be virtually instantaneous. Do not apply excessive solder or heat to the joint as this may result in dull, gritty fillets and excessive or darkened flux residues.
c) Remove solder wire from the workpiece and then remove the iron tip.
d) The total process will be very rapid, depending upon thermal mass, tip temperature and configuration and the solderability of the surfaces to be joined.

CLEANING

Stannol Kristall flux cored solder wires have been formulated to leave pale flux residues and to resist spitting and fuming. In most industrial and consumer electronics applications cleaning will not be required and the product may therefore be used to complement a No-Clean wave soldering or reflow process or to allow repairs to cleaned boards without the need for a second cleaning process.

Stannol Kristall 502, 505 and 511 offer good activity and consequently cored wire flux contents and hence residue levels may be reduced in comparison with equivalent conventional products.

Should cleaning be required, this is best achieved using Stannol Flux-Ex Post. Other proprietary solvent or semi-aqueous processes may be suitable but saponification is not recommended.

TEST RESULTS

GENERAL TESTS	KRISTALL 400	KRISTALL 502	KRISTALL 505	KRISTALL 511
J-STD-004				
- solder spread (mm^2)	210	310	315	340
- corrosion test	pass	pass	pass	pass
SIR Test (without cleaning)				
- IPC-SF-818 Class3	pass	pass	pass	pass
- Bellcore TR-NWT-000078	pass	pass	pass	pass
Electromigration-Test (without cleaning)				
- Bellcore TR-NWT-000078	pass	pass	pass	pass
Classification				
- J-STD-004	REL0	REL1	REL1	REM1
- IPC-SF-818	LR3CN	MR3CN	MR3CN	MR3CN

PHYSICAL PROPERTIES AND DATA

GENERAL PROPERTIES	KRISTALL 400	KRISTALL 502	KRISTALL 505	KRISTALL 511
Flux Type: J-STD-004	REL0	REL1	REL1	REM1
Flux content:	2.2% ± 0,3%	3.0% ± 0,3%	2.7% / 3.0% ± 0.3%	2.7% / 3.0% ± 0.3%
Acid Value mg/KOH/g:	215	170	170	170
Halide content:	none	0.2 %	0.5 %	1.1 %
Corrosion effect:	None / J-STD-004			
Standard alloys acc. to ISO 9453 **Flowtin = with micro additives <0,05%** **SN100C**	**Lead-containing:**			
	S-Sn60Pb40	S-Sn60Pb40	S-Sn60Pb40	S-Sn60Pb40
	S-Sn62Pb36Ag2	on request	on request	on request
	Lead-free (Ecoloy Series):			
	Ecoloy TC (S-Sn99,3Cu0,7)	on request	on request	Ecoloy TC (S-Sn99,3Cu0,7)
	Ecoloy TSC (S-Sn95,5Ag3,8Cu0,7)	on request	on request	Ecoloy TSC (S-Sn95Ag3,8Cu0,7)
	Ecoloy TSC305* (S-Sn96,5Ag3Cu0,5)	on request	on request	Ecoloy TSC305* (S-Sn96Ag3Cu0,5)
	Lead-free (Flowtin Series):			
	Flowtin TC* (Sn99,3Cu0,7)	on request	on request	Flowtin TC* (Sn99,3Cu0,7)
	Flowtin TSC* (Sn95,5Ag3,8Cu0,7)	on request	on request	Flowtin TSC* (Sn95Ag3,8Cu0,7)
	Flowtin TSC305* (Sn96,5Ag3Cu0,5)	on request	on request	Flowtin TSC305* (Sn96Ag3Cu0,5)
	Flowtin TSC0307* (Sn99Cu0,7Ag0,3)	on request	on request	Flowtin TSC0307* (Sn99Cu0,7Ag0,3)
	Lead-free (SN100C Series):			
	SN100C (SnCu0,7NiGe)	on request	on request	SN100C (SnCu0,7NiGe)
Available diameters:	from 0.3 mm			
Available reel sizes:	250 g, 500 g, 1 kg			

* These alloys are partially subject to minimum order quantities.

Other alloys, flux contents or reel sizes are available on request.

HEALTH AND SAFETY

Read the material safety data sheet carefully before use and observe the safety precautions described.

DISCLAIMER

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.