

No-Clean Solder Wire with Clear Residues



RoHS
Compliant



Description

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. 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 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

- Type 400 is designed for users who require a halide free formulation.
- Type 502, 505 and 511 contain different halide levels with maximised soldering power.
- Type 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 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.

The 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 (Type 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 cored wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using Tippy, then wiped on a clean, damp sponge before re-tinning with cored wire.

Soldering process: The 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 the 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.



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- b) Apply 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 work piece 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: The 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.

Should residue quantity be an important consideration, the flux cored wire may be specified if a halide free product is required. Type 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.

Other proprietary solvent or semi-aqueous processes may be suitable but saponification is not recommended.

General Properties

Properties	Type 400	Type 502	Type 505	Type 511
Flux Type: J-STD-004	REL0	REL1	REL1	REM1
Flux content:	2.2% ± 0.3%	3% ± 0.3%	2.7% / 3% ± 0.3%	2.7% / 3% ± 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 9453:2014 Flowtin = with micro additives <0,05%	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	auf Anfrage	Ecoloy TC (S-Sn99,3Cu0,7)
	Ecoloy TSC (S-Sn95Ag3,8Cu0,7)	on request	auf Anfrage	Ecoloy TSC (S-Sn95Ag3,8Cu0,7)
	Ecoloy TSC305* (S-Sn96Ag3Cu0,5)	on request	auf Anfrage	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* (Sn95Ag3,8Cu0,7)	on request	on request	Flowtin TSC* (Sn95Ag3,8Cu0,7)
	Flowtin TSC305* (Sn96Ag3Cu0,5)	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)
SN100C				

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Properties	Type 400	Type 502	Type 505	Type 511
Available diameters	from 0.3mm			
Available reel sizes	250g, 500g, 1kg			

* These alloys are partially subject to minimum order quantities.

General Tests

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

Part Number Table

Description	Part Number
Solder Wire, Lead Free, 1.2mm, 250g	812023

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