No-Clean Solder Wires 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 505 and 511 contain different halide levels with maximised soldering power
- Type 400, 505 and 511 cored wires are manufactured with a range of flux contents.
- Melting point of the Part No. 509-0600 is, 227°C

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
Copper - CAS: 7440-50-8
Tin - CAS: 7440-31-5

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.
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.
e) Soldering iron temperature is more dependent on the process than the LD. Usually around 350°C ±20°C.

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 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 505	Type 511
Flux Type: J-STD-004	REL0	REL1	REM1
Flux content:	2.2% ± 0,3%	2.7% / 3.0% ± 0.3%	2.7% / 3.0% ± 0.3%
Acid Value mg/KOH/g:	215	170	170
Halide content:	none	0.5%	1.1%
Corrosion effect:	None / J-STD-004		
Standard alloys acc. to ISO 9453:2014	**Lead-containing:**		
	S-Sn60Pb40	S-Sn60Pb40	S-Sn60Pb40
	S-Sn62Pb36Ag2	on request	on request
	Lead-free (Ecoloy Series):		
	Ecoloy TC S-Sn99,3Cu0,7)	auf Anfrage	Ecoloy TC (S-Sn99,3Cu0,7)
	Ecoloy TSC (S-Sn95Ag3,8Cu0,7)	auf Anfrage	Ecoloy TSC (S-Sn95Ag3,8Cu0,7)
	Ecoloy TSC305* (S-Sn96Ag3Cu0,5)	auf Anfrage	Ecoloy TSC305* (S-Sn96Ag3Cu0,5)
Flowtin = with micro additives <0,05%	**Lead-free (Flowtin Series):**		
	Flowtin TC* (Sn99,3Cu0,7)	on request	Flowtin TC* (Sn99,3Cu0,7)
	Flowtin TSC* Sn95Ag3,8Cu0,7)	on request	Flowtin TSC* (Sn95Ag3,8Cu0,7)
	Flowtin TSC305* (Sn96Ag3Cu0,5)	on request	Flowtin TSC305* (Sn96Ag3Cu0,5)
	Flowtin TSC0307* (Sn99Cu0,7Ag0,3)	on request	Flowtin TSC0307* (Sn99Cu0,7Ag0,3)

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Properties	Type 400	Type 505	Type 511
SN100C	Lead-free (SN100C Series):		
	SN100C (SnCu0,7NiGe)	on request	SN100C (SnCu0,7NiGe)
Available diameters:	from 0.3mm		
Available reel sizes:	250g, 500g		

* These alloys are partially subject to minimum order quantities.

Part Number Table

Description	Type	Part Number
Solder Wire, Lead Free, 0.5mm, 250g	Type 400	812000
Solder Wire, Lead Free, 0.5mm, 250g		812040
Solder Wire, Lead Free, 0.7mm, 250g		812001
Solder Wire, Lead Free, 0.7mm, 250g		507-1380
Solder Wire, Lead Free, 0.7mm, 500g		507-1422
Solder Wire, Lead Free, 0.9mm, 500g		507-1434
Solder Wire, Lead Free, 1.2mm, 250g		507-1409
Solder Wire, Lead Free, 1.2mm, 500g		812006
Solder Wire, Lead Free, 1.2mm, 500g		507-1446
Solder Wire, Lead Free, 1mm, 250g		812002
Solder Wire, Lead Free, 0.5mm, 250g	-	812010
Solder Wire, Lead Free, 0.5mm, 250g		509-0672
Solder Wire, Lead Free, 0.7mm, 250g		812011
Solder Wire, Lead Free, 0.7mm, 250g		509-0684
Solder Wire, Lead Free, 0.7mm, 500g		812014
Solder Wire, Lead Free, 0.7mm, 500g		509-0726
Solder Wire, Lead Free, 0.9mm, 250g		509-0696
Solder Wire, Lead Free, 0.9mm, 500g		509-0738
Solder Wire, Lead Free, 1.2mm, 250g		812013

Description	Type	Part Number
Solder Wire, Lead Free, 1.2mm, 250g	-	812053
Solder Wire, Lead Free, 1.2mm, 500g		812016
Solder Wire, Lead Free, 1.2mm, 500g		509-0740
Solder Wire, Lead Free, 1mm, 250g		812012
Solder Wire, Lead Free, 1mm, 500g		812015
Solder Wire, Lead Free, 0.5mm, 250g		812020
Solder Wire, Lead Free, 0.5mm, 250g		509-0593
Solder Wire, Lead Free, 0.7mm, 250g		812021
Solder Wire, Lead Free, 0.7mm, 250g		509-0600
Solder Wire, Lead Free, 0.7mm, 500g		812024
Solder Wire, Lead Free, 0.7mm, 500g		509-0647
Solder Wire, Lead Free, 0.9mm, 250g		509-0611
Solder Wire, Lead Free, 0.9mm, 500g		509-0659
Solder Wire, Lead Free, 1.0mm, 500g		812025
Solder Wire, Lead Free, 1.2mm, 250g		509-0623
Solder Wire, Lead Free, 1.2mm, 500g		812026
Solder Wire, Lead Free, 1.2mm, 500g		509-0660
Solder Wire, Lead Free, 1mm, 250g		812022