

# 309

309 cored solder wire has been specially developed in response to customer requirements for a cored solder wire that will solder difficult surfaces whilst leaving pale, post soldering residues.

## FEATURES AND BENEFITS

- Halide activated rosin based
- Good spread on nickel, stainless steel, Chromel, Monel, Constantin, etc.
- Mild odour
- Available in a range of alloys
- Heat stable – low fuming
- Pale residues
- Fast soldering

## TYPICAL PROPERTIES

### Solder Alloy:

309 cored wires are available in a variety of alloys conforming the purity requirements of J-STD-006 and EN 29453 or alloys conforming to similar national or international standards. A wide range of wire diameters is available manufactured to close dimensional tolerances.

Code	Alloy Composition	Melting Point (°C)
<b>60EN</b>	Sn60Pb40	183-188
<b>Sn63</b>	Sn63Pb37	183
<b>99C</b>	Sn99.3Cu0.7	227
<b>96SC</b>	Sn95.5Ag3.8Cu0.7	217
<b>97SC</b>	Sn96.5Ag3Cu0.5	217
<b>SAC0307</b>	Sn99Ag0.3Cu0.7	217-227

### Flux:

309 solid flux is based on a blend of novel activators and resins. It has a mild characteristic odour and leaves a clear, pale residue.

Property	Value
<b>Acid Value (mgKOH/g)</b>	200
<b>Halide Content (%)</b>	0.95
<b>Flux Content (%)</b>	3.0

### Reliability:

309 flux passes the J-STD-004 SIR test and other elements of J-STD-004 test protocols associated with the flux classification ROM1. It also passes the Bellcore GR-78-CORE electromigration test.

Test	Specification	Test Method	Results
<b>Copper Plate Corrosion</b>	IPC/J-STD-004A	2.6.15C	Pass
<b>Copper Mirror Corrosion</b>	IPC/J-STD-004A	2.3.32D	Pass
<b>Surface Insulation Resistance (SIR) (without cleaning)</b>	IPC/J-STD-004A	2.6.3.7	Pass
	Bellcore TR-NWT-000078	13.1.4	Pass
<b>Electromigration (ECM) (without cleaning)</b>	Bellcore TR-NWT-000078	13.1.5	Pass
<b>Flux Activity Classification (without cleaning)</b>	IPC/J-STD-004A		ROM1
	ISO 9454		1.1.2

## DIRECTIONS FOR USE

Soldering with 309 does not require any special methods or deviation from standard hand soldering practices. It is also suitable for robotic soldering processes.

**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. Care should be exercised to avoid unnecessarily high tip temperatures for excessive time. 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; this may be achieved using 309 cored solder wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using TTC-LF Tip Tinner/Cleaner, then wiped on a clean, damp sponge before re-tinning with 309 cored solder wire.

**Soldering process:** 309 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 309 solder wires, recommended working practices for hand soldering should be observed as follows:

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 properly. This process should only take a fraction of a second.

Apply 309 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.

Remove solder wire from the work piece and then remove the iron tip. The total process will be very rapid, depending upon thermal mass, tip temperature and configuration and the solderability of the surfaces to be joined. 309 flux cored solder wires provide fast soldering on copper and brass surfaces as well as solder coated materials. Activity on nickel is also good depending on the state of oxidation of the nickel finish. The good thermal stability of 309 flux cored solder wire means it is also well suited to soldering applications requiring higher melting lead free alloys.

Do not apply excessive solder to the joint, as this will leave excess flux residues on the surface. Remove solder from work piece and then remove the heat source (iron tip). This total process should take from 0.5 to 1.5 seconds per joint, depending upon mass, iron temperature and tip configuration, along with the solderability of the surfaces. Excessive times or temperatures may exhaust the flux before solder wetting has occurred and may cause increased residue levels.

**Note:** If the solder is applied directly to the soldering iron tip, the flux may be overheated, and its effectiveness diminished. It may also lead to charring which will contaminate the soldering iron tip.

#### Cleaning:

309 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. 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.

If cleaning is required, this is best achieved using MCF 800 solvent cleaner (see separate technical data sheet). Other proprietary solvent or semi-aqueous processes may be suitable.

Saponification may be suitable, but customers must ensure that the desired level of cleanliness can be achieved by their chosen system.

#### Storage:

It is recommended to store 309 in a dry environment at room temperature.

#### Shelf Life:

The cored solder wire is classified as a non-shelf-life item. Thus, no expiry date is required to be printed on the labels. However, the quality and manufacturing records for cored solder wire is only maintained no longer than 2 years from the date of manufacture. Thus, any quality feedback after that stipulated period cannot be addressed.

### GENERAL INFORMATION

**For safe handling information on this product consult the relevant Safety Data Sheet (SDS)**

#### Disclaimer

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. HARIMA is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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