



# Multicore<sup>®</sup> Cored Solder Wire Flux

Technical Data Sheet

## X39

April 2004

### NO CLEAN CORED SOLDER WIRE FLUX

Properties of Multicore X39 solid flux for cored solder wires:

- No clean
- Low residue
- Eliminates cost of cleaning
- Halide free
- Non-corrosive formulation
- Negligible residues
- Fast Soldering on copper and brass

### PRODUCT RANGE

Multicore X39 cored wires are manufactured as standard with a nominal flux content of 1%.

Multicore X39 cored wires are available in a variety of alloys conforming to J-STD-006 and EN 29453 or alloys conforming to similar national or international standards. For details refer to document "Properties of Alloys used in Cored Solder Wires". A wide range of wire diameters is available.

### TECHNICAL SPECIFICATION

A full description of test methods and detailed test results are available on request.

**Alloys:** The alloys used for Multicore flux cored solder wires conform to the purity requirements of the common national and international standards. A wide range of wire diameters is available manufactured to close dimensional tolerances. For details refer to document "Properties of Alloys used in Cored Solder Wires".

**Flux:** Multicore X39 solid flux is based on modified rosins and halide free carboxylic acid activators. In use it has a mild rosin smell and leaves a small quantity of clear residue. It may be classified as RO L0 according to J-STD-004 (January 1995), LR3CN according to IPC-SF-818 or DIN F-SW32 according to DIN 8511. It meets the requirements of Bellcore TR-NWT-000078 issue 3 (December 1991).

FLUX PROPERTIES		
TEST	RESULT	
Acid value	215-230mg KOH/g	
Halide content	Zero	
Copper mirror	Pass	
Chromate paper	Pass	
Corrosion	J-STD-004	Pass
Test	IPC-SF-818	Pass (10 days)
	BS 5625	Pass
	DTD 599A	Pass
	DIN 8516	Pass
	JIS-Z-3197	Pass

### SPECIAL PROPERTIES

The uncleaned residues PASS SIR testing to the Bellcore TR-NWT-000078 issue 3 (December 1991) and IPC Class 1,2 and 3 protocols. They also pass the electromigration test specified by Bellcore TR-NWT-000078.

BELLCORE TR-NWT-000078 ISSUE 3 SIR TEST RESULTS ON UNCLEANNED COMBS		
Test conditions	35°C, 85% RH	
Test time, h	24	96
Surface insulation resistance, ohms	3.17 x 10 <sup>11</sup>	3.52 x 10 <sup>11</sup>
Passmark, ohms	-	10 <sup>11</sup>

IPC-SF-818 SIR TEST RESULTS ON UNCLEANNED COMBS				
Test conditions	85°C, 85% RH			
Test time, h	0	24	96	168
Surface insulation resistance, ohms	1.63 x 10 <sup>12</sup>	1.68 x 10 <sup>9</sup>	3.37 x 10 <sup>9</sup>	3.43 x 10 <sup>9</sup>
Passmark, ohms	-	10 <sup>8</sup>	10 <sup>8</sup>	10 <sup>8</sup>

BELLCORE TR-NWT-000078 ISSUE 3 ELECTROMIGRATION TEST RESULTS ON UNCLEANNED COMBS		
Test conditions	85°C, 85% RH	
Test time, h	96	500
Bias, V (DC)	No bias	10
Surface insulation resistance, ohms	1.16 x 10 <sup>9</sup>	5.43 x 10 <sup>9</sup>
Unfluxed control, ohms	5.09 x 10 <sup>9</sup>	8.91 x 10 <sup>9</sup>

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## RECOMMENDED OPERATING CONDITIONS

**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 Multicore cored wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using Multicore Tip Tinner/Cleaner TTC1, then wiped on a clean, damp sponge before re-tinning with Multicore cored wire.

**Soldering process:** Multicore 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 Multicore 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 adequately. This process should only take a fraction of a second.
- Apply Multicore 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.

Multicore flux cored solder wires provide fast soldering on copper and brass surfaces as well as solder coated materials. The good thermal stability of Multicore fluxes means they are also well suited to soldering applications requiring high melting temperature alloys.

**Cleaning:** Multicore X39 flux cored wires have been formulated to leave minimal quantities of flux residue and to resist spitting and fuming.

Cleaning will not be required in most situations but if necessary this is best achieved using Multicore MCF800 Cleaner (see separate technical data sheet). Other proprietary solvent or semi-aqueous processes may be suitable. Saponification may be viable but customers must ensure that the desired level of cleanliness can be achieved by their chosen system

## HEALTH AND SAFETY

**WARNING:** The following information is for guidance only and users must refer to the Material Safety Data Sheets relevant to specific Multicore X39 products before use.

**Health Hazards and Precautions:** Inhalation of the flux fumes given off during soldering should be avoided. The fumes are irritating to the throat and respiratory system. Prolonged or repeated exposure to rosin or modified rosin based flux fumes may lead to the development of respiratory sensitisation and occupational asthma.

Multicore solder wires must always be used with suitable fume extraction equipment to remove fumes from the breathing zone of operators and the general work environment.

Solder alloys containing lead give off negligible fume at normal soldering temperatures up to 500°C.

Normal handling of lead alloy wires will not cause lead to be absorbed through the skin. The most likely route of entry is through ingestion but this will not be significant if a good standard of personal hygiene is maintained. Eating, drinking and smoking should not be permitted in the working area. Hands should be washed with soap and warm water after handling solder wire.

**Waste disposal:** Wherever possible, waste solder wire should be recycled for recovery of metal. Otherwise it should be disposed of according to local or national regulations.

### Note

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