



LEAD-FREE CORED SOLDER WIRES FOR ELECTRONICS

99C

Multicore 99C Cored Solder Wires have been developed to provide lead-free soldering for the electronics and electrical industries.

- **Lead-free**
- **Choice of fluxes for**
 - **No Clean, low residue**
 - **Standard electronics assembly and repair**
 - **Difficult surfaces**
- **Compatible with existing surface finishes and processes**
- **Smooth shiny joints**
- **Cost effective alloy**

APPLICATIONS

Multicore 99C Cored Solder Wires are designed to be substituted for tin/lead cored solder wires in all hand soldering operations. Minor adjustments to soldering techniques will be required but the resulting soldered joints will perform as well as tin/lead solder joints. Obviously the flux type must be matched to the requirements of the assembly process.

Multicore 99C eliminates the handling hazards due to lead for operators using conventional cored wire products. Where lead has also been eliminated from other coating and soldering processes in PCB and component manufacture, the use of Multicore 99C Cored Solder Wire will ensure that completely lead-free assemblies are produced.

PRODUCT RANGE

Multicore 99C Cored Solder Wires are lead-free substitutes for eutectic and near eutectic tin/lead solders commonly used for hand soldering. They can be supplied in wire form with a choice of non-corrosive flux cores including Multicore X39, Multicore Ersin 381 and Multicore Ersin 362. The general characteristics of these fluxes and the core constructions

available are summarised in the table overleaf and further information is presented in separate data sheets. Other combinations and different flux cores may be available on request.

Multicore 99C Cored Solder Wires are available in a wide range of wire diameters down to approximately 0.45mm (0.20in.). Details of packaging and wire diameters are available in a separate data sheet.

RECOMMENDED OPERATING CONDITIONS

Multicore 99C is a 99.3% tin / 0.7% copper alloy already included in some specifications such as ISO9453 and BS219. It has a melting point of 227°C (440°F) which is approximately 45°C (110°F) higher than the 60% tin / 40% lead alloy commonly used for electronics soldering. It is therefore essential to use a higher soldering iron tip temperature than is normally used with the 60/40 alloy. The minimum acceptable tip temperature is 300°C (572°F). The optimum tip temperature in any particular application will depend on factors such as the thermal mass of the work being soldered but will probably be in the range 350-370°C (660-700°F).

By choosing the appropriate flux core and using the recommended tip temperature, it is possible to produce joints at least comparable in quality with those that would be obtained with lead based solder, using conventional hand soldering equipment.

Guidance on the selection of the appropriate flux core for any particular situation can be obtained from the data sheets on X39 and Ersin Multicore Solder Wires.

It is possible to solder all common finishes used on the solderable surfaces of electronic components and PCBs including tin/lead alloy finishes. If tin/lead coatings are soldered, the resulting joint will be contaminated with lead and the melting temperature (solidus) of the fillet will be reduced to that of eutectic tin/lead alloy. The properties of joints made with 99C are comparable with those made with conventional 60/40 solder.

TECHNICAL SPECIFICATION

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

ALLOY		
Composition	99%Tin 0.45-0.85%Copper	60%Tin 40%Lead
Solidus temperature, °C	227	183
Liquidus temperature, °C	227	188
Density, mg m ⁻²	7.31	8.52
Conductivity (% of copper) at -20°C		11.7
Copper lead-through-hole Joint properties		
Shear strength, N mm ⁻²		
20°C	28	37
100°C	21	22
Stress to rupture, hours (est.)		
5 N mm ⁻² , 20°C	4300	500
2 N mm ⁻² , 100°C	1460	<50
Mechanical fatigue, cycles (est.)		
±15 N mm ⁻² at 20°C	1100	1500
±10 N mm ⁻² at 100°C	900	1350

FLUX TYPE (other flux contents and fluxes may be supplied to special order)	
No Clean	X39B
Flux content	2 core, 1%
Characteristic	Halide free modified rosins, low residue
RMA	Ersin 381
Flux content	5 core, 3%
Characteristic	Mildly activated non-corrosive rosin
Standard product	Ersin 362
Flux content	5 core, 3%
Characteristic	Halide activated Non-corrosive rosin
General Purpose	Ersin 399
Flux content	5 core, 3%
Characteristic	Halide activated, non-corrosive rosin for difficult to solder surfaces

HEALTH AND SAFETY

WARNING: The following information is for guidance only and users must refer to the Material Safety Data Sheet relevant to specific Multicore 99C solder wire products before use.

Fume Hazards and Precautions: Avoid excessive inhalation of the flux fumes. These are irritating to the throat and respiratory organs. Prolonged or repeated exposure may result in sensitisation leading to occupational asthma. Suitable fume extraction equipment should be used to extract flux fumes away from operators.

Protection and Hygiene: Eating, drinking and smoking should not be permitted in the working area. Hands should be washed with soap and warm water after handling solder, especially before eating.



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MULTICORE SOLDERS

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