

# Solder Wires



## 60/40 Halide Free Flux



### Features:

- Halide free version-Multicomp 400
- Fast soldering-range of activities to suit all applications
- Good spread on copper, brass and nickel
- Clear residues
- Heat stable-low spitting

### Product Range

Multicomp type 400 is designed for users who require a halide free formulation. The remaining products in the range contain higher halide levels to maximise soldering power

Multicomp type 400, 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 Multicomp Typ 400, 505 and 511 products may allow a lower flux content to be specified e.g. 2.2%. This will further improve residue appearance by reducing the quantity.

For applications requiring low residue halide free fluxes, Multicomp 400 is available at 1% flux content (formerly Multicomp X-39). Multicomp 400, 502, 505 and 511 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.

### Technical Specification

#### Alloys

The alloys used for Multicomp 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

#### Flux

Multicomp 400, 502, 505 and 511 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

Flux Properties				
Test	400	502	505	511
Acid value mg / KOH / g	205 - 220	156 - 172	159 - 177	164 - 176
Halide Content %	0	0.2	0.5	1.1
J-STD-004 -Solder Spread mm <sup>2</sup> -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 -EN 29454-1 -J-STD-004 -IPC-SF-818	1.1.3 RO L0 LR3CN	1.1.2 RO M1 MR3CN	1.2.2 RO M1 MR3CN	1.1.2 RO M1 MR3CN

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### Special Properties:

Multicomp 400, 502, 505 and 511 cored solder wires are designed to give fast and sustained wetting on both copper and brass. This can be demonstrated using spreading tests on both substrates under standard conditions for the Multicomp products and comparable competitor products. After 5 seconds, area of spread is measured to form a comparative index indicating total flux efficacy.

Relative Wetting Performance of Multicomp Solder Wire and Halide Free Competitor Products*			
Product	Flux Content (%)	Area of Spread (mm <sup>2</sup> )	
		Oxidised Copper*	Oxidised Brass
Multicomp 400	2.2	222	209
Competitor A	3.5	191	140
Competitor B	2.5	202	

\* Oxidised for 1 hour at 205°C

Relative Wetting Performance of Multicomp Competitor Products*				
Product	Flux Content (%)	Halide Content (%)	Area of Spread (mm <sup>2</sup> )	
			Oxidised Copper*	Oxidised Brass
Multicomp 502	2.7	0.2	220	160
Competitor E	2	0.4	200	150
Competitor F	2.4		190	180
Competitor G	3.5		150	120
Competitor H	2.7	0.5	230	150
Multicomp 505			220	240

\* Oxidised for 1 hour at 205°C

### 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 Multicomp Typ 400, 505 and 511 cored wire. Severely contaminated soldering iron tips should first be cleaned and pre-tinned using a soldering iron tip tinner, then wiped on a clean, damp sponge before re-tinning with Multicomp cored wire

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### Soldering process

Multicomp 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 Multicomp 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 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

Multicomp flux cored 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 Multicomp fluxes means they are also well suited to soldering applications requiring high melting temperature alloys

### Cleaning

Multicomp 400, 502, 505 and 511 flux cored solder wires have been formulated to leave pale flux residues and to resist spilling and fuming

Cleaning will not be required in most situations but if necessary this is best achieved using Multicomp MCF800 Cleaner. 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

## Healthy and Safety

### Warning

The following information is for guidance only and users must refer to the Material Safety Data Sheets relevant to specific Multicomp flux cored solder wires 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

Multicomp 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

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### Part Number Table

Description	Part Number
Solder Wire, 60/40, 0.5 mm, 250 G	507-1136
Solder Wire, 60/40, 0.7 mm, 250 G	507-1148
Solder Wire, 60/40, 0.9 mm, 250 G	507-1150
Solder Wire, 60/40, 1.2 mm, 250 G	507-1161
Solder Wire, 60/40, 0.7 mm, 500 G	507-1185

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