

No-clean Flux Cored Wire Solder

Prevents **EROSION** of the soldering iron bit, reduces bit consumption and exhibits excellent thermal fatigue.

S03X7C-51M (SnAg0.3Cu0.7Co0.3)

Helps prevent shortening of the soldering iron bit life.

Solder wettability is greatly improved.

Minimized solder/flux spattering.

Compatible with various solder alloys.

No clean ROM1	Flux content 3.0%	Halide content 0.13%	Melting point 217 - 227°C	High heat fatigue property	Anti-erosion alloy	Powerful wetting	High reliability
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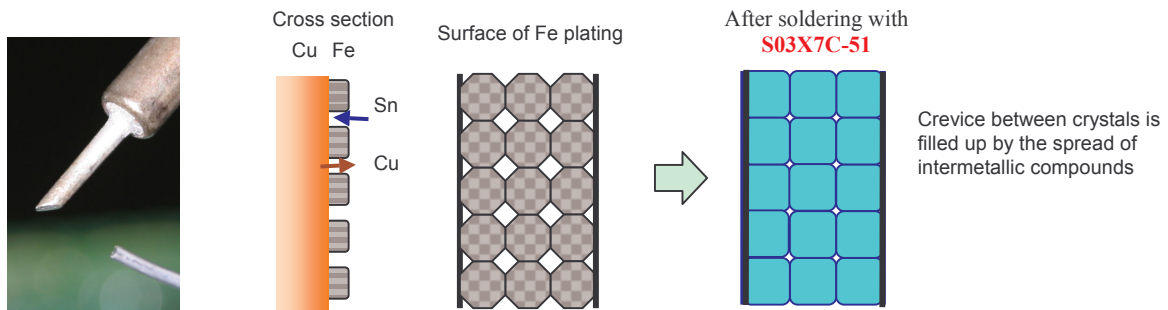
Anti-erosion alloy

– Remarkably extends the life of the solder bit!

The alloy composition of the lead-free resin flux cored solder is now dominated by SnAg3.0Cu0.5, resulting in a much higher Sn content compared to SnPb wires. While soldering Sn enters the crevices between crystals on the plating surface of a soldering bit, dissolves and erodes Cu in the center of the soldering bit, and the Cu flows out

from the bit.

Consequently, the Cu in the center becomes thinner, and when external pressure is exerted, the plating surface gets damaged.



As a corrective measure against such erosion of the soldering bit, simply thickening the bit plating (around 500μ □) may be one option, though it cannot be the complete solution due to the properties of the metals utilised.

In the case of using **S03X7C-51M**, intermetallic compounds are formed over the plating surface while soldering in the same way as with the normal solders.

Composition of such compounds is Sn/Fe/Co. Although these are compounds with a high melting point of over 500°C like Sn/Fe, they can spread thinly over the Fe plating surface thanks to Co relieving the high surface tension of Sn, allowing it to fill up the crevices between crystals. Subsequently, intrusion of solder into the bit center is restrained, and the erosion is diminished.

Reduction of solder spitting

– Remarkably increases working efficiency.

Since the melting point of the lead-free resin flux cored solder is higher than that of the Sn/Pb alloy, a soldering iron of larger heat capacity or good heat conductivity should be used with a relatively high preset temperature. Therefore,

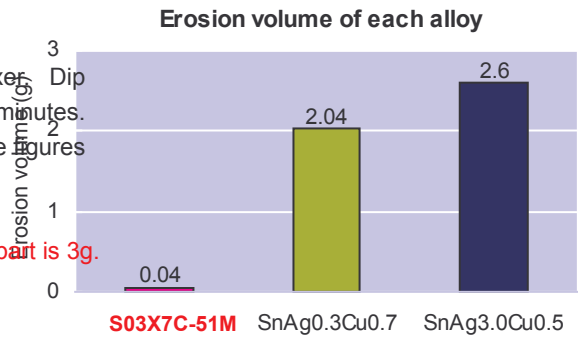
flux tends to splatter while soldering.

The development of **S03X7C-51M** drastically reviewed the flux ingredients and largely reduced flux spitting.

Erosion Test

Set two copper plates of 10□120x1mm on the stirring paddles of a mixer. Dip 20mm from the tip into the solder bath of 255°C. Stir at 30rpm for 30 minutes. Measure a decrease in weight of the copper plates and represent the figures as the quantities of copper erosion.

* Complete erosion of the dipped part is 3g.



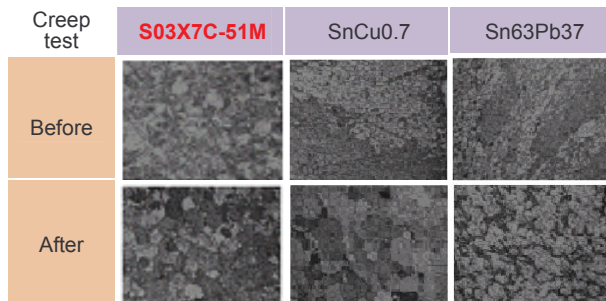
Thermal fatigue resistance - Improved connection reliability is achieved!

The metal organization maintains its strength by the wedge effect with its respective crystals sticking together. When the organization becomes enlarged because of heat, the wedge effect on each other weakens, and a slip between crystals occurs due to a load, resulting in creep

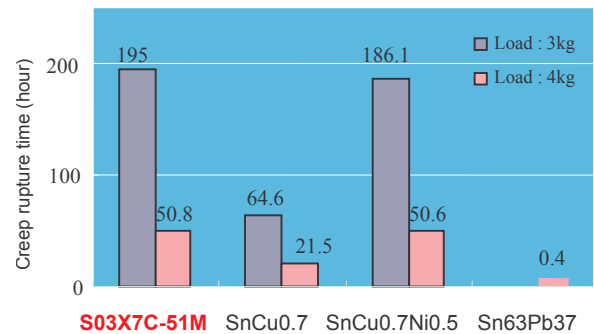
rupture.

S03X7C-51M improves the thermal fatigue resistance property by adding Co to restrain the enlargement of the organization.

* Creep test condition : 100°C × 4 kg load



Creep strength test at 130°C



Specifications & Other products

Product	S03X7C-51M	S3X-51M	TX-51M
Alloy composition (%)	SnAg0.3Cu0.7Co0.03	SnAg3.0Cu0.5	SnCu0.5
Melting point (°C)	217 ~ 227	217 ~ 218	227
Flux content (%)	3.0	3.0	3.0
Halide content (%)	0.13	0.13	0.13
Solder spread factor (%)	> 75	> 75	> 75
Flux type	ROM1	ROM1	ROM1
Diameter available (mm)	0.3, 0.5, 0.6, 0.8, 1.0, 1.2		
Packaging	500 gs/spool		

Solder Bars

Specifications & Products range

Product	S35X-B	S3X-B	S35-B	SX7-B
Alloy composition (%)	Sn-3.5Ag-Cu0.75	Sn-3.0Ag-0.5Cu	Sn-3.5Ag	Sn-0.7Cu
Specific gravity	7.38	7.39	7.37	7.31
Melting point (°C)	217	217 ~ 218	221	227
Tensile strength (N/mm ²)	59.4	59.4	54.2	32.8
Elongation (%)	64.0	64.0	67.0	70.0