Products for minimizing tip erosion

The alloys have largely overcome the iron tip erosion problems when using lead-free solder. Achieve superior wetting characteristics with Sn-Ag-Cu alloys.

LFM-48S
LFM-22S/LFM-41S

1. Tip erosion is vastly minimized as compared to standard Sn-Ag-Cu alloys.
2. Fewer tip changes equate to substantial cost reductions.
3. Superior soldering performance and better joined strength are gained, as compared with Sn-Ag-Cu series alloys. Alloys can be changed by following a series of simple steps.

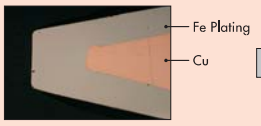
Examples of application : Used as tips in robotic soldering machines.

Tip Erosion Durability Test

[Condition] Measurements of depth of tip wastage after 20,000 solder shots at each testing temperature.

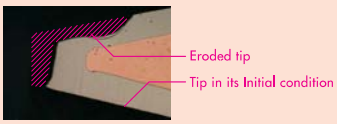
-Test Equipment: UNIX-412 from Japan Unix. -Solder Feeling Speed: 5mm/shot. -Solder Feeding Speed: 10mm/shot. -Solder Reversing Speed: 10mm/shot.

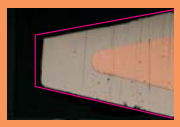
Initial Condition of Tip (Cross-section)



Soldering

Beginning of tip erosion



	LFM-48S	Conventional Products (SAC305)	Leaded Solder
350℃	 −55μm	 −210μm	 −22μm
380℃	 −78μm	 −294μm	 −50μm

Photos of Spreading states on Copper Sheet

[Condition] Test of solder wetting property on an oxidized copper sheet.

-Flux Used: SR-37. -Test Temperature: 350°C.

Comparisons with Existing Solder

	LFM-48S	SAC305 (Conventional Products)	LFM-22S	LFM-22 (Conventional Products)	LFM-41S	LFM-41 (Conventional Products)	Measurement Method
Solid State Temperature (°C)	217	217	227	227	217	217	DSC Method
Liquid Phase Temperature (°C)	221	220	227	228	270	270	DSC Method
Rate of Spreading (%)	82.2	82.2	82.8	83.3	82.2	83.0	With SR-34 SUPER Flux
Tensile Strength (Mpa)	46	44	34	29	39	38	JIS Tensile Test (Tensile Speed 10mm/min)
Elongation (%)	47.5	48.2	47.8	45.2	41.1	41.2	JIS Tensile Test
Young's Modulus (%)	52	50	58	55	59	59	Ultrasonic Method
Specific Gravity	7.4	7.4	7.3	7.3	7.3	7.3	Laser Method

* Temperatures used for spreading tests: LFM-48 type = 270°C, LFM-22 type = 270°C, LFM-41 type = 320°C

Parts for minimizing tip erosion (for use with resin-core solders) products specification

Product name	Melting point temperature	Flux compatibility				
		KR-19	KR-19 SH RMA	SR-34Super	SR-37	GUMMIX-19
LFM-48S	217-220°C	○	○	○	○	○
LFM-22S	227-228°C	○	△	○	○	△
LFM-41S	217-270°C	○	△	○	○	△

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