

Core Solders "Products for Minimizing Tip Erosion"

Problems involving iron tip erosion when using lead-free solder have been largely overcome. Both the flux and the alloy of the core solder play a part in ensuring ideal soldering conditions.

SR-37 / BT-19 LFM-48S SR-37 LFM-22S / SR-37 LFM-41S

1. Tip erosion problems when using lead-free solder are almost entirely overcome through a combination of flux with good wetting properties and the alloys designed to minimize its erosion.
2. As a result of tip exchange reduction, substantial cost reduction is possible.

Examples of application: **Sn-Ag-Cu solders** **Sn-Cu solders** Robotic soldering machines, soldering with specialized tips



Reasons for excessive tip erosion with lead-free soldering operation

Reason 1
Higher tip
temperature

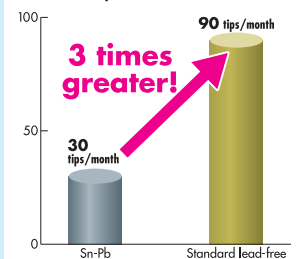
Reason 2
Increases in
soldering time

Reason 3
Higher Sn content
in the solder

Tip erosion leads to cost increase!

Changes of tip shape due to tip erosion cause the imperfect soldering. As a result, increases in times of tip changes and cost.

Numbers of tips used in one month



Development of the soldering system, such as the combination of flux and tip alloy, designed to minimize tip erosion

(Flux)
SR-37

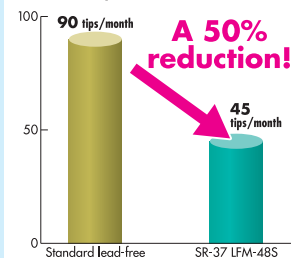
(Alloy)
LFM-48S
(LFM-22S / LFM-41S)

**Perfect soldering
at low
temperatures**

**Perfect soldering is
achieved with less
soldering operation time.**

**Additional metal has
no effect on reliability
and workability**

Numbers of tips used in one month



**Cost reductions are achieved through
reductions in the number of tip changes!**

Tip Erosion Durability Test

[Condition] Depth measurements of tip erosion after 20,000 solder shots with different flux and alloys.

-Test Equipment: UNIX-412 made by Japan Unix.
-Solder Feeding Quantity: 5mm/shot.
-Solder Feeding Speed: 10mm/shot.
-Solder Reverse Speed: 10mm/shot.

Initial Condition of Tip



Cross-section

Appearance



Soldering

Standard lead-free



Depth of Tip erosion: 310.49μm



SR-37 LFM-48S



Depth of Tip erosion: 41.49μm



**An 86%
reduction in rate
of tip erosion**

Product name component for Core Solders

(Example) SR-37 LFM-48S 3.5% 0.3Ø

Flux name; alloy type; flux content; core solder diameter

Core Solder products specification

Flux name	Alloy type	Flux content	Melting point temperature	Core solder diameter (mmØ)
SR-37	LFM-48S (Sn-3.0Ag-0.5Cu-α)	3.5%	217-221°C	0.3, 0.38, 0.5, 0.65, 0.8, 1.0, 1.2, 1.6
BT-19	LFM-22S (Sn-0.7Cu-α)	3.5%	227-228°C	0.5, 0.65, 0.8, 1.0, 1.2, 1.6
	LFM-41S (Sn-0.3Ag-2.0Cu-α)	3.5%	217-270°C	0.5, 0.65, 0.8, 1.0, 1.2, 1.6

*LFM-48S has been sublicensed for US PAT No. 6231691B1. Alloy LFM-48S is compatible with other fluxes such as SR-34 Super. *SR-37 LFM-41S is effective in minimizing Cu erosion.
*If the ordered core solder diameter is out of stock, please contact with our sales representative.