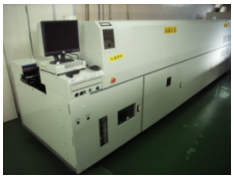
Applicable for air reflow - Crack-free flux residue solder paste

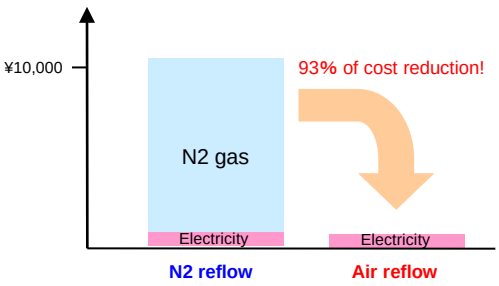
S3X58-CF100 Alloy composition: Sn Ag3.0 Cu0.5 (SAC305)

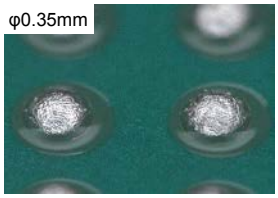
- Gives crack-free flux residue with air reflow. An industry first unique to Koki.
- Enables savings by no need of N2 during reflow & coating agent after reflow
- Particularly well suited to automotive applications

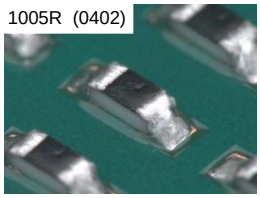
◆ Power saving effect by adopting air reflow



■ Running cost per 1kg of solder paste consumption



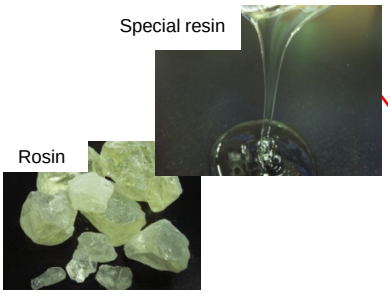




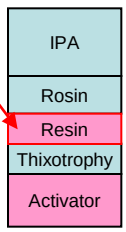
Board: FR-4
Stencil thickness: 150um
Reflow profile: Preheat temp. = 155 – 190ºC for 90sec.
Peak temp. = >220ºC for 40sec. / Maximum temp. = 240ºC

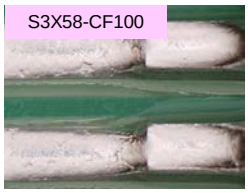
S3X58-CF100 achieves exceptional wettability for crack-free residue solder paste with finer pitch and smaller components, even with air reflow.

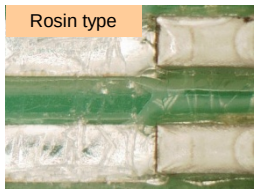
◆ Highly reliable crack-free flux residue



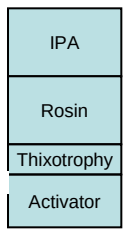
Flux composition





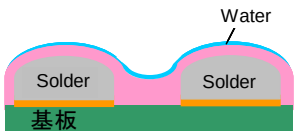


Flux composition

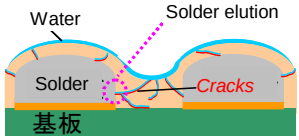


Migration concerns

No cracks



Cracked



■ Heat cycling condition
-40C⇔125C (every 30min)
1000 cycles

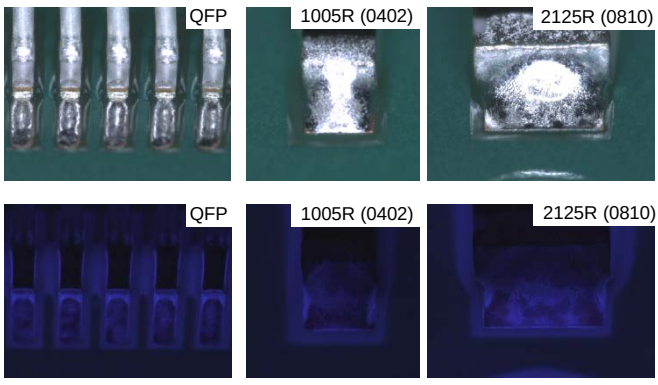
Crack-free flux residue removes any concerns about electromigration due to moisture ingress through cracks in the flux residues after reflow.

◆ Prevention of moisture absorption

■ Test description
Reflow S3X58-CF100 which fluorescence agent is added in the flux.
After reflow, apply UV light to its flux residue and see if the residue covers on soldering area so that flux residue protects the area from moisture.

Board: FR-4
Stencil thickness: 150um
Reflow profile: Preheat temp. = 155 – 190ºC for 90sec.
Peak temp. = >220ºC for 40sec. / Maximum temp. = 240ºC

Since crack-free flux residue in S3X58-CF100 prevents moisture absorption and constantly secures high insulation resistance through extremely severe environmental changes, there are no requirements to clean or use coating agents after the soldering process. It helps to reduce production and process costs.



Flux residue perfectly covers solder joint and component leads.

◆ Excellent ICT & visual appearance testability

■ Post soldering inspections such as ICT test are essential for securing constant high quality in mass production of electric devices.
However, since conventional rosin type flux residue has the potential to cause the following problems due to its brittleness and opaqueness:

- Obstruction of electrical conduction in ICT test due to the attachment of cracked residue to the tip of probing pins.
- Interruption of electrical connection due to cracked residue lodging in the electrodes of other components.
- Obstruction in visual appearance test due to the opaqueness of the flux residue.

S3X58-CF100 achieves excellent ICT & visual appearance testability ,since this uniquely developed flux maintains its residue transparency and is crack-free in various tests such as ICT test and thermal cycling test.

■ ICT testability check

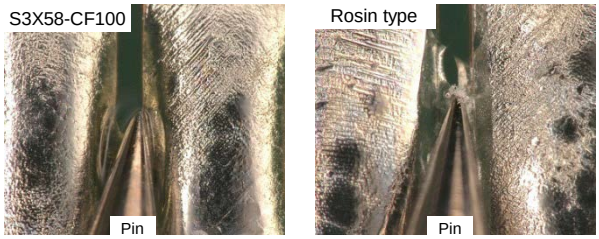
Description:

Conduct ICT test with two different types of pin to 100 pads continuously without cleaning the pins and record the level of the insulation resistance each time.

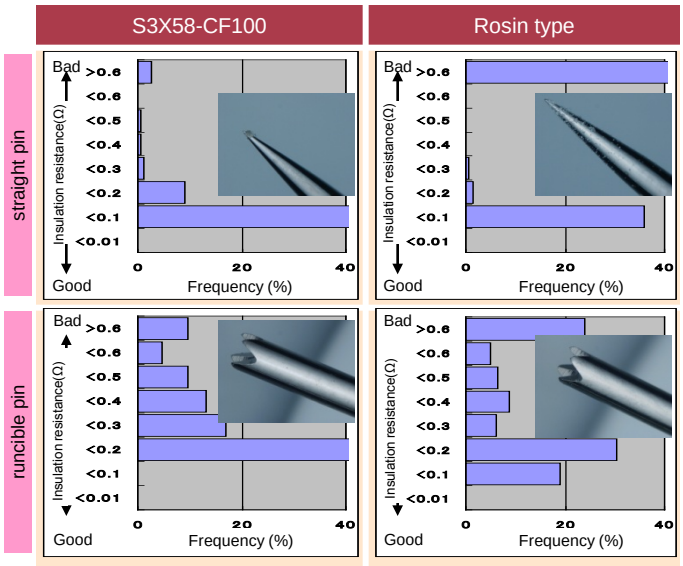
straight pin:Nihon denshin / C-17M L53
Pad:φ1.5～2.5 N=714
runcible pin:Nihon denshin / C-17X L53
Pad:φ2.0～2.5 N=408

In conventional rosin type flux residue, excessively high insulation resistance is frequently recorded since cracked residue attaches to the tip of the pin.

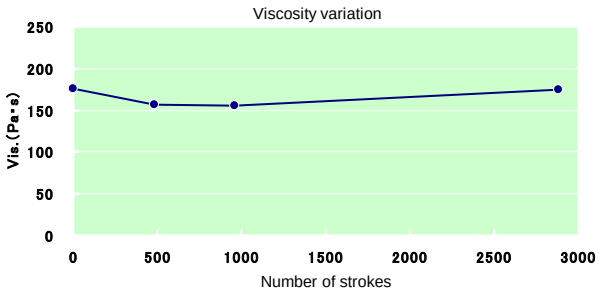
Crack-free flux residue improves ICT testability



Remained crack-free　　cracked



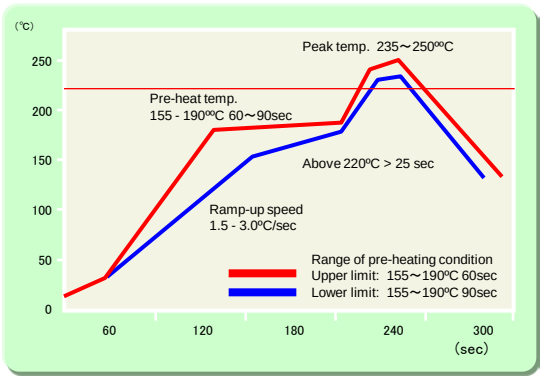
◆ Continual printability



Test conditions:
Print speed: 30mm/sec.
Length of stroke: 300mm
Interval: 60sec./1stroke

High viscosity stability achieves excellent continual printability.

◆ Recommended reflow profile



◆ Product specifications

Product name	S3X58-CF100
Alloy composition	Sn Ag3.0 Cu0.5
Melting point (ºC)	217-219
Particle size	20-38μm(58)
Viscosity (Pa.s)	190±30
Flux content (%)	11.2±0.5
Halogen content (%)	0

◆ Crack-free flux residue product line up

GSP	Solder paste co-developed with TOYOTA Corp.
S3X58-N210	Low voiding type solder paste
S3X48-M500P	Solder paste applicable to DCB soldering
S3X-70M	Solder wire for repairing
ST-78F	Coating agent for post repairing
JS-E-13	Wave soldering flux for crack-free residue

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