

# PRODUCT DATA SHEET

# RA-2

## Flux Coating for Solder Preforms

### Introduction

Flux-coated solder preforms give you exact, repeatable amounts of solder for your manufacturing process without adding an extra step for applying flux. Both the solder preforms and flux are made to very tight tolerances, resulting in consistent solder joints. This improves efficiency and manufacturing yields.

**RA-2 Flux Coating** is a no-clean formulation that can be used to coat most alloys, including all SAC and SnPb material, and is also available with other indium-containing alloys.

**RA-2** provides superior reliability with activity approaching that of a fully activated rosin flux, while maintaining ROL1 no-clean status. **RA-2** ensures complete flux coverage on all preform geometries to promote wetting and low-void performance.



### Features

- No-clean
- Usable on all substrate surfaces
- Usable with all alloys
- Compatible with pick and place or bowl feeding equipment
- Available in colors to distinguish similar parts (color has no impact on soldering ability)

### Flux Percentage

The recommended amount of flux coating is generally  $1\% \pm 0.5\%$  by weight. This precise amount of flux eliminates operator variations when applying flux as a separate step. It also reduces the post-reflow flux residue. Coatings up to 3% are possible, although not generally required.

### Cleaning

**RA-2** is designed for no-clean applications. If desired, the flux residue can be removed by a commercially available flux cleaner.

IPC Classification	Substrate Finishes	Reliability J-STD-004B
ROL1	Au, Ag, Pd, Pt, Cu, HASL, ENIG, Sn, Ni	Pass

### Technical Support

Indium Corporation's internationally experienced engineers provide in-depth technical assistance to our customers. Thoroughly knowledgeable in all facets of Materials Science as it applies to the electronics and semiconductor sectors, Technical Support Engineers provide expert advice in solder properties, alloy compatibility and selection of solder preforms, wire, ribbon, and paste. Indium Corporation's Technical Support engineers provide rapid response to all technical inquiries.

### Summary

Test	Test Requirement	Result	Classification
Copper Mirror	No Breakthrough	L	No Breakthrough L
	<50% Breakthrough	M	
	>50% Breakthrough	H	
Halides	<0.5%	L	<0.5% L
	0.5–2.0%	M	
	>2.0%	H	
Corrosion	No Corrosion	L	No Corrosion L
	Minor Corrosion	M	
	Major Corrosion	H	
SIR	No-Clean $\geq 100 \text{ M}\Omega$	L	Pass L
	Cleaned or No-Clean $\geq 100 \text{ M}\Omega$	M	
	Cleaned $\geq 100 \text{ M}\Omega$	H	
ECM	No-Clean <1 Decade Drop	L	Pass L
	Cleaned or No-Clean <1 Decade Drop	M	
	Cleaned <1 Decade Drop	H	
Halides	<0.05%	0	>0.05% 1
	>0.05%	1	

### Safety Data Sheets

Please refer to the SDS document within the product shipment, or contact our local team to receive a copy.

From One Engineer To Another®



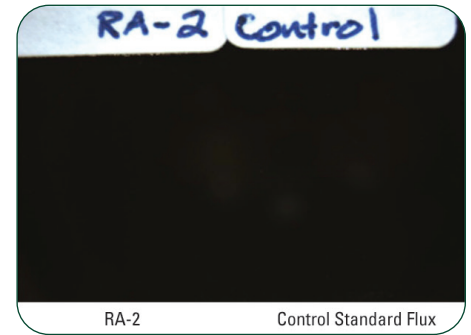
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## Test Data

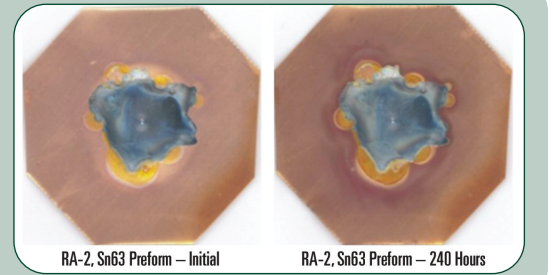
### Copper Mirror

The J-STD-004B copper mirror test is performed per IPC-TM-650 2.3.32. To be classified as "L" type flux, there should be no complete removal of the mirror surface. **RA-2** shows no removal of the mirror surface and can be classified an "L" type flux.



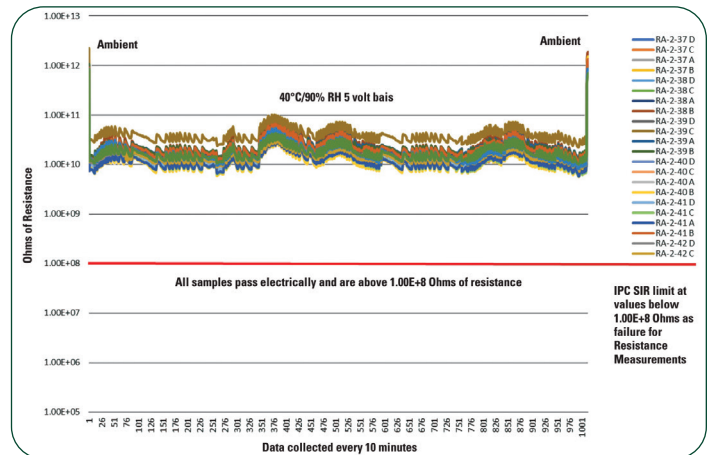
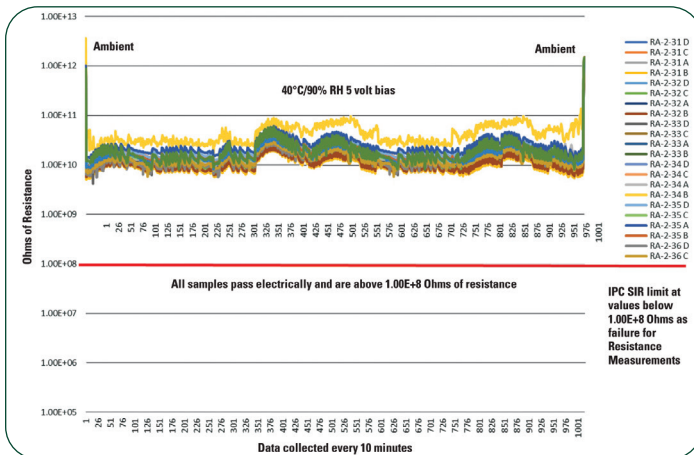
### Copper Corrosion

Copper corrosion is tested per IPC-TM-650 method 2.6.15. This test gives an indication of any visible reactions that take place between the flux residue after soldering and copper surface finishes. In particular, green copper corrosion (formed as copper-chloride) should not be seen. With **RA-2**, some of the residue darkens over time, but no corrosion is observed.



### Surface Insulation Resistance (SIR)

The Surface Insulation Resistance test is performed per IPC-TM-650 method 2.6.3.7, using boards prepared per IPC-TM-650 method 2.6.3.3. All boards soldered with **RA-2** pass the requirements of having exhibited no dendritic growth, no visible corrosion, and a minimum insulation resistance of 100 megohms ( $1 \times 10^8$ ). The values presented on the adjacent graphs show the number of Ohms times ten to the power of the vertical axis. The IPC-TM-650 SIR is a 7-day test and gives a general idea of the effect of the flux residue on the electrical properties of the surface of the circuit board.



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All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified. Indium Corporation is an ISO 9001:2015 registered company.

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