

## PRODUCT DATA SHEET

# NC-299

## Flux Coating for Solder Preforms

### Introduction

Flux-coated solder preforms provide precise, reproducible solder quantities for your manufacturing operation, eliminating the need for a separate flux application step. Both the solder preforms and flux are created to stringent specifications, leading to uniform solder joints that enhance efficiency and boost manufacturing output.

**NC-299 Flux Coating** is a no-clean formulation that can be applied to most alloys, including all SAC and SnPb materials, and it is also compatible with other indium-based alloys.

**NC-299** guarantees comprehensive flux coverage across all preform shapes, fostering optimal wetting and minimal void performance.

### Features

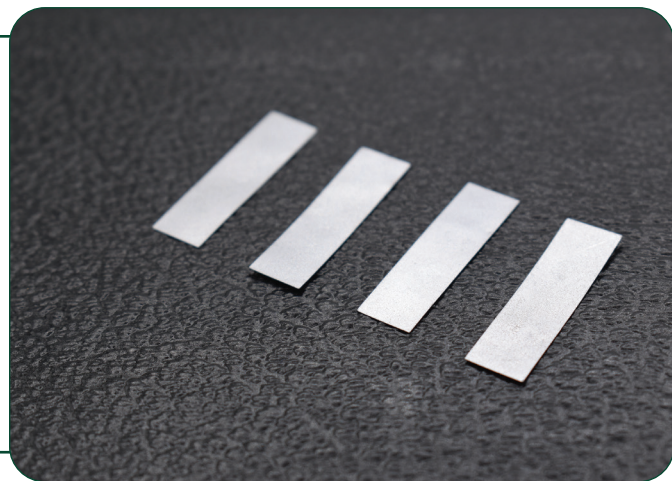
- Requires no cleaning
- Suitable for all substrate surfaces
- Compatible with all types of alloys
- Can be used with pick and place or bowl feeding equipment
- Offered in various colors for easy differentiation of similar parts (color does not affect soldering capability)

### Flux Percentage

The advised flux coating quantity is typically  $1\% \pm 0.5\%$  by weight. This exact measure of flux eradicates inconsistencies that can arise from manual flux application and also lessens the flux residue after reflow. Coatings can reach up to 3%, although such high percentages are usually not necessary.

### Cleaning

**NC-299** is designed for no-clean applications. If desired, the flux residue can be removed by a commercially available flux cleaner.



### Properties

| IPC Classification | Substrate Finishes                        | Reliability<br>J-STD-004 |
|--------------------|-------------------------------------------|--------------------------|
| ROL1               | Au, Ag, Pd, Pt, Cu,<br>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.

### 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®**



Form No. 100037 R1

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# NC-299 Flux Coating for Solder Preforms

## Test Data

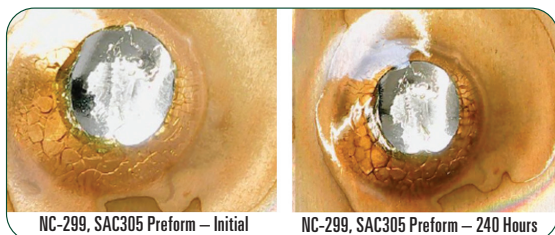
### Copper Mirror

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. **NC-299** shows no removal of the mirror surface and can be classified an "L" type flux.



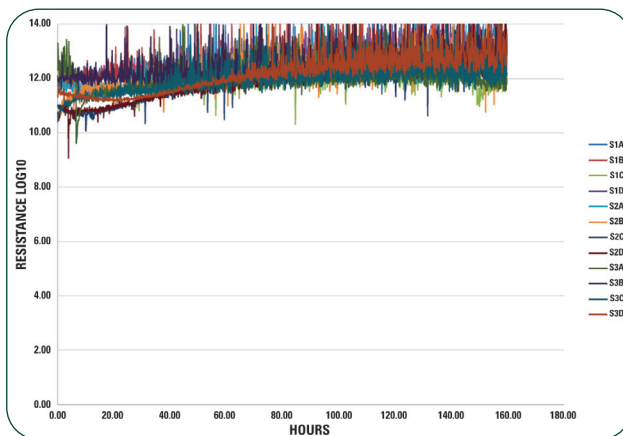
### Copper Corrosion

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 **NC-299**, 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 **NC-299** 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.



## 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 $\geq 100M\Omega$            | L | Pass            | L              |
|               | Cleaned or No-Clean $\geq 100M\Omega$ | M |                 |                |
|               | Cleaned $\geq 100M\Omega$             | 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 |                 |                |

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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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