

PRODUCT DATA SHEET

3545 No-Clean Flux

Introduction

3545 is a no-clean, rosin-containing, alcohol-based flux. The addition of rosin increases the hole fill yield and reduces bridging when soldering challenging assemblies. This product can be used in wave soldering and selective soldering processes.

Features

- Rosin-containing for additional heat stability
- Halogen-free
- Sn/Pb and Pb-free compatible
- Compatible with all spray and drop jet fluxers

Physical Properties

| Test | Result |
|---------------------------|--------|
| Classification J-STD-004C | ROLO |
| Specific Gravity @ 25°C | 0.812 |
| Acid Value | 29.5 |
| Solids Content | 11.4 |
| Flash Point (TCC) | 54°C |

Shelf Life

The shelf life for this product is **2 years** in an unopened container stored at less than 32.2°C (90°F). Shelf life for an opened container will vary depending on storage conditions, including open time, temperature, and humidity. For longest shelf life of an opened container, replace cap to reduce alcohol evaporation and store in a cool, dry environment.

Process Recommendations

Indium Corporation tests all of its wave soldering fluxes on its own wave soldering machine prior to making them available to the market.

62mil-thick Circuit Board Process Recommendations

| Flux Deposition Rate µg/in ² solids | Preheat Temp | | Preheat Time (sec) | Alloy | Contact Time (sec) | Pot Temp (°C) |
|---|--------------|-------------|--------------------|-------|--------------------|---------------|
| | Top (°C) | Bottom (°C) | | | | |
| 750–3,000 | 85–120 | 85–125 | 50–75 | Sn995 | 4–6 | 265–270 |
| 500–2,000 | 70–110 | 90–120 | 50–75 | SnPb | 1.5–2.0 | 250–260 |

Safety

Flammable liquids should be stored in a dry, well-ventilated environment away from open flames, sparks, or direct heat.

Indium Corporation Compatible Products

- **Solder Paste:** Indium8.9HF
- **Cored Wire:** CW-818 and CW-807
- **Flux Pen:** FP-500 (rosin-containing)

Indium Corporation's wave soldering fluxes have been designed to be fully compatible with our solder paste, cored wire, and rework flux, and are also expected to be compatible with many of our competitors' products. For example, **3545 No-Clean Flux** is not only compatible with Indium8.9HF Solder Paste, but also with our 5.2LS, 8.9 series, 92 series, and 10 series. Indium Corporation determines compatibility primarily by matching flux chemistry. However, a select number of wave, reflow, and rework product combinations have been thoroughly tested to ensure that the combined flux residues meet the electrical and reliability requirements of IPC J-STD-004C. Please contact Indium Corporation Technical Support if you are interested in knowing about these fully-tested combinations.

Technical and Customer 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®



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Test Data

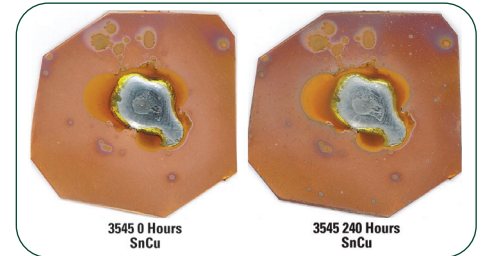
Copper Mirror

The J-STD-004C copper mirror test is performed per IPC-TM-650 method 2.3.32. To be classified as an "L" type flux, there should be no complete removal of the mirror surface. **3545** exhibits no complete removal of the copper mirror and, therefore, is classified as an ROL0.



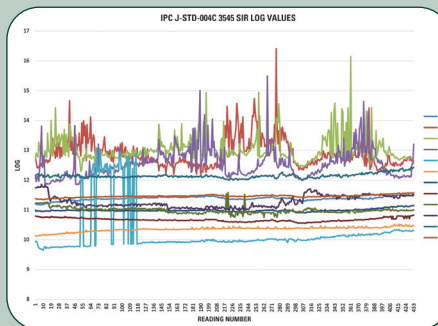
Copper Corrosion

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.

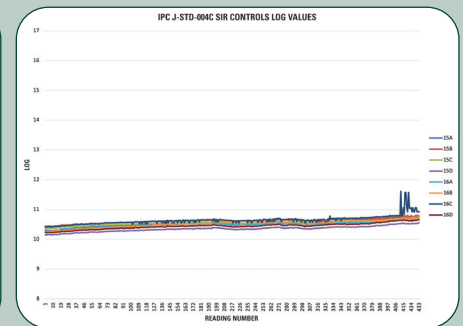


Surface Insulation Resistance (SIR)

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 **3545** pass the requirements of having exhibited no dendritic growth, no visible corrosion, and a minimum insulation resistance of 100 megohms (1×10^8). The values shown on the two 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.



SIR 3545

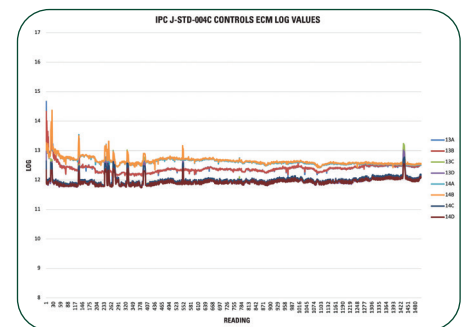
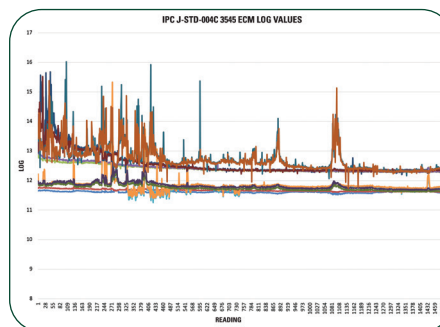


SIR Controls

Electromigration (ECM)

| J-STD-004C Insulation Resistance Values | | |
|---|----------|----------|
| | Initial | Final |
| 3545 | 4.57E+12 | 9.79E+11 |
| Controls | 7.86E+12 | 2.07E+12 |

The electromigration test is performed to IPC-TM-650 method 2.6.14.1 with boards prepared using IPC-TM-650 method 2.6.3.3. The test conditions for this test are 596 hours at $65^\circ\text{C} \pm 2^\circ\text{C}$ and $88.5\% \pm 3.5\% \text{ RH}$. To pass this test, there should be no visible corrosion and no dendritic growth that decreases line spacing by more than 20%. In addition, the insulation resistance should not drop more than one order of magnitude after the first 96-hour stabilization period when a bias voltage is applied.



This product data sheet is provided for general information only. It is not intended, and shall not be construed, to warrant or guarantee the performance of the products described which are sold subject exclusively to written warranties and limitations thereon included in product packaging and invoices. All Indium Corporation's products and solutions are designed to be commercially available unless specifically stated otherwise.

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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