

Product Data Sheet

Cu-Pillar Flip-Chip Flux WS-641

Features

- Halogen-free – no intentionally added (NIA) halogens
- Uniform dipping volumes over long periods
- Proven high yields in copper-pillar (Cu-pillar) flip-chip TCB (thermocompression bonding) reflow on interposer
- Designed for SnAg microbumps
- Flux rheology applicable for copper-pillar dipping
- Excellent solderability on a wide range of surfaces
- Bubble-free packaging

Introduction

Cu-Pillar Flip-Chip Flux WS-641 is a water-washable dipping flux designed for use in thermocompression bonding flip-chip copper pillar applications. Its rheology and chemical design enables its use with dipping depths down to 10 microns or less. **WS-641** has an activator system powerful enough to promote solder wetting even on mildly oxidized copper and ENEPIG. Its cleanability in deionized (DI) water and halogen-free nature makes it environmentally-friendly, as well.

Properties

Property	Value	Test Method
Flux Classification:	M0	J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)
Typical Viscosity:	10kcps	Brookfield Spindle TB (20rpm)
SIR (Ohms, after cleaning):	Pass (>108 after 7 days @ 85°C & 85% RH)	J-STD-004 (IPC-TM-650: 2.6.3.3 IPC-B-24)
Typical Acid Value:	60mg	KOH/g Titration
Typical Tack Strength:	250g	J-STD-005 (IPC-TM-650: 2.4.44)
Shelf Life:	3 months (+10°C to +30°C)	Viscosity change / microscope examination

All information is for reference only. Not to be used as incoming product specifications.



Application

The amount of flux deposited on the substrate can be optimized by changing equipment parameters. Key variables include temperature, copper-pillar dimensions, shear speed, time of shearing before dipping, dwell time in flux, and depth of immersion. The flux rheology can be optimized for the desired application by shearing

to achieve the desired viscosity. Humidity must be kept at <60%RH.

Cleaning

WS-641 post-reflow residue can be cleaned with DI water, or water with an added cleaner. Ideal conditions for spray-cleaning: 25°C (room temperature) or higher for >2 minutes at >60psi.

Packaging

WS-641 is available in 10cc and 30cc syringes.



OVER→

Form No. 98617 R1

www.indium.com

askus@indium.com

ASIA: Singapore, Cheongju: +65 6268 8678
 CHINA: Suzhou, Shenzhen, Liuzhou: +86 (0)512 628 34900
 EUROPE: Milton Keynes, Torino: +44 (0) 1908 580400
 USA: Utica, Clinton, Chicago: +1 315 853 4900



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Storage

For maximum shelf life, syringes and cartridges should be stored tip down. Storage temperatures should not exceed 30°C. If placed in cold storage, **WS-641** should be allowed to stand for at least 4 hours at room temperature before use.

Technical Support

Indium Corporation sets the industry standard in providing rapid response, on-site technical support for our customers worldwide. Indium Corporation's team of Technical Support Engineers can provide expertise in all aspects of Materials Science and Semiconductor Packaging process applications.

Material Safety Data Sheets

The MSDS for this product can be found online at <http://www.indium.com/techlibrary/msds.php>

Reflow

WS-641 flux is designed for the rapid reflow conditions seen in copper-pillar first-level interconnect (FLI) thermocompression bonding. A maximum oxygen level of 75ppm O₂ and a reflow temperature of 350°C are recommended.

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.

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