

PRODUCT DATA SHEET

WS-3401

Wafer Flux

Introduction

Wafer Flux WS-3401 is a low-viscosity semiconductor-grade flux, specifically optimized to remove surface oxides from solder bumps on wafers. Working with the natural surface tension of solder, **WS-3401** produces uniform hemispherical bumps without solder robbing or solder bridging. The rheology is suited to both spin coat and spray applications.

Features

- Water-soluble
- Viscosity suitable for 150–300mm wafers
- No residue after multiple reflow/cleaning cycles
- Uniform bump shape
- Halogen-free—no intentionally added (NIA) halogens
- Suitable for SnPb and Pb-free, and high-temperature applications
- Non-corrosive to underbump metallization

Properties

	Value	Test Method
Flux Type Classification	M0	J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)
Typical Viscosity	42cSt	Cannon-Fenske viscometer
SIR (Ohms, post cleaning)	Pass (>10 ⁹ after 7 days @ 85°C and 85% RH)	J-STD-004 (IPC-TM-650: 2.6.3.3 IPC-B-24)
Typical Acid Value	60mg KOH/g	Titration
Color	Amber to brown	Visual
Shelf Life	6 months (0–25°C)	Viscosity change/microscope examination

All information is for reference only.

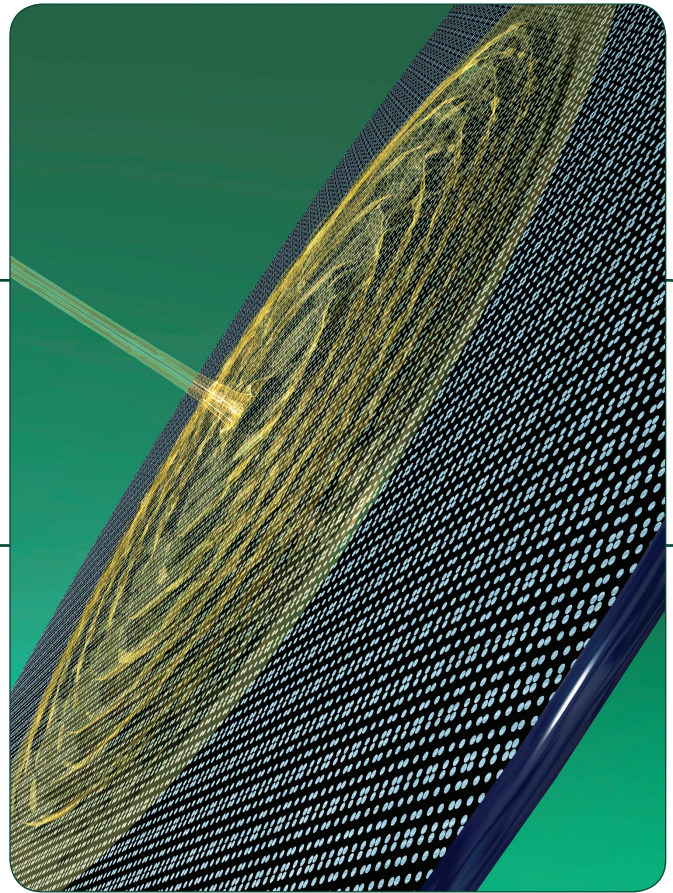
Not to be used as incoming product specifications.

Application

WS-3401 can be applied by standard spray and spin coating techniques.

For spin coating applications, an initial rotation speed should be used to spread this liquid flux uniformly onto the wafer. Next, a velocity rotation ranging from 15–800rpm, based on the application, should be used. The wafer size, topology, pitch, and the flux application are all variations that would impact the rotation velocity. This velocity rotation should be used to thin the flux and remove the excess flux from the wafer surface.

From One Engineer To Another®



For spray applications, the equipment flux storage tank should hold enough flux for one 8-hour shift. Additional flux remaining in the tank may expire (pot life >8 hours at room temperature) if left for a prolonged amount of time. Spray equipment should also be cleaned frequently to ensure the highest level of purity with this or any other flux.

Cleaning

WS-3401 is designed to be cleaned with DI water or water with an added cleaner. Ideal conditions for spray cleaning are 25°C or higher for >1 minute at >60psi.

Packaging

WS-3401 is sold by weight (grams) and is available in appropriate containers from 100g to 3.5kg (3,500 grams—approximately 1 gallon). Other packaging can be provided to meet specific requirements.

Storage

WS-3401 containers should be stored at 0–25°C for maximum shelf life. Storage temperatures should not exceed 25°C for more than 4 days, and should never exceed 30°C. After removing from cold storage, **WS-3401** should be allowed to stand for at least 4 hours at room temperature before using.



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Technical Support

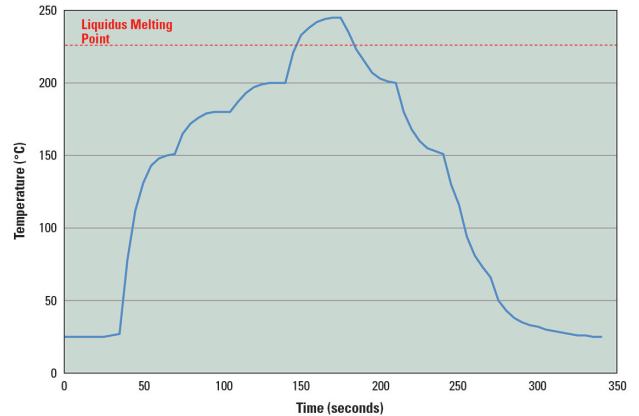
Indium Corporation sets the industry standard in providing rapid response, onsite technical support for our customers worldwide. Indium Corporation's team of Technical Support Engineers can provide expertise in all aspects of Materials Science and Semiconductor Packaging process applications.

Safety Data Sheets

The SDS for this product can be found online at:
<http://www.indium.com/sds>

Reflow

Recommended Profile:



The above profile is recommended as a starting point for 300mm wafers with SnAg solder microbumps, and should be optimized by the user to meet their individual process needs. Wafers should be reflowed in a nitrogen atmosphere (<10ppm O₂ is recommended, but <20ppm O₂ may be feasible; however, results may not be optimal). Note that bridging or solder thieving may be seen for fine-pitch microbumps (<60 microns) on copper pillars, and that reducing the peak temperature will reduce the occurrence of this failure mode.

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