WS-3600
Ball-Attach Flux

Introduction

Ball-Attach Flux WS-3600 is a thixotropic flux designed for use in pin transfer applications for ball-attachment to substrates (BGA manufacturing). Its rheology is specifically designed for use with even the smallest gravity-fed spheres. **WS-3600** has an activator system powerful enough to promote wetting on the most demanding substrate metallizations. The flux is a distinctive red color, which aids automated level-sensing equipment and also enhances visual inspection.

Features

• Flux rheology applicable for all sphere sizes
• Suitable for Pb-free or SnPb applications
• Uniform pin transfer over extended periods
• Red color for ease of detection
• Proven high yields in ball-attach process
• Excellent solderability on a wide range of surfaces

Properties

|	Value	Test Method
Flux Type Classification	H1	J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)
Typical Viscosity	16kcps	Brookfield HB DVII ± CP (5rpm)
SIR (Ohms, after cleaning)	Pass (>10^8 after 7 days @ 85°C and 85% RH)	J-STD-004 (IPC-TM-650: 2.6.3.3 IPC-B-24)
Typical Acid Value	78mg KOH/g	Titration
Typical Tack Strength	275g	J-STD-005 (IPC-TM.650: 2.4.44)
Shelf Life	5 to 25°C for 3 months or -20 to +5°C for 6 months	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 pin shape, pin diameter, shear speed, dwell, and depth of immersion. The flux rheology can be optimized for the desired application by shearing to achieve the desired viscosity.
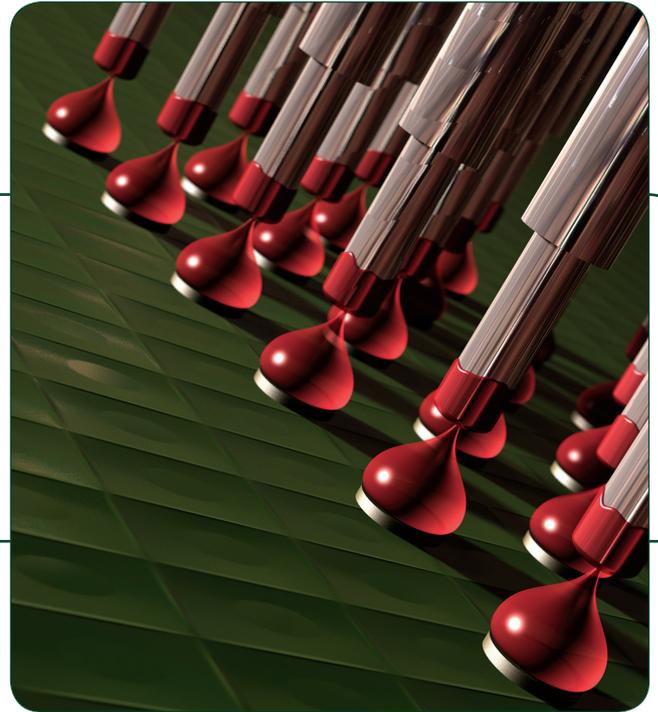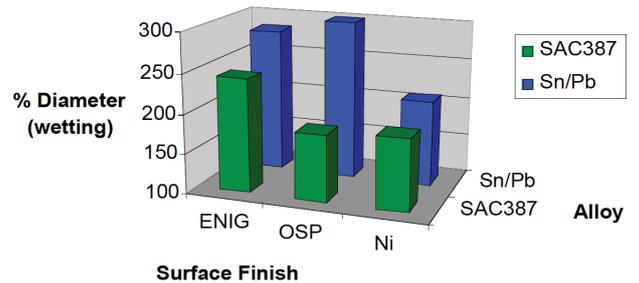

Viscosity vs. Shearing Time at Different Shearing Speeds

- 0.5rpm
- 1rpm
- 2rpm
- 5rpm
- 10rpm
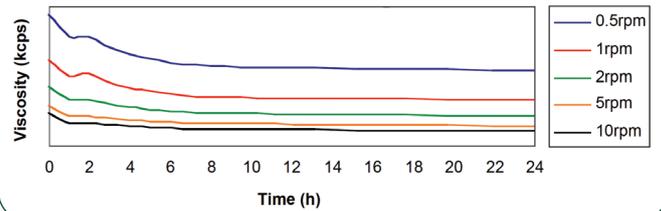
Comparative Solder Wetting Capability

Solder Wetting Test

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Cleaning

WS-3600 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 >1 minute at >60psi.

Packaging

WS-3600 is available in 10–150g syringes and in 100g jars or cartridges. Other packaging can be provided to meet the customer's specific requirements.


Storage

For maximum shelf life, **WS-3600** syringes and cartridges should be stored tip down at -20 to +5°C. After removing from cold storage, **WS-3600** should be allowed to stand for at least 4 hours at room temperature before using.

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.

Reflow

Recommended Profile:
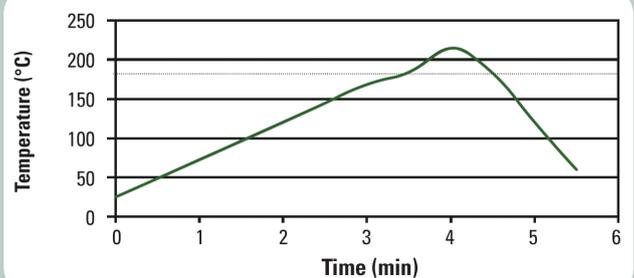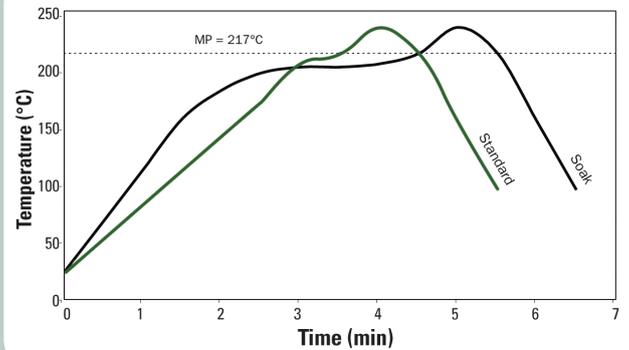
Peak reflow temperature should be <350°C in an air or nitrogen atmosphere (<500ppm O_2), with a linear ramp up to 30°C above liquidus temperature. These profiles are recommended to the user as starting points, and should be optimized by the user to meet their individual process needs.

Safety Data Sheets

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

Contact our engineers today: **askus@indium.com**

Learn more: **www.indium.com**

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