

PRODUCT DATA SHEET

# WS-3600

## Ball Attach Flux

### 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

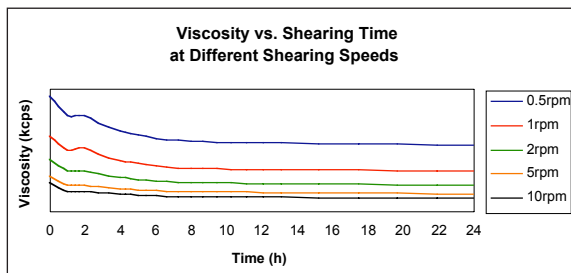
### Introduction

**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.

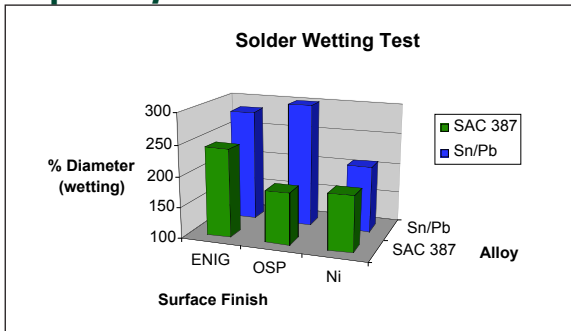


### Properties

Property	Value	Test Method
Flux 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 (>109 after 7 days @ 85°C & 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°C to +25°C for 3 months or -20°C to +5°C for 6 months	Viscosity change / microscope examination



### Comparative Solder Wetting Capability



### 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.

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Form No. 98209 (A4) R4

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## Ball Attach Flux WS-3600

### 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 °C 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

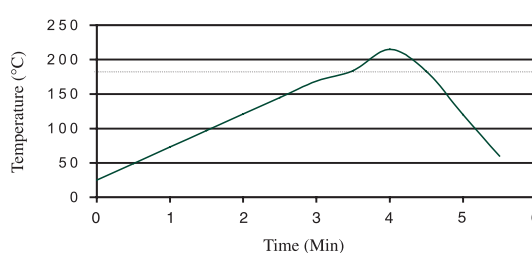
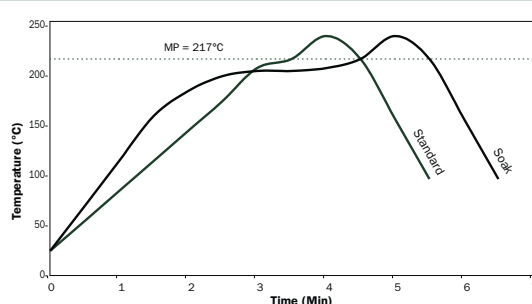
Indium Corporation sets the industry standard in providing rapid response, on-site technical support for our customers worldwide. Indium's team of Technical Support Engineers can provide expertise in all aspects of Materials Science and Semiconductor Packaging process applications.

### Material Safety Data Sheets

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

### Reflow

#### Recommended Profile:



Peak reflow temperature should be <350 °C in an air or nitrogen atmosphere (<500ppm O<sub>2</sub>), 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.

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