

# PRODUCT DATA SHEET

# WS-676

## Ball-Attach Flux

### Introduction

**Ball-Attach Flux WS-676** is a NIA halogen-free water-soluble ball-attach 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-676** has an activator system powerful enough to promote wetting on the most demanding substrate metallizations. The flux has a distinctive red color, which aids automated level-sensing equipment and also enhances visual inspection. **WS-676** is cleanable with just warm DI water only.

### Features

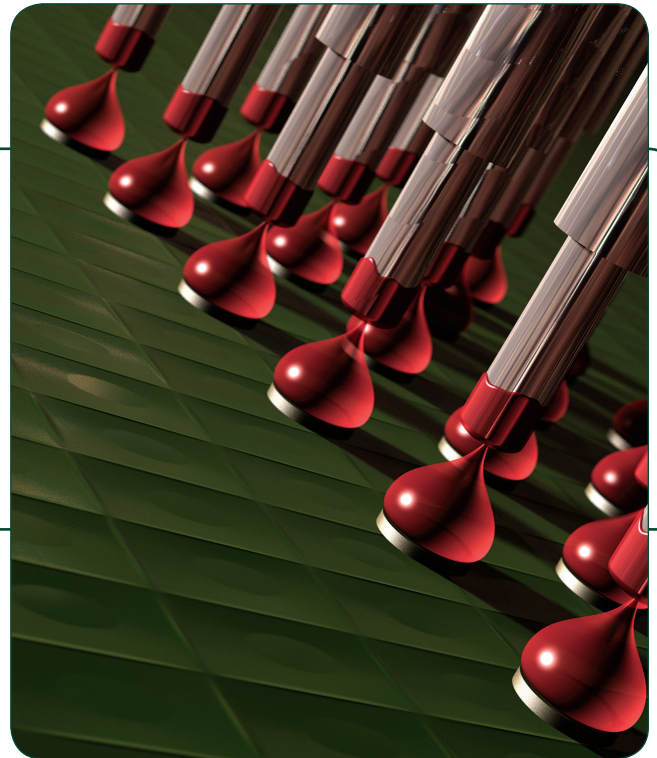
- Halogen-free—no intentionally added (NIA) halogens
- Flux rheology applicable for all sphere sizes
- Suitable for Pb-free or SnPb applications
- Uniform pin transfer over extended periods
- Proven high yields in ball-attach process
- Excellent solderability on a wide range of surfaces
- Cleanable with warm DI water only
- Red color for ease of detection

### Properties

	Value	Test Method
Flux Type Classification	H0	J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)
Typical Viscosity	20kcps (peak) 18kcps (5min)	Brookfield HB DVII ± CP (5rpm)
SIR (Ohms, after cleaning)	Pass (>10 <sup>8</sup> after 7 days @ 85°C and 85% RH)	J-STD-004 (IPC-TM-650: 2.6.33 IPC-B-24)
Typical Acid Value	34mg KOH/g	Titration
Typical Tack Strength	338g	J-STD-005 (IPC-TM-650: 2.4.44)
Shelf Life	Data not yet available	Viscosity change/ microscope examination

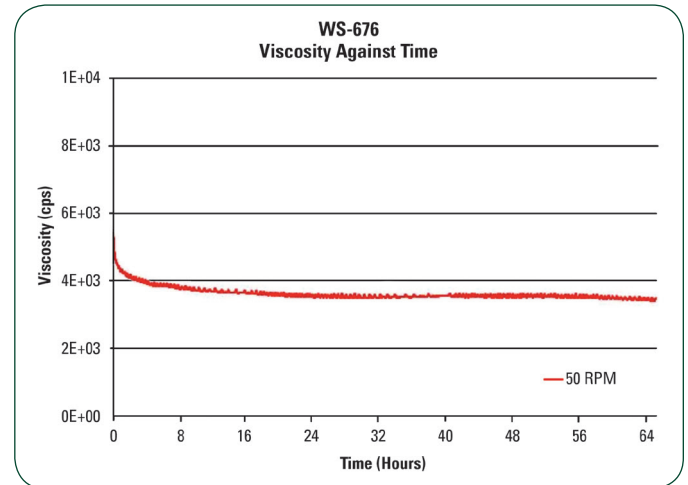
All information is for reference only.

Not to be used as incoming product specifications.



### Application

The amount of **WS-676** 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 desired application by shearing to achieve the desired viscosity.



From One Engineer To Another®



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### Cleaning

**WS-676** 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

**Ball-Attach Flux WS-676** is available in jars and in 6 oz. and 12 oz. cartridges.

### Storage

For maximum shelf life, **WS-676** cartridges should be stored tip down at -20 to +5°C. Storage temperatures should not exceed 25°C for more than 4 days, and should never exceed 30°C. After removing from cold storage, **WS-676** should be allowed to stand for at least 4 hours at room temperature before using.

### Technical Support

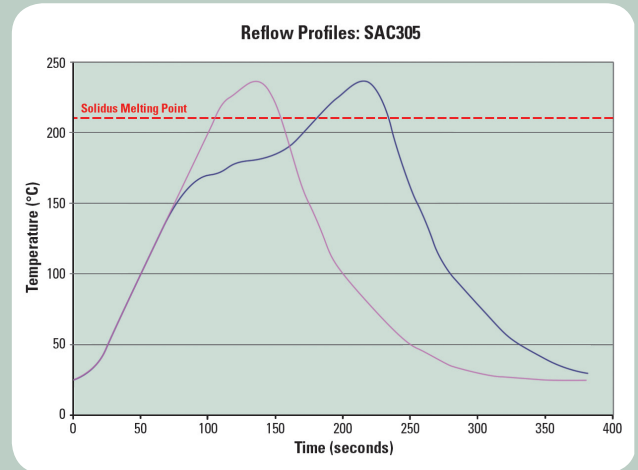
Indium Corporation sets the industry standard in providing rapid response, onsite technical support for our customers worldwide. Indium Corporation's team of Technical Support Engineers can provide expertise in all aspects of materials science and semiconductor packaging process applications.

### Safety Data Sheets

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

### Reflow

#### Recommended Profile:



A short preheat (150–160°C) for less than 45 seconds may be used to reduce voiding. The profile should ideally be a linear ramp at 1–2°C/second up to 20–30°C above solidus temperature, with a rapid cool down afterwards, and a minimum time above liquidus of 20 seconds.

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Contact our engineers today: [askus@indium.com](mailto:askus@indium.com)

Learn more: [www.indium.com](http://www.indium.com)

ASIA +65 6268 8678 • CHINA +86 (0) 512 628 34900 • EUROPE +44 (0) 1908 580400 • USA +1 315 853 4900

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