PRODUCT DATA SHEET

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flux Type Classification</td>
<td>H1</td>
<td>J-STD-004 (IPC-TM-650: 2.3.32 and 2.3.33)</td>
</tr>
<tr>
<td>Typical Viscosity</td>
<td>16kcps</td>
<td>Brookfield HB DVII ± CP (5rpm)</td>
</tr>
<tr>
<td>SIR (Ohms, after cleaning)</td>
<td>Pass (&gt;10^8 after 7 days @ 85°C and 85% RH)</td>
<td>J-STD-004 (IPC-TM-650: 2.6.3.3 IPC-B-24)</td>
</tr>
<tr>
<td>Typical Acid Value</td>
<td>78mg KOH/g</td>
<td>Titration</td>
</tr>
<tr>
<td>Typical Tack Strength</td>
<td>275g</td>
<td>J-STD-005 (IPC-TM-650: 2.4.44)</td>
</tr>
<tr>
<td>Shelf Life</td>
<td>5 to 25°C for 3 months or -20 to +5°C for 6 months</td>
<td>Viscosity change/ microscope examination</td>
</tr>
</tbody>
</table>

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.

Comparative Solder Wetting Capability

All information is for reference only. Not to be used as incoming product specifications.
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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 O₂), 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