

PRODUCT DATA SHEET

WS-446HF

Flip-Chip Flux

Introduction

WS-446HF Flip-Chip Flux is a NIA halogen-free water washable flip-chip dipping flux, which has an activator system powerful enough to promote wetting on the most demanding substrate metallizations.

Features

- Halogen-free
- Designed for flip-chip dipping applications
- Excellent solderability on a variety of metallizations
- Reduces flip-chip voids
- Uniform dipping performance over extended periods
- Tackiness suitable for holding large die during assembly
- Cleanable with DI water only

Properties

	Value	Test Method
Typical Viscosity	19kcps (5 minutes)	Brookfield HB DVII+-CP @ 5rpm
Typical Acid Number	91mg KOH/g	Titration
Typical Tack Strength	240g	J-STD-005 (IPC-TM.650: 2.4.44)
Shelf Life	Room temperature for 3 months*	Viscosity change/microscope examination

*Preliminary shelf life. Data still being gathered.

Industry Standard Test Results and Classification

Flux Classification	ORH0*	*Preliminary designation based on initial lab data. Complete designation pending.
Based on the testing required by IPC J-standard-004A.		
Halogen-free per IEC 61249-2-21, Test Method EN14582	<900 ppm Cl <900 ppm Br <1,500ppm total	

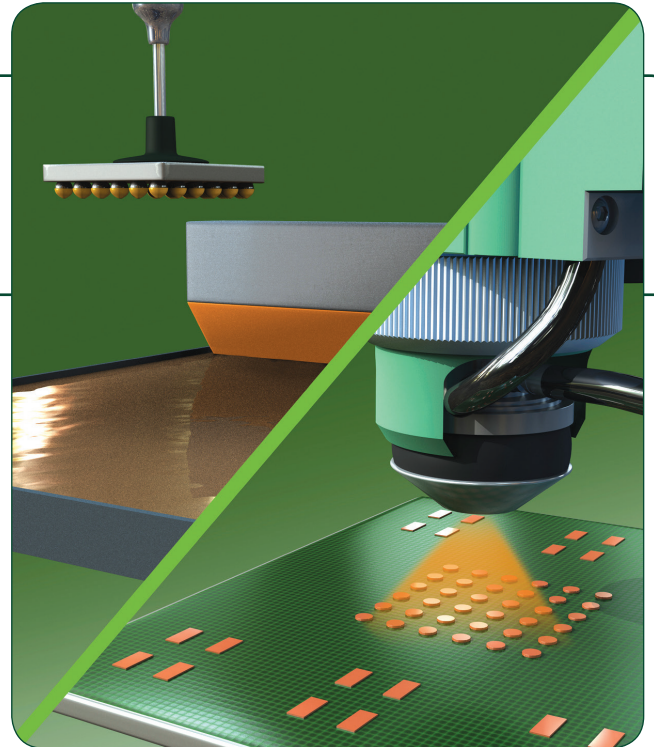
All information is for reference only.

Not to be used as incoming product specifications.

Application

WS-446HF is intended to be used in an air or nitrogen reflow environment of 50ppm oxygen or less. **WS-446HF** can be used on many surface finishes. **WS-446HF** has been developed to allow tin and tin/silver solder bumps, in both standard bump shapes and as microbumps on copper pillars, to solder well to any quality of substrate metallization. **WS-446HF** also allows poor-quality OSP to be soldered to, without non-wet open solder joints.

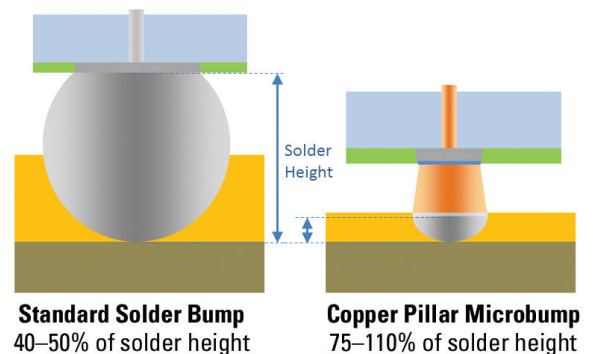
From One Engineer To Another®



Dipping Process

The dipping depth should be adjusted to exact needs. Guidelines are given in the illustration below. The flux reservoir (dip tray) should be cleaned and replenished every shift.

Dipping Depth



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Cleaning

WS-446HF residue can be cleaned with DI water, or water with an added cleaner. Ideal conditions for spray-cleaning: 25°C (room temperature) to 40°C for >one minute at 60psi or higher.

Packaging

WS-446HF is available airlessly packaged in 10cc and 30cc syringes, and is also available in jars or cartridges, on customer request.

Storage

For maximum shelf life, **WS-446HF** syringes and cartridges should be stored tip down. Storage temperatures should not exceed 30°C. If using cold storage, **WS-446HF** should be allowed to stand for at least 4 hours at room temperature before using.

Technical Support

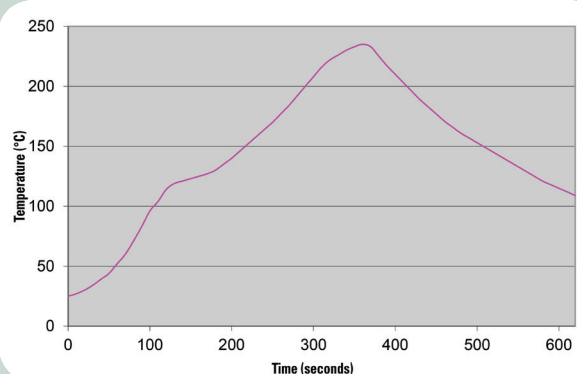
Indium Corporation sets the industry standard in providing rapid response, onsite technical support for our customers worldwide. Indium Corporation's team of Technical Support Engineers can provide expertise in all aspects of materials science and semiconductor packaging process applications.

Safety Data Sheets

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

Reflow

Recommended Profile:



WS-446HF Flip-Chip Flux is intended to be used in a nitrogen reflow environment of 50ppm oxygen or less. Some applications can utilize this material in an air environment, although best results will be obtained in an inert atmosphere. **WS-446HF Flip-Chip Flux** can be used on many surface finishes.

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