PRODUCT DATA SHEET

Flip-Chip Fluxes

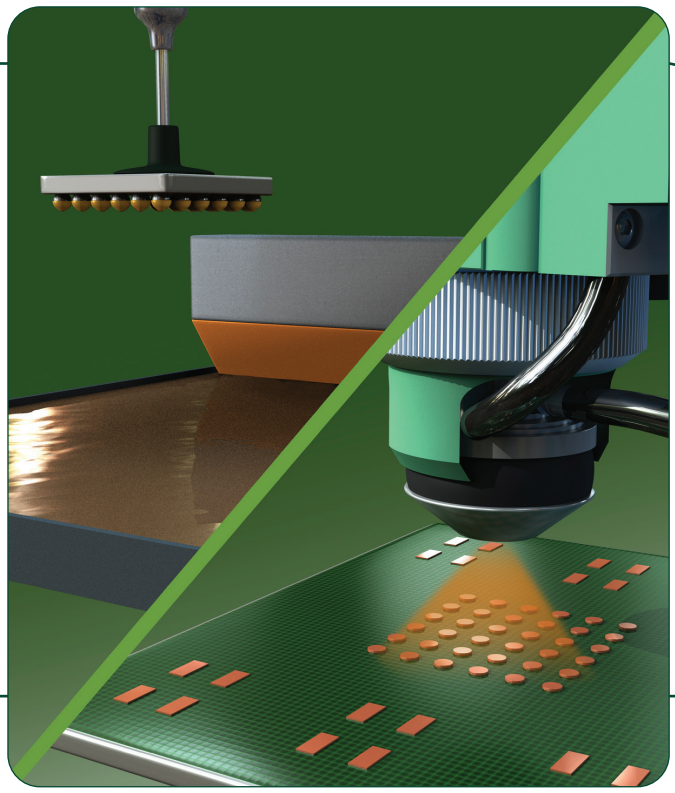
Introduction

Our fluxes for flip-chip bonding applications are halide-free. They are designed for both air and nitrogen reflow and may be purchased individually or in a research kit. The no-clean and water-soluble fluxes are available in two series: LT and HT.

Series LT is for high-performance eutectic soldering, such as SnPb and Pb-free.

Series HT is designed for high Pb-containing solder alloys with a high melting point.

Each series consists of fluxes with different viscosities and specifications depending on the processing conditions. For example, a flux with low or medium viscosity can be sprayed onto substrates followed by flip-chip placement. These fluxes can also be dispensed onto the side of the flip-chip, allowing the flux to wick across the bottom of the chip. Fluxes with higher viscosities can be printed onto the pads, or the chip can be dipped into the flux prior to placement.



Features

- Superior wetting ability
- Wide reflow temperature ranges
- Extremely low to no residue for no-clean applications

These fluxes are designed to cover a variety of flip-chip bonding processes. Indium Corporation will also provide custom fluxes to meet specific requirements.

The table below offers users a guideline for selecting the appropriate flux for the desired application. These fluxes are represented by a four-part code.

Type of Process	Flux Viscosity	Flux for Low MP Alloys*	Flux for High MP Alloys*
Spray, dispense	Low	FC-NC-LT-A FC-WS-LT-A	FC-NC-HT-A or A1 FC-WS-HT-A or A1
Spray, dispense	Medium	FC-NC-LT-B FC-WS-LT-B	FC-NC-HT-B FC-WS-HT-B1
Brushing, dipping	Medium High	FC-NC-LT-C FC-WS-LT-C	FC-NC-HT-C or CA
Dipping, printing	High	FC-NC-LT-D FC-WS-LT-D	FC-NC-HT-D FC-WS-HT-D

*1. FC–flip-chip application
2. NC–no-clean WS–water-soluble
3. LT–low-temperature HT–high-temperature
4. Viscosity level: A–low B–medium C–medium-high D–high

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 these products can be found online at http://www.indium.com/sds

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Low-Temperature Reflow No-Clean Fluxes (Series LT)

Properties	FC-NC-LT-A	FC-NC-LT-B	FC-NC-LT-C	FC-NC-LT-D
Typical Viscosity	5cSt	42cSt	N/A	N/A
Typical Acid Number	82.5	25	20.5	31.7
Typical Specific Gravity	.83	.91	.94	N/A
Flash Point	23°C	24°C	110°C	100°C
Reflow Atmosphere	N_2	N_2	N_2	N_2
Max. Reflow Temperature	400°C	400°C	400°C	400°C
SIR	Pass	Pass	Pass	Pass
Indium Part Number	84174	84175	84176	84177

High-Temperature Reflow No-Clean Fluxes (Series HT)

Properties	FC-NC-HT-A	FC-NC-HT-A1*	FC-NC-HT-B	FC-NC-HT-C	FC-NC-HT-CA	FC-NC-HT-D**
Typical Viscosity	6.1cSt	60cSt	46cSt	N/A	N/A	67.5kcps
Typical Acid Number	83	32.2	18.6	18.6	28.1	31.7
Typical Specific Gravity	.83	.938	.91	.95	.95	N/A
Flash Point	23°C	37°C	26°C	110°C	37°C	110°C
Reflow Atmosphere	N_2	N_2	N_2	N_2	N_2	N_2
Max. Reflow Temperature	450°C	450°C	450°C	450°C	450°C	450°C
SIR	Pass	Pass	Pass	Pass	Pass	Pass
Indium Part Number	84178	84279	84179	84180	84200	84181

Low-Temperature Reflow Water-Soluble Fluxes (Series LT)

Properties	FC-WS-LT-A	FC-WS-LT-B	FC-WS-LT-C	FC-WS-LT-D
Typical Viscosity	11cSt	54cSt	1,450cSt	N/A
Typical Acid Number	42	70	100	73
Typical Specific Gravity	.905	.979	1.06	N/A
Flash Point	11°C	40°C	100°C	140°C
Reflow Atmosphere	Air or N_2	Air or N_2	Air or N_2	Air or N_2
Max. Reflow Temperature	250°C	250°C	250°C	250°C
SIR	Pass	Pass	Pass	Pass
Indium Part Number	84201	84195	84202	84182
Cleaning	DI Water	DI Water	DI Water	DI Water

High-Temperature Reflow Water-Soluble Fluxes (Series HT)

Properties	FC-WS-HT-A*	FC-WS-HT-A1	FC-WS-HT-B1	FC-WS-HT-D
Typical Viscosity	19.3cSt	5cSt	111.5cSt	22,400cps
Typical Acid Number	37.3	11	50.4	31
Typical Specific Gravity	.94	.8	1.05	1.19
Flash Point	12°C	11°C	24°C	>225°C
Reflow Atmosphere	N_2	N_2	Air or N_2	Air or N_2
Max. Reflow Temperature	345°C	345°C	345°C	345°C
SIR	Pass	Pass	Pass	Pass
Indium Part Number	84189	84286	84232	84183
Cleaning	DI Water 40psi @ 55°C	DI Water 40psi @ 55°C	DI Water 40psi @ 55°C	DI Water 40psi @ 55°C

NOTE:
The viscosities were measured with a Brookfield RVT-DV1 viscometer using a TC or TF spindle (D viscosity), #1 disc spindle (C viscosity), or Cannon-Fenske viscometer (A and B viscosity) @ 25.0 ± 1°C.

Shelf life is 6 months when stored at 0–30°C, unless otherwise noted.

* FC-NC-HT-A1 and FC-WS-HT-A have a shelf life of 3 months when stored at 18–30°C.

** FC-NC-HT-D has a shelf life of 12 months when stored at 0–30°C.

All of Indium Corporation's solder paste and preform manufacturing facilities are IATF 16949:2016 certified. Indium Corporation is an ISO 9001:2015 registered company.

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