

SURF 11 Flux (VOC-Free)

Low Solids, No-Clean Liquid Flux

Description

SURF 11 is a no clean, water based flux with low solids. It can be used with standard wave soldering equipment. After preheat and soldering, the residues are minimal and not observable without magnification.

SURF 11 is suitable for through hole, mixed technology and SMT assemblies.

Key Benefits

- VOC-free.
- Non-flammable, as water based.
- Due to a special activator blend there is a very wide processing window.
- Excellent wetting with: Sn/Pb, Ni-Au and protected Cu-surfaces.
- The residues are dry, non tacky and not visible to the naked eye.
- In-circuit tests can be performed without previous cleaning.
- Foam and spray applicable.
- SURF 10 flux, with a similar formulation and the same activation as SURF 11, passes all no clean tests specified by Siemens Central Approval Laboratory ZT ME 7 in Berlin (issue 18 July 1997).

Properties

Appearance: before Soldering	Clear liquid
Appearance: after Soldering	No readily observable residues
Density (at 25 °C):	c. 1.0 g/cm ³
Flash Point:	None
Acid Value:	22 ± 1.5 mg KOH/g
Resin Type/Content:	Resin- and Rosin-free
Solids:	2.75 ± 0.25 weight %
Halides:	Halide-free

Flux Activity

According to:
ISO 9454-1 (DIN EN 29454 Part 1) 2.1.3.A

Copper Mirror Test*:

J-STD-004 (1995)	Pass, L0
Bellcore GR-78-Core Issue 1	Pass
IPC-SF-818 (1988)	Pass

Silver Chromate Paper Test*:

J-STD-004 (1995)	Pass, L0
Bellcore GR-78-Core Issue 1	Pass
IPC-SF-818 (1988)	Pass

Halides / Ion Chromatograph Analysis*:

J-STD-004 (1995)	Pass, L0
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SIR after Soldering*:

J-STD-004 (1995)	Pass, L0
IPC-SF-818 (1988)	Pass
Bellcore GR-78-Core Issue 1	Pass

Electromigration Test*:

Bellcore GR-78-Core Issue 1	Pass
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pH value*:

Bellcore TR-TSY-000078 Issue 2	Pass
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* All tests were performed at Trace Laboratories (independent test laboratories) in the USA - detailed test reports are available upon request.

Maximum Flux Quantity:

If a test criteria for cleanliness is an ionic contamination test, the upper limit for flux coverage should be 30 ml flux / m².

After application of the flux to the boards by foam, it is recommended that the surplus be removed with an airknife from the boards before entering the preheat. In a properly adjusted spray there will not be a flux surplus.

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Typical Process Parameters

SURF 11 features a wide process window.

Flux Application*: Spray and foam

* For more information see Application Data Sheet.

Pre-heat Temperature (see pre-heat curve).

Bottom Side of PCB:

100 to 120 °C for 20 to 40 seconds.

A pre-heat temperature of ≥ 100 °C (measured at the bottom side of the PCB), should be reproducibly achieved for 20 to 40 seconds, (see pre-heat curve for SURF 11).

The upper temperature range should be in accordance with the product that will be produced, e.g. the

maximum temperature which the components withstand. The solder wave might splash if the flux has not been dried sufficiently before entering the wave. If this occurs, an increase in preheat temperature or a lower conveyor speed will be required.

Conveyor Speed: 1 to 1.5 m/min

Dwell Time: 2 to 3 sec at 240 to 250 °C

Soldering Atmosphere: Air or Nitrogen

Soldering Under Nitrogen

If soldering is done under nitrogen and the wetting is good, SURF 11 may be diluted with deionized water (up to 50 %).

The optimum preheat temperature and other above mentioned process parameters are influenced by: PCB type and layout, preheat time, solder temperature, solder wave shape, contact time with molten solder, speed of solder flow etc.

Cleaning of Residues

The residues may remain on the circuit. They do not require cleaning. If desired, the residues may be cleaned using aqueous systems, without a danger of white residues remaining after cleaning.

Packaging

1, 5 and 55 gallon drums (1 gallon = 3.785 litres)

For rework and testing purposes, SURF 11 is also available in spray bottles B3 with a flux content of 100 g.

Storage

Store the flux in tightly sealed containers at room temperature and avoid exposure to sunlight and high humidity.

Storage Time: Maximum 12 months at 10 - 25 °C.

Ensure that the flux has reached room temperature before use.

Issue from 12.12.01 AZM-JT

The descriptions and engineering data shown here have been compiled by Heraeus using commonly-accepted procedures, in conjunction with modern testing equipment, and have been compiled as according to the latest factual knowledge in our possession. The information was up-to date on the date this document was printed (latest versions can always be supplied upon request). Although the data is considered accurate, we cannot guarantee accuracy, the results obtained from its use, or any patent infringement resulting from its use (unless this is contractually and explicitly agreed in writing, in advance). The data is supplied on the condition that the user shall conduct tests to determine materials suitability for a particular application.

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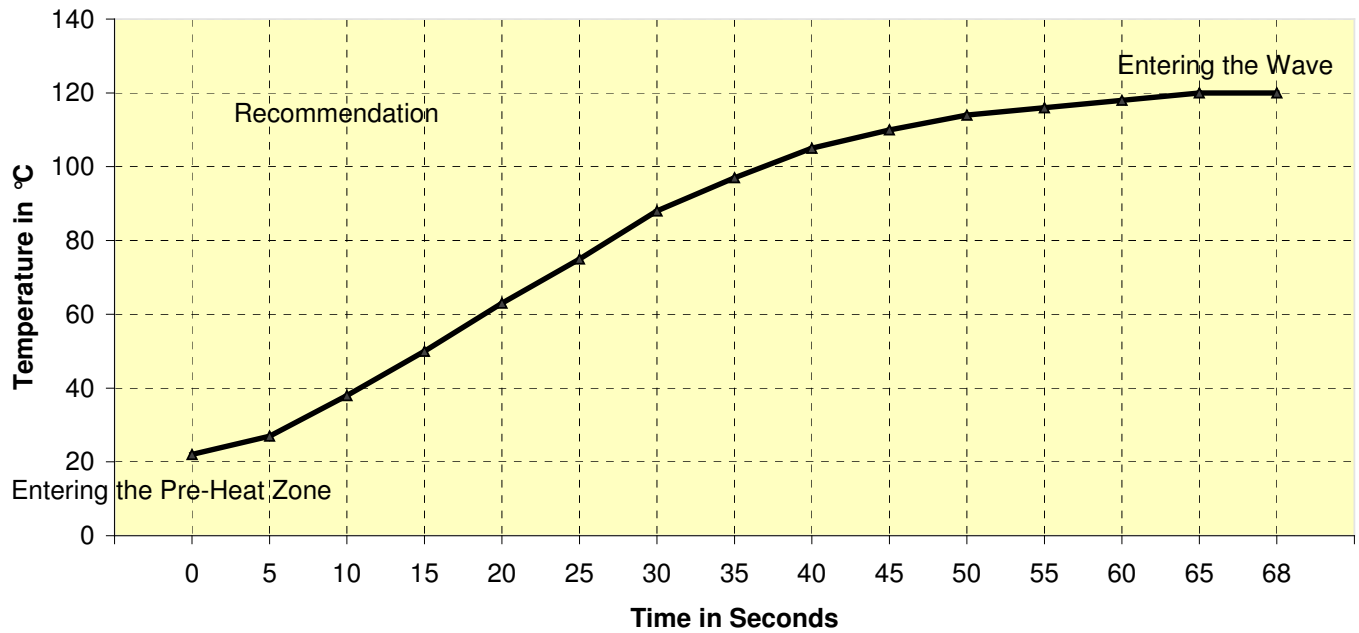
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Pre-Heat Curve SURF 11, Transport Speed: 1.5 m / min, Pre-heat length: 1.45 m



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