

ALPHA NR300F

VOC-FREE, NO-CLEAN, NO RESIDUE FLUX

FEATURES

VOC-FREE

NON-FLAMMABLE

HIGH ACTIVITY

NO THINNERS REQUIRED

MEETS BELLCORE REQUIREMENTS

NO VISIBLE RESIDUE

BENEFITS

HELPS MEET AIR QUALITY REGULATIONS

ELIMINATES EQUIPMENT FIRES & ELIMINATES
SPECIAL STORING REQUIREMENTS

GOOD SOLDERING; LOW DEFECTS

REDUCED OPERATING COSTS & LESS FREQUENT
SOLIDS ANALYSIS REQUIRED

HIGH RELIABILITY ASSEMBLIES

ACCURATE PIN TESTING & ENHANCED
BOARD COSMETICS

DESCRIPTION

Alpha NR300F is essentially a **VOC-free¹, halide-free, rosin/resin free, low solids, no-clean flux**. It is formulated for wave soldering of through-hole, mixed technology and surface mount assemblies. The flux produces a tack-free surface with high surface insulation resistance and no residue to interfere with electrical testing. It has a unique formulation that provides high activity with virtually no visible residue with most solder masks. **Alpha NR300F** conforms to the requirements of Bellcore TR-NWT-000078 for non-VOC flux formulations.

Alpha NR300F is supplied in a water based vehicle, free of organic solvents and is formulated to help meet the present and future volatile organic compound (VOC) emission regulations. The water vehicle results in a non-flammable product which does not require special storage conditions. A further unique property of the **Alpha NR300F** formulation is its ability to keep the organic activator system in solution after being submitted to storage temperatures below freezing.

Alpha NR300F flux uses a unique blend of organic activators which significantly reduces solder bridging, icicling and solder balling on difficult to solder assemblies.

USE

Alpha NR300F flux is designed for foam applications. The recommended topside preheat temperatures are 104-116°C (220-240°F). The optimum preheat settings and conveyor speed required to completely evaporate the water vehicle will be dependent upon the particular wave solder machine being used and the assemblies being processed. Insufficient preheat will be evident by spattering during wave soldering.

NR300F produces a slower breaking foam head than typical alcohol base fluxes. This may result in a higher level of foam in the flux pot surrounding the foam chimney and possibly some foam drag out on the fluxed boards. To achieve the proper foam height, it is recommended that the flux be filled to a level approximately 1 1/2 inches (4 cm) above the foam stone element and the air flow rate carefully adjusted to produce the optimal foam head. Proper adjustment to the chimney opening can optimize the size and uniformity of the foam. An air knife at the flux pot exit will break any foam dragged out on the boards, assuring uniform coverage of the surface with a thin film of flux liquid.

Alpha NR300F flux, unlike conventional fluxes, does not require frequent thinning. Flux solids can be monitored using Alpha's Flux Solids Control Kit #3. If thinning is required, the addition of deionized water is all that is necessary.

For applications which specify cleaning, a plain heated water cleaning step after soldering will remove any slight traces of flux residues.

¹Trace VOC content, primarily from flux activator volatilization during soldering, measured at 0.8% as determined per EPA Reference Method 24 using ASTM test procedure D2369. Conventional alcohol-based low solids, no-clean fluxes typically have VOC content in excess of 95%.



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Alpha-Fry Group
 A Cookson Company

PHYSICAL PROPERTIES

Appearance	Clear, colorless liquid
Solids Content, wt/wt	3.0
Specific Gravity @ 25°C (77°F)	1.0095 ± 0.0030
Acid Number (mg KOH/g)	27.2 ± 1.5
Halides	NONE
Flash Point (T.C.C.)	NONE

CORROSION AND ELECTRICAL TESTING

CORROSION TESTING

Test	Requirement	Results
Copper Mirror Tests ² (Modified IPC/Bellcore Method)	No complete removal of copper	Passes
Halide-silver chromate paper method IPC-TM 650 Test Method 2.3.3.3	No detection of halide	Passes

SURFACE INSULATION RESISTANCE

Method	Conditions	Requirement ³	Results ³
IPC-SF-818, Class 3 Bellcore-TR-NWT-000078, Issue 3:	85°C/85% RH, 7 days	1.0 X 10 ⁸ min.	6.0 X 10 ⁹
Comb Pattern "Up" (uncleaned)	35°C/85% RH, 5 days (4 days with bias voltage)	1.0 X 10 ¹¹ min.	1.1 X 10 ¹²
Comb Pattern "Down" (uncleaned)	35°C/85% RH, 5 days (4 days with bias voltage)	1.0 X 10 ¹¹ min.	2.8 X 10 ¹²
Control Boards	35°C/85% RH, 5 days (4 days with bias voltage)	2.0 X 10 ¹¹ min.	2.4 X 10 ¹²

ELECTROMIGRATION (per Bellcore TR-NWT-000078, Issue 3, all values in ohms)

Method	Conditions	SIR (Init.) ⁴	SIR (Final) ⁴	Visual
Comb Pattern "Up"	85°C/85% RH (500 Hrs. with 10 V. bias)	3.6 X 10 ⁹	4.5 X 10 ⁹	No dendrites or corrosion
Comb Pattern "Down"	85°C/85% RH (500 Hrs. with 10 V. bias)	3.6 X 10 ⁹	2.3 X 10 ⁹	No dendrites or corrosion

PACKAGING

Alpha NR300F flux is available in 1, 5 and 55 gallon containers.

SAFETY

Standard precautions should be observed, such as use in well ventilated areas and avoidance of prolonged or repeated contact with skin. Safety glasses and neoprene gloves should be worn when handling the material.

² Passes the copper mirror test when the same flux formulation is prepared using isopropyl alcohol instead of water. Also passes the copper mirror test when the same flux formulation is reconstituted with isopropyl alcohol after evaporation of its water vehicle at 85°C.

³ All values shown are in ohms.

⁴ For passing, SIR (init.)/SIR (final) <10.

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