

ALPHA[®] NR-205

No-Clean, Low Residue Flux

DESCRIPTION

ALPHA NR-205 is a 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 is particularly effective when soldering in an inert atmosphere. The flux produces a tack-free surface with high surface insulation resistance and very little residue to interfere with electrical testing. **ALPHA NR-205** fully conforms to the requirements of Bellcore TR-NWT-000078. This flux has been specifically formulated to resist degradation in surface insulation resistance and electromigration, even in situations where the flux does not experience soldering temperatures and when heavy levels of flux have been applied. The residues are non-corrosive and do not cause "greening" when in contact with copper or copper-bearing alloys.

ALPHA NR-205 is particularly well-suited for touch-up/rework when supplied in a flux pen. ALPHA "Write Flux" pens make local flux application an easily controlled process.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- High activity
- Meets Bellcore requirements & other critical SIR tests
- Very safe residues
- Non-corrosive residues
- Good soldering in air; excellent soldering in nitrogen for low defects
- High reliability assemblies, even when the flux does not experience soldering temperatures
- Excellent for touch-up/rework applications
- Will not cause "greening" on exposed copper/copper alloys

APPLICATION GUIDELINES

ALPHA NR-205 flux is designed for foam, spray, and wave applications. Amount of flux to be applied on board for wave soldering process is suggested to be at a range of 1000 to 2000 $\mu\text{g}/\text{in}^2$. Topside preheat temperatures of 80 to 105 °C (180 to 220 °F) are recommended. Flux solids can be monitored using Alpha's Flux Solids Control Kit #3. If thinning is required, the use of ALPHA 425 thinner is recommended. For applications which specify cleaning, a water cleaning step with ALPHA 2110 Saponifier or ALPHA Autoclean 40, after soldering, will remove any slight traces of flux residues.

For application via the flux pen, the nib should be lightly wiped on and around the solder joint to be reworked. Once a suitable amount of flux has been applied the manual soldering operation can be performed.

TECHNICAL DATA

Item	Typical Values	Item	Typical Values
Appearance	Clear, colorless liquid	Flash Point (T.C.C.)	13 °C (56 °F)
Solids Content, wt/wt	2.15	Recommended Thinner	ALPHA 425
Specific Gravity @ 25 °C (77 °F)	0.797 ± 0.002	Shelf Life (from Date of Mfg.)	540 days
Acid Number (mg KOH/g)	16.5 ± 1.0	IPC J-STD-004 Designation	ORL0
Halides	None	Packaging Size	20 liter containers and in "Write Flux" flux pens

CORROSION & ELECTRICAL TESTING
Corrosion Testing

Test	Requirements	Results
IPC/Bellcore Copper Mirror Test	No complete removal of copper	Passes
Silver Chromate Paper Method	No detection of halide	Passes
IPC-SF-818 10-day Copper Corrosion Test	No evidence of corrosion	Passes as Type "L"

Surface Insulation Resistance (All Values in Ohms)

Method	Conditions	Requirement	Results
IPC-SF-818, Class 3, Not Cleaned	85°C/85% RH 7 Days	1.0x10 ⁸ min.	5.6x10 ⁹

Bellcore-TR-NWT-000078, Issue 3

Test Condition	Conditions	Requirements	Results
Comb Pattern "Up" (uncleaned)	35 °C/85% RH (4 days with bias voltage)	1.0 X 11 ¹¹ min.	1.3 X 10 ¹²
Comb Pattern "Down" (uncleaned)	35 °C/85% RH (4 days with bias voltage)	1.0 X 10 ¹¹ min.	1.9 X 10 ¹²
Control Boards	35 °C/85% RH (4 days with bias voltage)	2.0 X 10 ¹¹ min.	3.3 X 10 ¹²

Electromigration (Per Bellcore TR-NWT-000078, Issue 3, All Values in ohms)

Method	Conditions	SIR (Init.)*	SIR (Final)*	Visual
Comb Pattern "Up"	85 °C/85% RH 500 Hrs. / 10 V. bias	1.2 X 10 ⁹	5.0 X 10 ⁹	No dendrites or corrosion
Comb Pattern "Down"	85 °C/85% RH 500 Hrs. / 10 V bias	5.4 X 10 ⁹	3.4 X 10 ⁹	No dendrites or corrosion

* For passing electromigration, SIR (Init.) / SIR (Final) <10

SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available at MacdermidAlpha.com/assembly-solutions/knowledge-base**

CONTACT INFORMATION

**To confirm this document is the most recent version, please contact
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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE . Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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