

ALPHA® NR200

No-Clean / No Residue Flux

DESCRIPTION

ALPHA NR200 is a halide-free, rosin/resin free, low solids, no-clean flux for wave soldering through-hole, mixed technology and surface mount assemblies. It has a unique formulation that provides high activity with virtually no visible residue with most solder masks. ALPHA NR200 flux leaves a tack-free surface with high surface insulation resistance. **ALPHA NR200** features enhanced foam properties and low odor.

ALPHA NR200 meets Bellcore specification TR-NWT-000078.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

| Features | Benefits |
|-------------------------------|---|
| Unique Low Solids Formulation | Eliminates the need for Cleaning |
| High Activity | Good Soldering; Low Defects |
| Halide Free | High Sir Values |
| No Visible Residue | Accurate Pin Testing and Enhanced Board Cosmetics |
| Enhanced Foaming Properties | Reduced Defects |
| Meets Bellcore Requirements | High Reliability Assemblies |

APPLICATION GUIDELINES

ALPHA NR200 flux utilizes a unique blend of organic activators which significantly reduces solder bridging, icicing and solder balling on difficult to solder assemblies.

ALPHA NR200 flux can be applied by foam, by spray or by wave techniques. Topside preheat temperatures of 180 to 210 °F (80 to 100 °C) are recommended. Higher preheat temperatures can lead to premature volatilization of the activators, leading to less than optimal soldering performance. Best results are obtained using the following guidelines:

- a) Maintain a consistent foam head, spray volume or wave height.
- b) Replace the flux daily unless a sealed, self-contained system is available.
- c) Adjust the acid number as determined with the ALPHA Flux Solids Control Kit #3 to 18.0 (range +5, -2) with ALPHA 425 thinner.
- d) Add fresh ALPHA NR200 to maintain the appropriate flux level.
- e) Regularly clean the fluxing equipment. Equipment can be easily cleaned with sponge and water. For foam fluxers, the stone should be cleaned with ALPHA 425 thinner.

ALPHA NR200 flux can be maintained by monitoring specific gravity, but control by acid number determination is recommended.

TECHNICAL DATA

| Item | Typical Values | Item | Typical Values |
|----------------------------------|------------------------|-------------------------------|-------------------|
| Appearance | Clear Colorless Liquid | Recommended Thinner | ALPHA 425 |
| Solids Content, % wt/wt | 2.0 | Self-Life (from date of mfg.) | 540 Days |
| Specific Gravity @ 25 °C (77 °F) | 0.805 ± 0.003 | IPC J-STD-004 Designation | ORM0 |
| Acid Number (mg KOH/g) | 18.0 ± 1.0 | Package Size | 1, 5 & 55 Gallons |
| Flash Point (T.C.C) | 58 °F (14 °C) | | |

CORROSION & ELECTRICAL TESTING
Corrosion Testing

| Test | | Requirements for M0 | Results |
|------|--|--------------------------------|---------|
| IPC | Silver Chromate Paper IPC-TM 650 Test Method 2.3.33 | No detection of halide | PASS |
| | Copper Mirror Test IPC-TM 650 Test Method 2.3.32 | <50% Breakthrough in test area | PASS |

J-STD-004A Surface Insulation Resistance

| Test | Conditions | Requirement | Results |
|------------------------|----------------------|---------------------------|--------------------------|
| “Comb-Down” Un-cleaned | 85 °C/85% RH, 7 days | $>1.0 \times 10^8 \Omega$ | $2.6 \times 10^9 \Omega$ |
| “Comb-Up” Un-cleaned” | 85 °C/85% RH, 7 days | $>1.0 \times 10^8 \Omega$ | $5.0 \times 10^9 \Omega$ |
| Control Boards | 85 °C/85% RH, 7 days | $>1.0 \times 10^8 \Omega$ | $7.3 \times 10^9 \Omega$ |

IPC Test Condition (per J-STD-004A): -50V, measurement @ 100V/IPC B-24 board (0.4 mm lines, 0.5 mm spacing).

Bellcore Surface Insulation Resistance

| Test | Conditions | Requirement | Results |
|------------------------|----------------------|------------------------------|-----------------------------|
| “Comb-Down” Un-cleaned | 35 °C/85% RH, 5 days | $>1.0 \times 10^{11} \Omega$ | $3.4 \times 10^{11} \Omega$ |
| “Comb-Up” Un-cleaned” | 35 °C/85% RH, 5 days | $>1.0 \times 10^{11} \Omega$ | $6.3 \times 10^{12} \Omega$ |
| Control Boards | 35 °C/85% RH, 5 days | $>2.0 \times 10^{11} \Omega$ | $2.2 \times 10^{12} \Omega$ |

Bellcore Test Condition (per GR 78-CORE, Issue 1): 48 Volts, measurement @ 100V/25 mil lines/50 mil spacing.

Bellcore Electromigration

| Test | SIR (Initial) | SIR (Final) | Requirement | Result | Visual Result |
|------------------------|-----------------------------|-----------------------------|---------------------------------|--------|---------------|
| “Comb-Down” Un-cleaned | $1.9 \times 10^{10} \Omega$ | $1.9 \times 10^{10} \Omega$ | SIR (Initial) / SIR (Final) <10 | PASS | PASS |
| “Comb-Up” Un-cleaned” | $1.8 \times 10^{10} \Omega$ | $1.9 \times 10^{10} \Omega$ | SIR (Initial) / SIR (Final) <10 | PASS | PASS |

Bellcore Test Condition (per TR-NWT-000078 Issue 3): 85 °C/85% RH/500 Hours/10V, measurement @ 100V/IPC B-25B Pattern (12.5 mil lines, 12.5 mil spacing).

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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