TECHNICAL BULLETIN

ALPHA E191/1
No-Clean Flux

GENERAL DESCRIPTION
Alpha E191/1 is a very efficient halide-free and rosin/resin-free, low solids, no-clean flux. After soldering, a very small amount of barely visible residue is left which is tack-free and non-corrosive.

FEATURES & BENEFITS
- Non-Corrosive Residues. High SIR Assemblies.
- Fast Wetting. Defect-Free Soldering.
- Tack-Free Residues. Accurate Pin-Testing.

USES
Alpha E191/1 flux is engineered for foam, spray and wave applications. If foaming, it is recommended that the flux level be 1½ inches above the top of the stone. Topside preheat temperatures of 80°C-105°C are recommended. Alpha E191/1 flux can be maintained by using Alpha's Flux Solids Control Kit #2.

TECHNICAL SPECIFICATIONS

Physical Properties	Typical Values
Appearance	Clear, Colorless Liquid
Solids Content, % wt/wt	2.1%
Specific Gravity: @ 25°C	0.799
@ 20°C	0.804
Acid Number (mg KOH/g)	15.9 - 18.2
Flash Point (TCC)	16°C
Thinners	UK: Flowsolder Thinner US: 425

PACKAGING
In the United States, Alpha E191/1 is available in 1, 5 and 55 gallon containers. In the United Kingdom, it is available in 20 liter containers.

CORROSION TESTING

Corrosion Testing	Requirements	Results
Silver Chromate Paper Test	No Detection of Halide	Passes
Copper Mirror Test	No Complete Removal of Copper	Passes
IPC Copper Corrosion Test		Type "L"

SURFACE INSULATION RESISTANCE (all values in ohms)		
Test Condition	**Requirements**	**Results**
Bellcore "Comb-Down" - Uncleaned	1.0 x 10^{11} minimum	9.5 x 10^{11}
Bellcore "Comb-Up" - Uncleaned	1.0 x 10^{11} minimum	6.3 x 10^{11}
Bellcore Control Board	2.0 x 10^{11} minimum	8.9 x 10^{11}
IPC J-STD-004 Comb-Down - Uncleaned	1.0 x 10^{8} minimum	Being tested
IPC-J-STD-004 Comb-Up - Uncleaned	1.0 x 10^{8} minimum	Being tested
IPC J-STD-004 Control Board	1.0 x 10^{9} minimum	Being tested
Bellcore Test Condition (per TR-NWT-000078, Issue 3): 35°C/85%RH/120 Hours/-48 volts, measurement @ 100V/25 mil lines/50 mil spacing. IPC Test Condition (per J-STD-004): 85°C/85%RH/168 Hours/-50V, measurement @ 100V/IPC B-24 board (0.4mm lines, 0.5mm spacing).		

ELECTROMIGRATION (all values in ohms)					
Test Condition	**SIR (Initial)**	**SIR (Final)**	**Requirement**	**Result**	**Visual Result**
Bellcore "Comb-Up" Uncleaned	1.5×10^{10}	2.0×10^{10}	SIR (Initial)/SIR (Final) < 10	Passes	No Dendrites or Corrosion
Bellcore "Comb-Down" Uncleaned	2.2×10^{10}	2.0×10^{10}	SIR (Initial)/SIR (Final) < 10	Passes	No Dendrites or Corrosion
Bellcore Test Condition (per-NWT-000078, Issue 3): 85°C/85%RH/500 Hours/10V, measurement @ 100V/IPC B-25 B Pattern (12.5 mil lines, 12.5 mil spacing).					

HEALTH & SAFETY

Observe standard precautions for handling and use. Use in well-ventilated areas. Do not smoke. Avoid prolonged or repeated contact with the skin by the use of solvent resistant gloves.

Flammable, keep way from sparks and open flames. Remember, empty containers can still be flammable hazard from residual vapors. Remove skin splashes by immediate washing with soap and water.

Please consult the product Material Safety Data Sheet as the primary source of health and safety information.