

ALPHA 2100

Aqueous Rosin Cleaner

DESCRIPTION

ALPHA 2100 is a concentrate designed for the efficient removal of rosin flux residues from printed circuit boards using aqueous saponification processing. In conveyORIZED, in-line aqueous machines, **ALPHA 2100** will provide excellent cleaning with little or no foaming, and greatly increased operating life.

ALPHA 2100 is about 30% more concentrated than most liquid rosin flux cleaners. It is formulated to maintain its compositional balance in the recirculated wash solution during prolonged use, thus greatly reducing makeup additions normally required. **ALPHA 2100** contains no silicone defoamers.

ALPHA 2100 removes rosin flux residues primarily by saponification to form water-soluble rosin soaps.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

APPLICATION GUIDELINES

Aqueous Cleaning with ALPHA 2100

While designed for use in conveyORIZED cleaning equipment, ALPHA 2100 can also be used in batch soak tanks and modified dishwasher units. Soft tap water is recommended for the wash solution. Use of hard, or high mineral content water can deposit scale which can clog spray nozzles and insulate heating elements and electrical probes.

Suggested use levels of ALPHA 2100 by volume	
In-Line Machines	3 to 8%
Soak Tanks	4 to 8%
Dishwashers	2 to 3%

The proper level of ALPHA 2100 concentration will depend on such variables as the throughput of printed wiring assemblies and wash temperature.

Recommended wash tank temperatures are 60 to 71 °C (140 to 160 °F). Higher temperatures speed the saponification reaction and increase the efficiency of flux residue removal. Temperatures of 71 to 77 °C (160 to 170 °F) are sometimes necessary for the simultaneous removal of some stabilizer waxes and solder masks. ALPHA 2100 has excellent solution stability even at these elevated temperatures. Temperatures of 49 to 60 °C (120 to 140 °F) can be used for relatively light production rates, or where waxes and masks are removable at these lower levels. ALPHA 2100 has low odor characteristics over this entire range of temperatures.

Multi-staged rinsing of assemblies cleaned with ALPHA 2100 can be accomplished with hot tap water or DI water, depending upon the level of ionic cleanliness sought. After hot air drying, the ionic cleanliness level achieved by aqueous cleaning with ALPHA 2100 can be measured exactly with an ionography.

Monitoring the ALPHA 2100 Concentration in an In-Line Cleaner

To maintain the ALPHA 2100 concentration during use in the desired range¹, and continuously produce clean assemblies, periodic makeup additions of ALPHA 2100 should be made. Such losses from drag-out and spray nozzle mist can be replaced simultaneously with water makeup. Solutions of ALPHA 2100 can be added manually, or semi-automatically, using proportioning devices.

Standard practice is to change the wash tank contents completely after 8 to 16 hours of continuous use. After this amount of time, the solution generally has become sufficiently contaminated with rosin soaps, so further cleaning and rinsing are no longer satisfactory, even with makeup additions of ALPHA 2100.

ALPHA 2100 contains a natural buffer to maintain the pH of the wash solution within a narrow range, even as its concentration changes. Thus, if makeup additions of ALPHA 2100 are made on the basis of pH, control of concentration would be lost. However, an alkalinity-titration procedure can be used to reliably monitor the concentration of ALPHA 2100 in use. See Appendix I.

Once the normal throughput of typical soldered assemblies is determined, this titration procedure will provide a dependable method for monitoring ALPHA 2100 concentration changes, and any makeup additions needed. When the throughput (rosin residue loading) varies widely with board size, component density, and the number of boards per minute, this procedure can be geared to the highest throughput for a good cleaning.

(Footnote: ¹ The concentration of ALPHA 2100 in the recirculated wash is reduced primarily by makeup water dilution, added to compensate for drag out and spray mist losses of active solution.)

TECHNICAL DATA

Item	Typical Values	Item	Typical Values
Appearance	Blue Liquid	pH, as 5% volume solution	11.6
Specific Gravity @ 25 °C (77 °F)	1.002 +/- 0.005	Flash Point (Cleveland Open Cup)	99 °C (210 °F)
Pounds per gal. @ 25 °C (77 °F)	8.34	Packaging Size	5 and 54 Gallon Containers

PROCESSING GUIDELINES
Storage & Handling

Do not transfer to aluminum or galvanized containers. Avoid storage below 0 °F for prolonged periods. ALPHA 2100 containers carry a D.O.T. "corrosive" label. When handling, observe standard precautions such as safety goggles and protective gloves. Use ALPHA 2100 with adequate ventilation.

Material Compatibility

When used as recommended, ALPHA 2100 will not damage most plastics or marking inks. Cleaning equipment materials of construction should not include among the wetted parts: Lexan (polycarbonate), Viton, Neoprene, or natural rubber; copper, aluminum, brass, or galvanized metals.

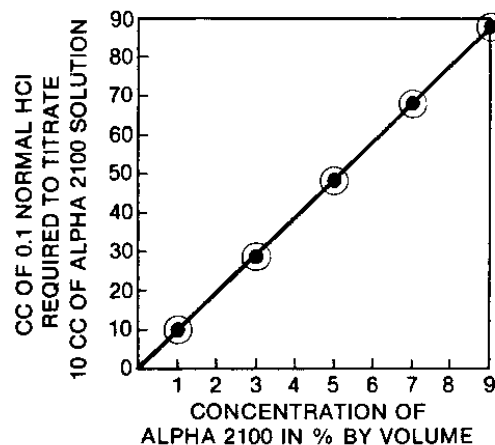
Cleaning - Machine Maintenance

Processes using untreated tap water will frequently deposit scale on the wetted parts of the alkaline wash section of in-line machines. ALPHA 926 Scale Remover will effectively clean this scale.

APPENDIX I

Titration Procedure for Process Start-Up and Periodic Monitoring

1. From the freshly made up, recirculated wash solution, take a 50 mL sample from below the surface with the pump shut off. Pipette 10 mL into a 200 mL Erlenmeyer flask.
2. Dilute with DI water to 50 mL.
3. Add 5 drops of 1% bromothymol blue indicator solution (made from Fisher Scientific Cat. # B-388 crystals, 1 gm per 100 mL of DI water). Titrate with 0.1 Normal hydrochloric acid (Fisher Scientific Cat. # SO-A-54), swirling gently, to a yellow, or yellow-orange endpoint.
4. Repeat this procedure every few hours, noting how the acid titer decreases. (Note also, how little the pH decreases).
5. Applying visual, optical, and/or Ionograph cleanliness standards during this monitoring, it will be seen that marginal cleaning begins when the solution titer is allowed to fall below the minimum level corresponding to the minimum desired concentration of ALPHA 2100.

**Example:**

If a 5% solution of ALPHA 2100 is charged at the beginning of a shift, it is recommended that the concentration be maintained in the 3 to 5% range throughout. The titer of a 3% solution is directly proportioned to that of the starting 5% solution. Makeup additions can be made, as necessary, by monitoring the titer.

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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