

## SWAF Safewash F

SWAF removes all types of flux residues (RA, RMA, no-clean and water-soluble) quickly and efficiently, using a range of different production equipment. It is ideally suited for cleaning PCBs and metals that are not sensitive to alkalis. SWAF is part of the Electrolube Safewash range; water-based, non-flammable, biodegradable solvent blends designed to clean to within military cleanliness standards, (ANSI-J-001B/IPC TM-650).

- Removes all types of flux residues; suitable for many PCB cleaning processes
- Low foaming action; suitable for use in pressure wash systems
- Supplied as a concentrate; allows versatility and control in the production process
- Non-flammable product, 100% ozone friendly; suitable for use in standard cleaning equipment

**Approvals**                      **RoHS Compliant (2015/863/EU):**                      **Yes**

<b>Typical Properties (Concentrate)</b>	Appearance	Blue Liquid
	Boiling Point (°C)	171
	Flash Point (°C)	94
	Freezing Point (°C)	-10
	Density @ 20°C (g/ml)	0.99
	Viscosity @ 20°C (mPa s)	15-25
	pH	12.3
	Conductivity @ 18°C (mS)	0.1

<b><u>Description</u></b>	<b><u>Packaging</u></b>	<b><u>Order Code</u></b>	<b><u>Shelf Life</u></b>
<u>Safewash SWAF</u>	5 Litre 25 Litre	SWAF05L SWAF25L	48 Months 48 Months

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All information is given in good faith but without warranty. Properties are given as a guide only and should not be taken as a specification.

Electrolube cannot be held responsible for the performance of its products within any application determined by the customer, who must satisfy themselves as to the suitability of the product.

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BS EN ISO 9001:2008  
Certificate No. FM 32082

## **Directions for Use**

As with all aqueous based products, the cleaning process is a 4-stage system; clean, rinse with tap water, rinse with deionised water, dry. The exact timings for cleaning will be dependent on the type of flux/paste, the reflow profile used, the age of residues, the temperature and concentration of the cleaner and the type of equipment used. Some starting points are provided below:

### **Dishwasher systems**

Use at a concentration of 5-8% in deionised water. A typical wash cycle would comprise of 10 mins at 40–55°C, tap water rinse for 5 mins at 45–65°C; deionised water rinse 5 mins at 45°C; drying at 70°C

### **In-line systems**

Use at a concentration of 5-8% in the wash. Re-circulation of the solution via angled high pressure spray nozzles allows effective cleaning under components and on both sides of the board. A typical wash cycle would comprise of 3-5 mins at 40–50°C; tap water rinse for 5 mins at 40-50°C; deionised water rinse for 5 mins at 40–50°C; drying at 70–90°C

### **Ultrasonic systems**

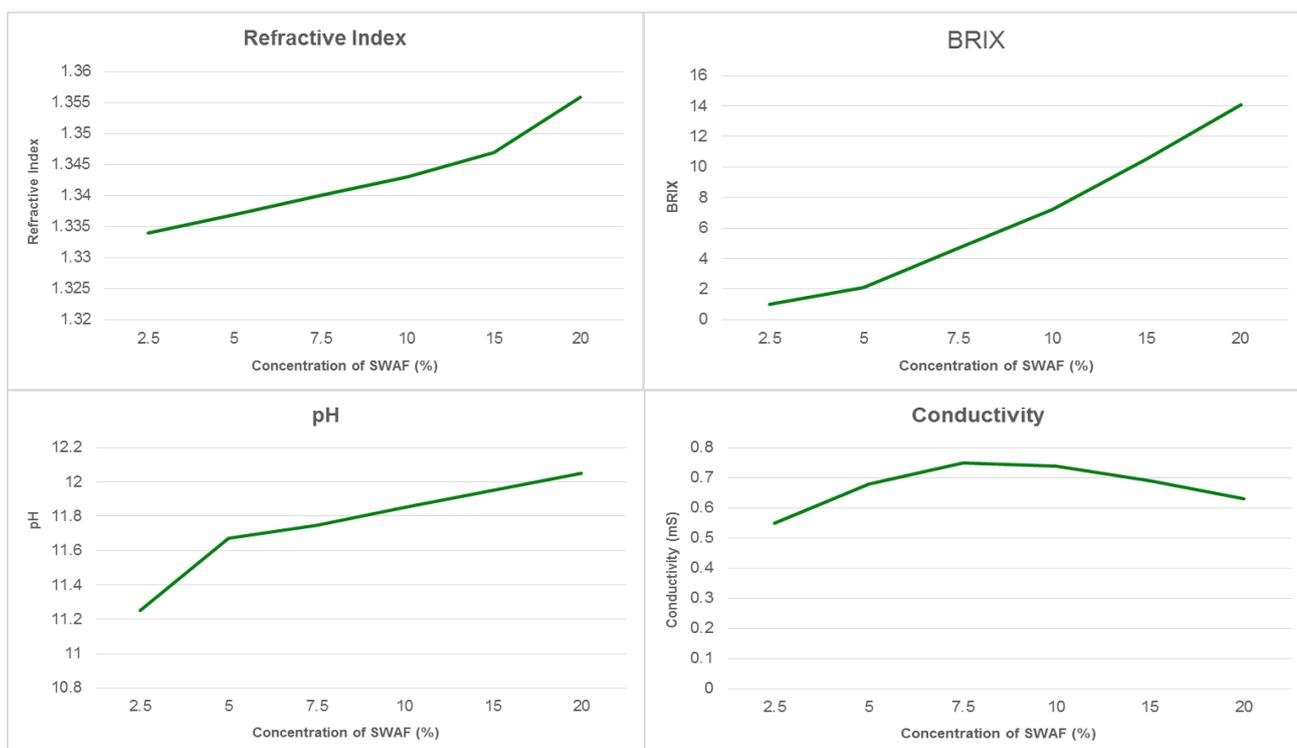
Use at a concentration of 5-8%. A typical wash cycle would comprise of 15 mins at 45°C; tap water rinse 5 mins at 45°C; deionised water rinse 5 mins; drying at 70°C

The temperature of the rinsing solution can be ambient, but higher temperatures in addition to agitation, will accelerate and improve rinsing. For ferrous metal cleaning operations it is possible to add a rust inhibitor (SRIA) at 0.5% into the rinsing stage. This will prevent flash rusting of ferrous metals when they are dried at high temperatures. Alternatively, where sensitive metals, such as copper or aluminium, are present an alternative product, SWAP, is recommended. For sensitive plastics such as polycarbonate and ABS, testing is recommended to confirm compatibility.

The length of time required to dry the PCB depends on the circuit design and the efficiency of the drying unit itself. This is enhanced by equipment that uses high air flow as opposed to 'heat only' systems. In general, this stage takes approximately 5 minutes at 90°C. Air-knives can be used as an optional extra to reduce temperature or total energy required.

## **Solution Control**

There are a number of methods that can be used to monitor the concentration of the cleaning solution. The graphs below give examples of suitable methods and typical values at a range of concentrations. It should be noted that the quality of the deionised water used to make the solution and the presence of any contaminant/residues will alter the measurements.



### **Additional Information**

Safewash has been tested and approved by both military and commercial electronics manufacturing companies across the world. The British Ministry of Defence (Directorate General of Defence Quality Assurance) have tested Safewash on various fluxes and have found that the product cleans to well within Defence Standard 00-10 (and it performed approximately 10 times better than 1.1.1. Trichloroethane based solvents).

Siemens Central Research Laboratories in Erlangen agreed with these findings. Their conclusions were: *"The residual contamination found on the circuit boards and components after cleaning with Safewash 2000 is significantly below the limit value of 1.56 micrograms NaCl/cm<sup>2</sup> permitted by MIL-P28809A. From the point of view of a high level of cleaning efficiency, the bio-cleansing agent "Safewash 2000" can be released for cleaning purposes in electrical engineering".*

### **Disposal**

SWAF solutions are normally only used once. The contamination levels after a single use are normally low enough to allow the solution to run directly to the drain, however the local water authority should be consulted for confirmation of this. Similarly, the rinse water can usually be run to the drain.

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