Technical Data Sheet

SWAF
Safewash F

Product Description

The Safewash range consists of water based cleaning solvents, suitable for the cleaning of PCBs and production equipment. The Safewash products are water-based, non-flammable, 100% ozone friendly, biodegradable solvent blends designed to clean to well within the world's military cleanliness standards, (ANSI-J-001B/IPC TM-650).

SWAF removes all types of flux residues (RA, RMA, no-clean and water-soluble) quickly and efficiently, with minimal environmental effect using low cost, readily available cleaning equipment. It ideally suited for cleaning PCBs and metals that are not sensitive to alkalis. SWAF will not normally attack sensitive metals unless they are cleaned many times or unless the units are immersed for beyond the recommended cleaning period.

Alternative products in the Safewash range are:

	SWA	SWAJ	SWAS	SWAP	SWAF	SWAC	SWAT
Application by Immersion	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Application by Spray	No	No	No	Yes	Yes	Yes	Yes
Requires dilution	No	No	No	No	Yes	Yes	Yes
Use on sensitive metals	No	Yes	Yes	Yes	No	Test	Yes
Removes Flux/ionics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Removes No-clean flux	No	No	Yes	Yes	Yes	Yes	Yes
Removes heavy grease & organics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Removes uncured paste	Yes	Yes	Yes	No	No	Yes	Yes

Separate data sheets are available for each of the above Safewash products.

Features

- Non-flammable
- Low toxicity
- Environmentally friendly
- Cost effective
- Low foam

Approvals

SWAF is RoHS Compliant (2002/95/EC).

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).

These results have been backed up by Siemens Central Research Laboratories in Erlangen. 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^2 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".

Typical Properties:

Appearance	Blue liquid
Boiling point (°C)	171
Freezing Point (°C)	-10
Density (g/ml)	0.99
Viscosity (cps)	15-25
pH	12.3
Conductivity @ 18°C (mS)	0.1
Flash Point (°C)	94

Packing	**Order Code**	**Shelf Life**
5 litre bulk	ESWAF05L	48 months
25 litre bulk	ESWAF25L	48 months

Directions For Use

SWAF has been specifically developed for use in 3 or 4 stage batch cleaning systems using dishwasher or in-line spray application. It is supplied as a concentrate and should be diluted with deionised water before use.

Stage 1 - cleaning: SWAF is typically used at 5-8% concentration at a temperature of 20-60°C. Re-circulation of the solution via angled high pressure spray nozzles allows effective cleaning under components and on both sides of the board.

Stage 2 – tap water rinse: The temperature of the rinsing solution can be ambient, but higher temperatures in addition to agitation, will accelerate and improve rinsing.

Stage 3 – deionised water rinse: This removes impurities left by the tap water. If military standard cleanliness is not required, this deionised rinse may not be necessary, though the PCBs may show some white streaking due to tap water impurities.

For ferrous metal cleaning operations it is possible to add a rust inhibitor (Code: SRIA) at 0.5% into this stage. This will prevent flash rusting of ferrous metals when they are dried at high temperatures.

Stage 4 – Drying: 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.

Material Compatibility

In typical usage times and temperatures, SWAF has excellent compatibly with most materials used in the electronics industry, and with materials used in cleaning equipment. Although compatibility with metals is good, where sensitive metals such as copper or aluminium are present, an alternative Safewash such as SWAP is recommended. For sensitive plastics such as polycarbonate and ABS, testing is recommended to confirm compatibility.

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.