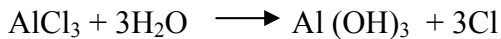


Aluminum Electrolytic Capacitors Printed circuit boards

When cleaning circuit boards care should be taken to prevent the capacitor from being contaminated by the cleaning solvent. Halogenated cleaning solvent should not be used. These solvents can penetrate into the capacitor through the end seal. The halogen ions in these cleaners react with the aluminum causing the aluminum to become corroded.

During this process the halogen ion is repeatedly reused to extend the corrosion of the capacitor. Below is an illustration of the corrosion process.



Signs of contamination are an increase in the capacitors leakage current and the case bulging from increased gas pressure. The production of excessive hydrogen gas will activate the safety vent.

Other cleaners that should be avoided are

- Alkali solvents, which can dissolve the aluminum can.
- Petroleum based solvents, which deteriorate the rubber end seal.
- Xylene, which also deteriorates the rubber end seal.
- Acetone, which removes the markings on the capacitor.

Whenever possible, water or alcohol cleaning agents should be used.

Acceptable cleaning solvents include:

1. Pine Alpha ST-100S
2. Clean Through 750H,750K,750L and 710M
3. Technocare FRW-14 to 17
4. Sanelek B-12
5. Aqua Cleaner 210SEP
6. Isopropyl Alcohol
7. DI-water
8. Ethyl alcohol
9. Butyl alcohol
10. Methyl alcohol
11. Propyl alcohol

These solvents can be used in immersion, ultrasonic, Vapor and spray on cleaning systems. Maximum cleaning duration of 5 minutes at a maximum cleaning temperature of +60°C is recommended.

Cleaning agents not recommended are:

1. Methylene Chloride
2. Perchloroethylene
3. Trichloroethylene
4. Carbon tetrachloride
5. Chloroform
6. Freon

Water cleaning

It is not unusual after cleaning circuit boards with a water wash cleaning system that some water can become trapped under the sleeve or end cap (snap mount capacitors only). The water getting trapped under the sleeve is typically caused by one of or combination of the following:

- Water pressure too high
- Water temperature is too hot
- Spray jets spray water directly onto end of sleeve
- Combination of all of the above

To prevent this situation from re-occurring steps should be taken to prevent the above possible causes from happening.

For the cleaning solution to penetrate between the case and the sleeve/end cap, the sleeve/end cap has to soften and swell. Sleeve and end cap softening can occur at temperatures above 80°C.

In the event water is trapped under the end cap or sleeve the circuit boards should be dried using hot air for a minimum of 10 minutes.

Insufficient drying of the capacitors may cause appearance problems, such as sleeve shrinking unevenly and end cap bulging.

In addition, a monitoring of the contamination of cleaning agents (electric conductivity, pH, specific gravity, water content, etc.) must be implemented.

After the cleaning, do not keep the capacitors in conditions where the cleaning agent is present. Storage in an air tight container is preferred.

Depending on the cleaning method, the markings on the capacitor may be erased or blurred.