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Jetting Systems Technology

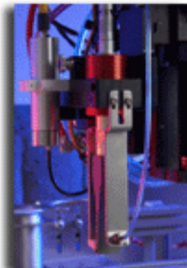
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October 9, 2006

Aqueous Cleaning Process

Which cleaning solution is preferred for localized cleaning on PCB board before and after the PCB goes through AQUEOUS washing?

- 1) IPA (isoprophyl alcohol) or
- 2) DI Water

N.D.

This "Ask the Experts" page has been viewed 1996 times.

Ask the Experts Comments

Neither. IPA is a very poor solubilizing agent. DI-water will only be able to clean inorganic contamination. You best bet is to use a cleaning solution that is able to accomplish both. As a result you can use your aqueous washer as a subsequent rinse.

Umut Tosun, Application Technology Manager

Zestron America

Mr. Tosun has published numerous technical articles. As an active member of the SMTA and IPC organizations, Mr. Tosun has presented a variety of papers and studies on topics such as "Lead-Free Cleaning" and "Climatic Reliability".



In my experience, NEITHER alcohol nor water do a very good job at localized cleaning on a PCB after the board has been washed in an automatic cleaning system.

Let's assume you have a circuit board that has been assembled, soldered, cleaned and tested, and now needs a bit of rework for some reason.

Water, by itself, does a very good job on the polar contamination but cannot easily dislodge the organic contamination in fluxes. It also is extremely slow drying, which means the technician has to wipe up the water or blow it off the board, extra steps which cost money.

Alcohol, by itself, is a weak cleaner that doesn't remove very much. Most alcohol cleaners saturate (that is, stop cleaning) when carrying only 2-3% contamination. If you use 5 grams of alcohol on a circuit board, it can only carry 0.1 grams of flux residues... a tiny amount, indeed.

I would recommend using a more modern, more sophisticated cleaning answer. Many companies sell such cleaners (including my company, Micro Care) and they are not all fancy and expensive, and some of them deliver great cleaning results at very low cost. For example, one fast-drying product made by my company saturates at 7% by weight, and some get up to 30% or more.

Look also for nonflammable solvents, for fast-drying solvents, and ones that have reduced aroma.

Mike Jones, Vice President

Micro Care

Mr. Jones is an electronics cleaning and stencil printing specialist. Averaging over one hundred days a year on the road, Mike visits SMT production sites and circuit board repair facilities in every corner of the globe, helping engineers and technicians work through the complex trade-offs today's demanding electronics require.



We routinely use isopropyl alcohol for simple bench top cleaning during repair and rework. IPC has a somewhat involved procedure following a mil standard. We don't quite follow it to the letter, but you can see our version of this procedure online at: <http://www.circuitrework.com/guides/2-2-1.shtml>

Jeff Ferry, President

Circuit Technology Center, Inc.

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Mr. Ferry is President of Circuit Technology Center, a world-leading contractor for the repair and rework of assembled circuit boards founded in 1983. Jeff also serves as Publisher of Circuitnet, Circuitmart and Semiconductor Packaging News.

It depends on what types of residues you are trying to remove.

If you are trying to clean rosin-based or other no-clean residues, a localized water clean won't help. IPA would be a better choice, but not necessarily the best choice as there are cleaning chemicals on the market that are designed specifically for rosin-based and other no-clean residues. I would suggest contacting companies like Chemtronics or Techspray for materials that would be better than IPA for this application.

If the residues that are being removed are water soluble, DI water would be the better approach, but I'm not sure why you would need to wash in water prior to an aqueous wash. More details about your process and what you are trying to clean would be necessary to make more specific recommendations.

It would be advised to contact the vendor of the materials that are being removed to get the optimal recommendation.

Brian Smith, Director of Marketing and Product Technology

Kester

bsmith@kester.com



Mr. Smith is the Global Sales & Marketing Manager for Kester and has worked in the soldering materials industry since 1994. He has an intensive background in soldering materials technology and SMT process optimization.

First, localized cleaning is actually localized flux dilution. To fully remove flux residues from a localized area, one must clean (wash and rinse) the entire board.

The cleaning media you choose depends on which specific flux you are removing. Water will not work on no-clean or rosin based fluxes. IPA, although capable of removing rosin and no clean flux residues, is not a great solvent and has been banned in many states as a cleaning media.

There are many good cleaning chemicals designed for thorough flux removal that are effective and environmentally safe. Cleaning equipment manufacturers can recommend specific chemicals.

Mike Konrad, President

Aqueous Technologies

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Mr. Konrad has been in the electronic assembly equipment industry since 1985. He is founder and CEO of Aqueous Technologies Corporation, a manufacturer of automatic de-fluxing equipment, chemicals, and cleanliness testing systems.

I don't like localized cleaning. If there is an intensive need to perform a soldering operation after aqueous cleaning, we recommend using a no-clean no-halide flux with a low solids content.

Dr. Craig D. Hillman, CEO & Managing Partner

DfR Solutions

chillman@dfrsolutions.com



Dr. Hillman's specialties include best practices in Design for Reliability, strategies for transitioning to

Pb-free, supplier qualification, passive component technology and printed board failure mechanisms.

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