

Cleaning test – report

FLUX RESIDUES removal



Solder paste:

AIM M8 (SAC305)

PCB type: assembled DCT testing board

*Cooperation of **DCT** as specialist for cleaning applications and producers of variable materials for electrotechnical industry helps to make our joint customer completely satisfied with his process. Thanks to this testing we are able to improve our current processes or develop new.*

*Thank you **AIM**.*

About DCT objective testing:

DCT is Czech company that develops and produces cleaning processes including cleaning machines and cleaning fluid for electrotechnical industry. This enables us to be able to suit the whole process to customer's specific needs. To be able to provide the best solution for our customer, we cooperate with producers of materials used in electrotechnical industry. We do this testing to be compatible and to be able to remove excess or residues of material on the surface which are undesirable.

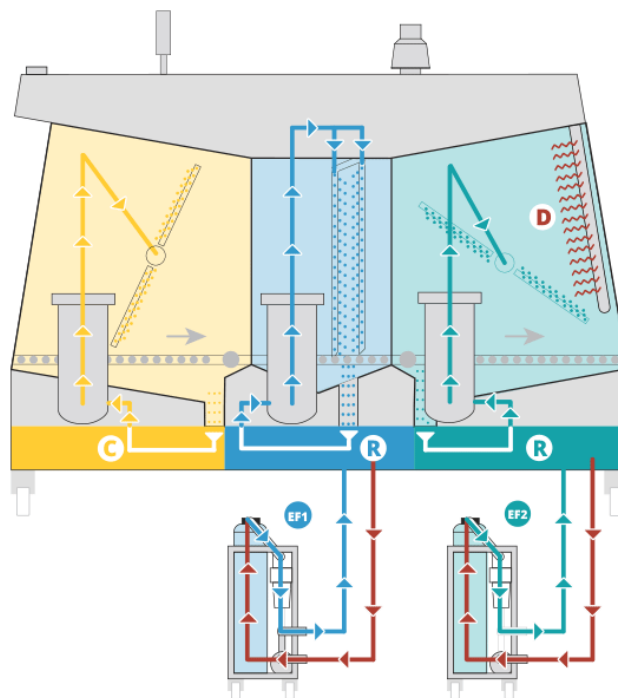
What is our standard test procedure for removing flux residues?

Based on our long experiences we use the most popular, the most successful and broad cleaning process for flux removal from assembled PCB. This process is

vertical high pressure spray in air cleaning technology in cleaning machine Injet TWIN 388 CRRD and cleaning fluid Decotron CP 381 at temperature 50°C. Cleaning is followed by two rinsing in DI water at conductivity 1-2uS with continual deionization and hot air drying.
(More types of cleaning fluid and different types of cleaning machines are tested on request.)

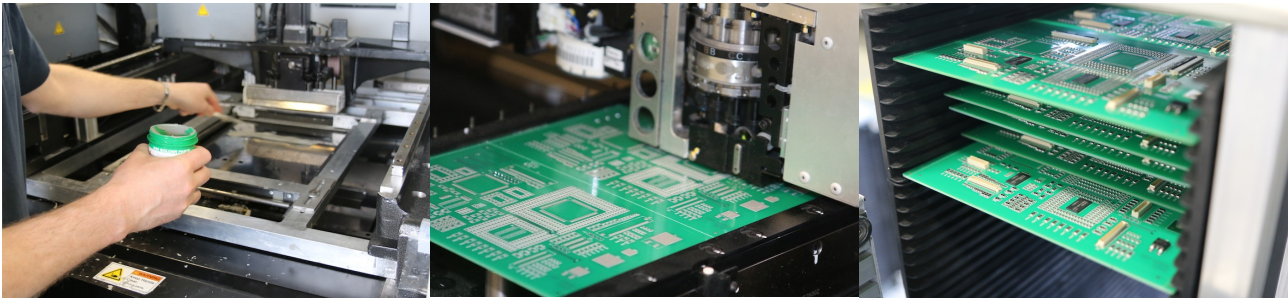
4 INDIVIDUAL PROCESS + 2 EXTERNAL ACTIVE FILTRATION

- | | |
|---------------------|--|
| C CLEANING | D DRYING |
| R 1. RINSING | EF1 EXTERNAL ACTIVE FILTRATION - 1. RINSING |
| R 2. DRYING | EF2 EXTERNAL ACTIVE FILTRATION - 2. RINSING |



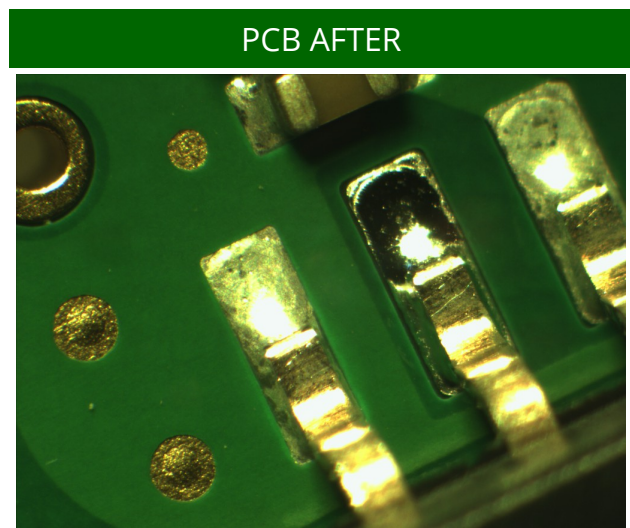
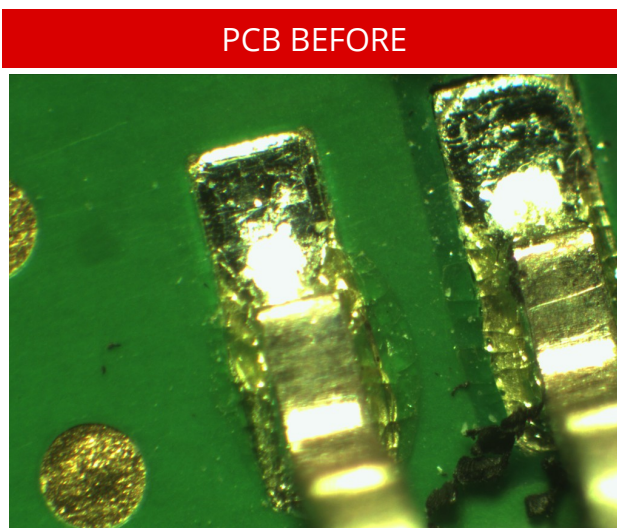
How do we test cleaning flux residues from PCB?

1. First we **let to assemble several DCT testing boards** using desired solder paste. DCT testing board contains more than 600 components and is designed to be the most complicate for cleaning as is possible. We test shadowing effect and effectivity of cleaning components which are difficult to clean.

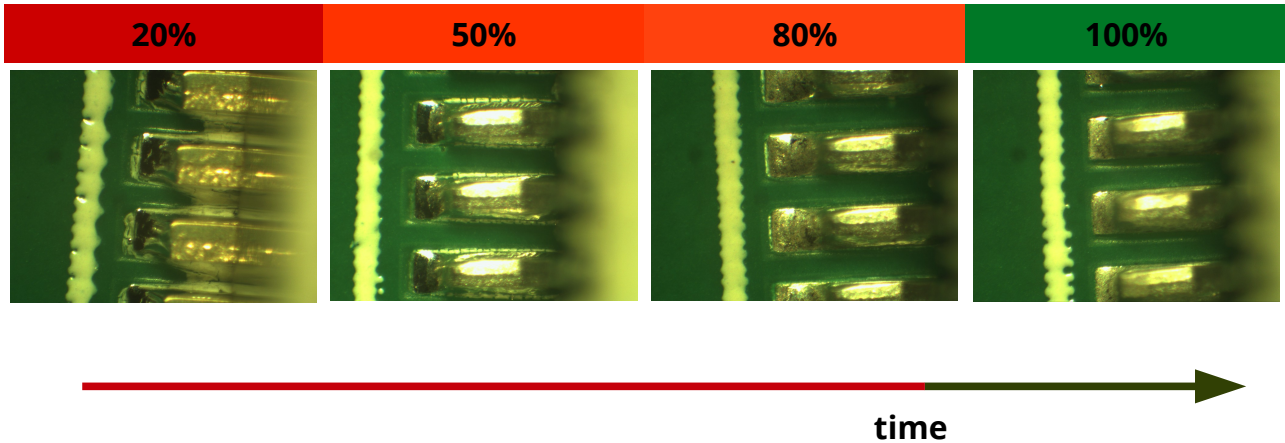


We can also make conclusions of cleaning possibilities of desired solder paste based on **our customer's PCB** which allow us to use their own real PCB for testing.

2. Before test we make detailed magnified **photos of flux residues** on the surface after soldering. In next step we start testing cleaning in machine using **our standard cleaning process setting**.



3. If we are able to remove all flux residues, we continue with **reducement of cleaning time**. It is also possible to play with temperature, different cleaning fluid and more types of cleaning technologies if requested.



All conclusions are based on **visual inspection** under microscope and **ionic contamination testing** before and after cleaning.

We require ionic contamination $<0,500 \text{ ug NaCl/cm}^2$ after cleaning and no visible flux residues for designation as an high suitable cleaning process.

Integrity testing

All tested materials, documents, photos and ROSE reports from test are thoroughly concluded to make this report and saved in DCT for future potential needs and are available on request for verification to customer or producer. DCT certifies that all data within this report are true and accurate.

Requested test procedure for AIM:

1. Standard test procedure using cleaning fluid **Decotron CP 381, Decotron CP 359, Proton 49, AIMTERGE 520 A** for cleaning flux residues after soldering with paste **AIM M8 (SAC305)**.
2. Comparison of cleaning efficiency using 3 and 2 arms rotation using **Decotron CP 381**

Result

Tested Cleaning fluid	Properties	Minimum cleaning time (at 50°C)	Suitability	Cleaning technology
Decotron CP 381 Concentration: 20%	Water based, anticorrosive additives (clean and protect technology).	3 min	High	3 arms rotation high pressure spray in air
		5 min	High	2 arms rotation high pressure spray in air
Decotron CP 359 Concentration: 20%	Water based anticorrosive additives (clean and protect technology).	20 min	High	3 arms rotation high pressure spray in air
Proton 49 Concentration: 100 %	Alcohol based	-	Not suitable	
AIMTERGE 520 A Concentration: 20%	Water based	10 min	Middle	
		10 min*	High	

* Cleaning temperature for was increased to 60°C

This result only shows ability of cleaning tested sample. All setting must be verified and customized for real PCB. Rinsing and drying time and temperature is set individually. Result from this test should be used as a guide to optimize specific cleaning process. For deeper study or trial test please contact DCT representative.

Test was performed by:

Ing. Lenka Musilová / **laboratory specialist** / Lm@dct. cleaning

Date of the test: 11.5.2016