



# CLEANING APPLICATION GUIDE

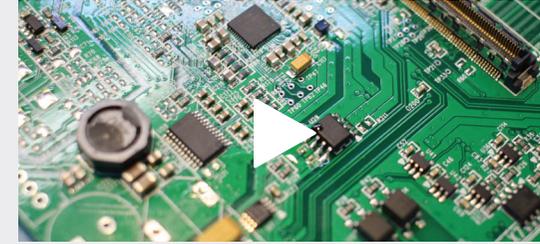
Cleaning Application Guide provides basic orientation in cleaning problematic and DCT cleaning solutions. Selection and set up of the whole cleaning process is based on detail analysis and following results of the cleaning test. Please contact your local distributor or DCT Project Manager to prepare for you the right cleaning process.

See technical data sheets of cleaning machines and fluids for more information.



# SOLDERED FLUX RESIDUES CLEANING

## SOLDERED PCBs



see our videoreport

REQUIRED CAPACITY	CLEANING MACHINE	CLEANING FLUID
LOW (50 – 300 pcs per shift)	InJet® 388 machines	Decotron® 333F
	Manual cleaning	Flux Remover 4
MEDIUM (300 – 600 pcs per shift)	InJet® 388 TWIN machines	Decotron® CP 381, Decotron® 333F, Decotron® C55S
	Sonix® machines	Decotron® 333F
	InJet® 888 machines	Decotron® 333F
HIGH (600 – 2000 pcs per shift)	InJet® 499 TWIN machines	Decotron® CP 381, Decotron® 333F, Decotron® C55S

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS
<p><b>InJet® 388</b> machines have vertical high pressure spray in air technology with 1 chamber for cleaning, rinsing and drying. Direct spray in air ensures cleaning without shadow effect. One phase cleaning fluids are suitable.</p>	<p><b>Decotron® 333F</b> – alkalic water based one phase cleaning fluid with anti foam additives against foaming.</p>
<p><b>InJet® 388 TWIN</b> and <b>InJet® 499 TWIN</b> machines have vertical high pressure spray in air technology with 1 chamber for cleaning and 1 chamber for 2<sup>nd</sup> rinsing and drying. 1<sup>st</sup> rinsing step is situated between cleaning and rinsing chambers. This technology saves time and lifetime of the rinsing fluid. Direct spray in air ensures cleaning without shadow effect. One or two phase cleaning fluids are suitable.</p>	<p><b>Decotron® CP 381</b> – alkalic water based two phase cleaning fluid that contains additives against corrosion protecting the metallic parts of the PCB.</p>
<p><b>InJet® 888</b> machines have horizontal high pressure spray in air technology. There is one process chamber for cleaning, rinsing and drying. Mainly for easy to clean PCBs because shadow effect can appear. One phase cleaning fluids are suitable.</p>	<p><b>Decotron® C55S</b> – highly concentrated alkalic water based two phase cleaning fluid for hard to clean fluxes and in case of sensitive labels on the board.</p>
<p><b>Sonix®</b> machines have ultrasonic technology that is commonly used for hard to clean flux residues to ensure under component cleaning and in case of very thin space between board and the component. One phase cleaning fluids are suitable.</p>	<p><b>Flux Remover 4</b> – alcohol based cleaning fluid with high evaporation rate suitable for manual cleaning of flux residues after manual soldering. Available in pressurised spray with brush. Dissolved residues are recommended to be absorbed using DCT ESD wipe.</p>
<p><b>Manual cleaning</b> uses DCT brush which is part of the spray Flux Remover 4. Dissolved residues are recommended to be absorbed using DCT ESD wipe. Suitable for cleaning after manual soldering when automatic cleaning doesn't follow.</p>	

# SOLDERED FLUX RESIDUES CLEANING SOLDERING FRAMES



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REQUIRED TECHNOLOGY	CLEANING MACHINE	CLEANING FLUID
SEMI AUTOMATIC	AirJet® machines	Decotron® T389F, Decotron® T390, Decotron® T300S, Decotron® T332
AUTOMATIC	InJet® 888 machines	Decotron® T389F, Decotron® T390, Decotron® T300S

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS
<p><b>AirJet®</b> machines ensures direct contact of the soldering frames with the cleaning fluid during the whole cleaning process. Air bubbles mix the fluid to ensure circulation. The frames are placed in baskets and after cleaning need to be manually transferred to rinsing and drying chambers. AirJet® machines are available with or without manipulator that is suitable for heavy baskets. One phase cleaning fluids are suitable.</p> <p><b>InJet® 888</b> machines have horizontal high pressure spray in air technology. There is 1 chamber common for cleaning, rinsing and drying. Soldering frames are placed into holder that ensures a minimum shadow effect. One phase cleaning fluids are suitable.</p>	<p><b>Decotron® T389F</b> – alkalic water based one phase cleaning fluid determined for easy to clean fluxes from soldering frames. Excels in high compatibility with durostone.</p> <p><b>Decotron® T390 or T300S</b> – alkalic water based one phase cleaning fluids determined for hard to clean fluxes.</p> <p><b>Decotron® T332</b> – alkalic water based one phase cleaning fluid that contains additives against corrosion protecting metal parts of the heat exchangers. Use when combined with cleaning parts of reflow ovens. Only for use in AirJet® machines because of possible foaming.</p>



# SOLDERED FLUX RESIDUES CLEANING REFLOW OVEN PARTS



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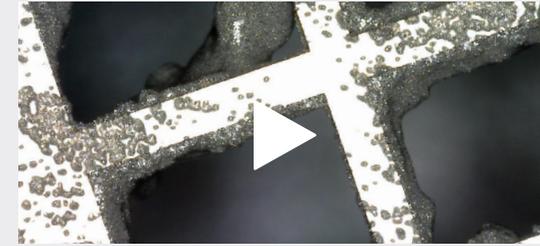
REQUIRED TECHNOLOGY	CLEANING MACHINE	CLEANING FLUID
SEMI AUTOMATIC	AirJet® machines with manipulator	Decotron® T332, Decotron® T389F, Decotron® T390, Decotron® T300S
AUTOMATIC	AirJet® Piano machines	Decotron® T332, Decotron® T389F, Decotron® T390, Decotron® T300S
	InJet® 888 machines	Decotron® T389F, Decotron® T390, Decotron® T300S
MANUAL	Manual sprayer	Reflow Cleaner 94, Reflow Cleaner 88, Decotron® M50

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS
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<p><b>AirJet®</b> machines ensures direct contact of parts with the cleaning fluid during the whole cleaning process. Reflow oven parts are often complicated and full of cavities and the direct contact is often necessary. Air bubbles mix the fluid to ensure circulation. The parts are placed in baskets and after cleaning need to be manually transferred to rinsing and drying chamber. <b>AirJet®</b> machines are available with or without manipulator that is suitable for heavy baskets. One phase cleaning fluids are suitable.</p>	<p><b>Decotron® T332</b> – alkalic water based one phase cleaning fluid that contains additives against corrosion protecting metal parts of the heat exchangers. Only for use in AirJet® machines because of possible foaming.</p>
<p><b>AirJet® Piano</b> machines are recommended in case direct contact of the part and the cleaning fluid is needed. The cleaning process is fully automatic. The parts are placed in a cleaning chamber. After cleaning, it is refilled automatically with rinsing fluid followed by automatic drying in the same chamber.</p>	<p><b>Decotron® T389F</b> – alkalic water based one phase cleaning fluid determined for easy to clean fluxes from soldering frames. Use when combined with cleaning soldering frames. Excels in high compatibility with durystone.</p>
<p><b>InJet® 888</b> machines have horizontal high pressure spray in air technology. There is 1 chamber for cleaning, rinsing and drying. Recommended in case when need to clean easy to clean reflow oven parts and soldering frames in one technology. One phase cleaning fluids are suitable.</p>	<p><b>Decotron® T390 or T300S</b> – alkalic water based one phase cleaning fluids determined for hard to clean fluxes.</p>

<p><b>Manual cleaning</b> is recommended in case of cleaning reflow oven parts that are not easy to disassemble. Use sprayer that forms a thick active foam and wipe the dissolved residues.</p>	<p><b>Reflow Cleaner 94</b> – alkalic water based cleaning fluid suitable for manual cleaning. Available in sprayer, able to form an efficient active foam that holds on vertical surfaces. Determined for easy to clean fluxes.</p>
	<p><b>Reflow Cleaner 88</b> and <b>Decotron® M50</b> – alkalic water based cleaning fluid suitable for manual cleaning. Available in sprayer, able to form an efficient active foam that holds on vertical surfaces. Determined for difficult to clean fluxes, but have decreased compatibility with aluminium and other alloys.</p>

# UNSOLDERED SMT PASTE CLEANING STENCILS AND SQUEEGEES



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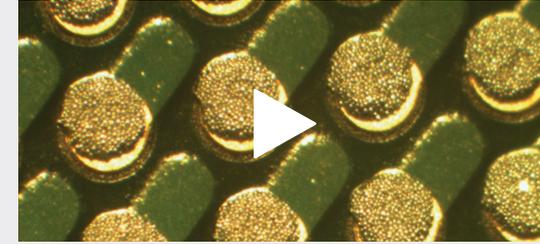
POSSIBILITIES	CLEANING MACHINE	CLEANING FLUID
STENCILS, SQUEEGEES, MISPRINTS	InJet® 388 machines	Decotron® 233
	InJet® 388 TWIN machines	Decotron® 250
BIG BOARD STENCILS, STENCILS, SQUEEGEES	InJet® 3179 machines	Decotron® 233
STENCILS, SQUEEGEES, MISPRINTS + ONE SIDE SOLDERED ONE SIDE MISPRINTS	InJet® 388 machines	Decotron® 333F
	InJet® 388 TWIN machines	Decotron® CP 381, Decotron® 333F
STENCILS, SQUEEGEES, MISPRINTS + ADHESIVE	InJet® 388 machines, InJet® 388 TWIN machines	Proton® 69
STENCILS, SQUEEGEES + ADHESIVE	Manual sprayer	Stencil Cleaner 11

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS
InJet® 388 machines have vertical high pressure spray in air technology with 1 chamber common for cleaning, rinsing and drying. One phase cleaning fluids are suitable.	Decotron® 250 – pH neutral water based two phase cleaning fluid.
InJet® 388 TWIN and InJet® 499 TWIN machines have vertical high pressure spray in air technology with 1 chamber for cleaning and 1 chamber for 2 <sup>nd</sup> rinsing and drying. 1 <sup>st</sup> rinsing step is situated between cleaning and rinsing chambers. This technology saves time and lifetime of the rinsing fluid. One or two phase cleaning fluids are suitable.	Decotron® 233 – pH neutral water based one phase cleaning fluid.
	Decotron® 333F – alkalic water based one phase cleaning fluid with anti foam additives against foaming.
	Decotron® CP 381 – alkalic water based two phase cleaning fluid that contains additives against corrosion, that are protecting the metal parts of the PCB.
	Proton® 69 – alcohol based cleaning fluid. Suitable for combination of cleaning soldering paste and adhesives using one cleaning machine.
	Stencil cleaner 11 – alcohol based cleaning fluid suitable for manual pre-cleaning before cleaning in machine. Available in sprayer.



# UNSOLDERED SMT PASTE CLEANING MISPRINTED PCBs

Possible to combine with cleaning of stencils and squeegees



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POSSIBILITIES	CLEANING MACHINE	CLEANING FLUID
MISPRINTED PCBs ONLY	InJet® 388 machines	Decotron® 233
	InJet® 388 TWIN machines	Decotron® 250
ONE SIDE SOLDERED ONE SIDE MISPRINTS	InJet® 388 machines	Decotron® 333F
	InJet® 388 TWIN machines	Decotron® CP 381, Decotron® 333F

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS
<p><b>InJet® 388</b> machines have vertical high pressure spray in air technology with 1 chamber common for cleaning, rinsing and drying. Direct spray in air ensures that there is no shadow effect. One phase cleaning fluids are suitable.</p>	<p><b>Decotron® 250</b> - pH neutral water based two phase cleaning fluid.</p>
<p><b>InJet® 388 TWIN</b> and <b>InJet® 499 TWIN</b> machines have vertical high pressure spray in air technology with 1 chamber for cleaning and 1 chamber for 2<sup>nd</sup> rinsing and drying. 1<sup>st</sup> rinsing step is situated between cleaning and rinsing chambers. This technology saves time and lifetime of the rinsing fluid. Direct spray in air ensures that there is no shadow effect. One or two phase cleaning fluids are suitable.</p>	<p><b>Decotron® 233</b> - pH neutral water based one phase cleaning fluid.</p>
	<p><b>Decotron® 333F</b> - alkalic water based one phase cleaning fluid with anti foam additives against foaming.</p>
	<p><b>Decotron® CP 381</b> - alkalic water based two phase cleaning fluid that contains additives against corrosion protecting the metal parts of the PCB.</p>

# UNSOLDERED SMT PASTE CLEANING UNDER STENCIL



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DESCRIPTION OF THE APPLICATION	CLEANING FLUID
<p>In case of very thin and small apertures, alcohol based fluid with slow evaporation rate is highly recommended. If solvent evaporates too fast (like IPA) then paste at the board is losing the volume and paste without the flux start to be dry and it is very easy to lump oneself, such a big particles can block small apertures and creates misprints. In case of normal apertures, cleaning fluid with faster evaporation may be used. Water based cleaning fluid is also suitable solution because of lower impact to the environment.</p>	<p><b>Proton® 21</b> – Alcohol based cleaning fluid with slow evaporation rate. Intended for use as a cleaning agent in screen printer.</p> <p><b>Proton® 29</b> – Alcohol based cleaning fluid with fast evaporation rate. Intended for use as a cleaning agent in screen printer. Highly compatible with all materials of the printers.</p> <p><b>Decotron® 23</b> – pH neutral water based one phase cleaning fluid with average evaporation rate. As water based fluid does not dissolve flux so fast.</p>

# UNSOLDERED SMT ADHESIVE CLEANING STENCILS, SQUEEGEES, PUMPPRINTS

May be combined with cleaning of unsoldered SMT paste



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CLEANING TECHNOLOGY	CLEANING FLUID
<p><b>Vertical spray in air InJet® 388 machines</b> and <b>InJet® TWIN machines</b> are the most suitable because of their power to remove adhesives from a small apertures.</p>	<p><b>Proton® 69</b> – alcohol based one phase cleaning fluid Proton® 69 excels in its ability to dissolve or disperse the uncured SMT adhesives. Proton® 69 is highly compatible with stencils. This solution is suitable for combination of cleaning uncured soldering paste and adhesives in one technology. Alcohol based cleaning fluids are required for cleaning of most SMT adhesives. Water based fluids could cure the small pieces of adhesive that can lead to blocking of pipes in the cleaning machine.</p>
<p><b>Manual pre-cleaning</b> of the stencil is recommended in case of high pollution level to increase lifetime of the cleaning fluid and shorten cleaning process. Just take a wipe, spray the fluid on the stencil or squeegee and wipe off the adhesive from the surface.</p>	<p><b>Stencil Cleaner 11</b> or <b>Proton® 581</b> in sprayer are commonly used for manual cleaning or pre-cleaning of the stencil. It doesn't leave any oily residues and easily removes the adhesive from the surface.</p>



# DUST, RUST, GREASE CLEANING



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POSSIBILITIES	CLEANING MACHINE	CLEANING FLUID
PLASTIC PARTS, CLEAN ROOM APPLICATIONS	InJet® 888 machines, InJet® 388 machines, InJet® TWIN machines, Sonix®, AirJet®	Decotron® 239
OLD PCBs FOR REWORK	InJet® 888, InJet® 388 machines, InJet® TWIN machines, Sonix®, AirJet®	Decotron® T389
MACHINE PARTS	InJet® 888, Sonix®, AirJet®	Decowash NW 109, Proton® 21, Proton® 29

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS
<p><b>InJet® 388</b> machines and <b>InJet® TWIN</b> machines have vertical high pressure spray in air technology that is suitable for cleaning small parts or PCBs required to be cleaned fast.</p>	<p><b>Decotron® 239</b> – neutral water based one phase cleaning fluid able to remove small dust particles. Compatible with most of plastics. Excels in its high evaporation rate what could be appreciated in the drying step. Use at temperature 45 °C to avoid foaming.</p>
<p><b>Horizontal InJet® 888</b> machine is a common solution because of the cappacity and big cleaning chamber where large pieces of different shape and heavy PCBs with large components may be cleaned. Unwanted shadow effect in case of cleaning PCBs may be observed.</p>	<p><b>Decowash NW 109</b> water based cleaning fluid that is able to emulsify the old oily impurities into the cleaning fluid.</p>
<p><b>Airbubble AirJet®</b> machines are the best choice when cleaning complicated machine parts because it enables direct contact of the cleaned part with the fluid. The liquid gets into all the cavities where it dissolves the impurity and release it into the fluid.</p>	<p><b>Decotron® T389</b> – alkalic water based one phase cleaning fluid able to remove dust and rust from old PCBs intended for rework.</p>
<p><b>Ultrasonic Sonix®</b> machines are good alternative when more powerful technology is needed.</p>	<p><b>Proton® 21</b> and <b>29</b> are alcohol based alternatives for special applications when water based cleaning fluids are insufficient.</p>

# CONFORMAL COATING CLEANING

## PCBs, COATING FRAMES, MACHINE PARTS



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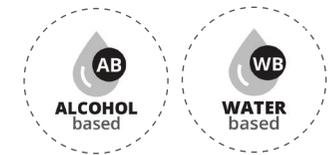
TYPE OF CONFORMAL COATING	CLEANING MACHINE	CLEANING FLUID	RINSING FLUID
ACRYLIC	InJet® 388 machines, InJet® TWIN machines, InJet® 888, Sonix®, AirJet® machines	Proton® 69	DI water
URETHANE	Sonix®, Sonix® Piano, AirJet®, AirJet® Piano	Proton® 537	DI water
SILICONE	AirJet® Piano, Sonix® Piano	Proton® 703	Proton® R07, Decotron® ACW 115

DESCRIPTION OF THE CLEANING MACHINES	DESCRIPTION OF THE CLEANING FLUIDS	DESCRIPTION OF THE RINSING FLUIDS
<p><b>InJet® 388</b> machines and <b>InJet® TWIN</b> machines have vertical high pressure spray in air technology. The most common and comfortable solution that provides perfect cleaning result in acceptable time in case of cleaning Acrylic conformal coating from PCBs or coating frames.</p>	<p><b>Proton® 69</b> – environmentally and user friendly alcohol based cleaning fluid with high flash point able to dissolve cured acrylic based conformal coatings. It excels in its compatibility properties.</p>	<p><b>Decotron® ACW 115</b> is acidic water based rinsing fluid used as a rinsing agent for aluminium coating frames after cleaning in Proton® 703.</p>
<p><b>Horizontal InJet® 888</b> machines are suitable for its high capacity, but the time needed for cleaning may be higher than in InJet® 388 and InJet® TWIN because of a shadow effect in case of cleaning Acrylic conformal coatings.</p>	<p><b>Proton® 537</b> is the most effective cleaning fluid for urethane based cured conformal coatings able to dissolve or separate the coating from the surface. Manual cleaning by brush after the process is often required for the perfect result in some cases.</p>	<p><b>Proton® R07</b> is alcohol based rinsing fluid used as a rinsing agent for PCBs after cleaning in Proton® 703.</p>
<p><b>Airbubble AirJet®</b> machines are the cheapest alternative, but the process is not fully automatic and closed. Air bubbles mix the fluid to ensure circulation. Recommended to use in case of easy to clean conformal coating.</p>	<p><b>Proton® 703</b> is able to dissolve cured silicone. It is compatible with most of materials used in electrotechnical industry.</p>	
<p><b>Airbubble AirJet® Piano</b> fully automatic and closed machine is the best solution for cleaning silicones because of the unpleasant odor of the fluid and ability of direct contact between the cleaned material and the cleaning fluid. Air bubbles mix the fluid to ensure circulation.</p>		
<p><b>Ultrasonic Sonix®</b> machines are good alternative when more powerful technology is needed. This technology enables a direct contact of the cleaned material with the cleaning fluid powered by ultrasonic force.</p>		
<p><b>Ultrasonic Sonix® Piano</b> machine is recommended, when fully automatic and closed process is needed and the airbubble technology is not sufficient.</p>		



# CLEANING FLUIDS PROPERTIES

	Suitable for cleaning Applications:	Water / Alcohol	Availability in con. / dilution		pH	Flash Point	CLP classification	Number of phases	Packaging	Special recommendations
			✓							
Decotron® 333F	Soldered PCBs, one side soldered one side misprints	Water	✓	1:4	10	✗	✗	1	25 L	
Decotron® CP 381	Soldered PCBs, one side soldered one side misprints	Water	✓	1:4	10	✗	✗	2	25 L	Only for machines with separate cleaning and rinsing chambers.
Decotron® C55S	Soldered PCBs	Water	✗	-	10	✗		2	25 L	Only for machines with separate cleaning and rinsing chambers.
Flux Remover 4	Soldered PCBs	Alcohol	-	-	-	<10 °C		1	400 ml spray	Spray for manual cleaning. Absorb residues through DCT ESD wiper.
Decotron® T389F	Soldering frames Reflow oven parts	Water	✓	1:3-5	10	✗		1	25 L	
Decotron® T390	Soldering frames Reflow oven parts	Water	✓	1:3	11	✗		1	25 L	
Decotron® T300S	Soldering frames, Reflow oven parts	Water	✓	1:4	10	✗		1	25 L	
Decotron® T332	Reflow oven parts, Soldering frames	Water	✓	1:3-5	11	✗		1	25 L	Only for use in AirJet® machines because of possible foaming.
Reflow Cleaner 88	Reflow oven parts	Water	-		10	✗		1	25 L, 10 L, 5L, 1 L sprayer	Sprayer for manual cleaning.
Reflow Cleaner 94	Reflow oven parts	Water	-		10	✗		1	25 L, 10 L, 5 L, 1 L sprayer	Sprayer for manual cleaning.
Decotron® M50	Reflow oven parts	Water	-		10	✗		1	25 L, 10 L, 5 L, 1 L sprayer	Sprayer for manual cleaning.
Decotron® 233	Stencils, squeegees, misprints	Water	✓	1:5	7	✗	✗	1	25 L	
Decotron® 250	Stencils, squeegees, misprints	Water	✓	1:2-5	7	✗	✗	2	25 L	Only for machines with separate cleaning and rinsing chambers.
Stencil Cleaner 11	Stencils, squeegees + adhesive	Alcohol	-		-	49 °C		1	25 L, 10 L, 5 L, 1 L sprayer	Sprayer for manual cleaning.



**HIGH PURITY GRADE**  
chemical substances

available as **CONCENTRATE**  
and **READY MIX**





# CLEANING FLUIDS PROPERTIES

	Suitable for cleaning Applications:	Water / Alcohol	Availability in con. / dilution		pH	Flash Point	CLP classification	Number of phases	Packaging	Special recommendations
<b>Decotron® 23</b>	Under Stencil	Water	✓	1:3	7	✗		1	25 L, 5 L	
<b>Proton® 21</b>	Under Stencil Machine parts	Alcohol	-		-	65 °C		1	25 L, 5 L	
<b>Proton® 29</b>	Under Stencil Machine parts	Alcohol	-		-	40 °C		1	25 L, 5 L	
<b>Proton® 581</b>	Adhesive	Alcohol	-		-	61 °C		1	25 L, 10 L, 5 L, 1 L sprayer	
<b>Proton® 69</b>	Acrylic coating Adhesive	Alcohol	-		-	68 °C		1	25 L, 5 L	Spray in air machines should be suited.
<b>Decotron® 239</b>	Plastic parts Clean room applications	Water	✓	1:5-6	7	✗		1	25 L	Use at temperatures 45 °C to avoid foaming.
<b>Decotron® T389</b>	Old PCBs for rework	Water	✓	1:3	10	✗		1	25 L	
<b>Decowash NW 109 conc.</b>	Machine parts	Alcohol	-		-	65 °C		1	25 L	Concentrate intended for mixing with water in ratio 1:5-6.
<b>Proton® 537</b>	Urethane coating	Alcohol	-		-	91 °C		1	25 L, 5 L	
<b>Proton® 703</b>	Silicone coating	Alcohol	-		-	67 °C		1	25 L, 5 L	Recommended for fully automatic closed process to avoid unpleasant odor.
<b>Proton® R07</b>	Rinsing PCBs after cleaning silicones	Alcohol	-		-	75 °C	✗	1	25 L, 5 L	
<b>Decotron® ACW 115</b>	Rinsing aluminium frames after cleaning silicones	Water	-		3	✗	✗	1	25 L	

Exact physical and chemical properties and other detailed information can be found in the technical and safety data sheet of the relevant fluid or cleaning machine. Contact a DCT specialist at [www.dct.cleaning](http://www.dct.cleaning) to introduce and set the process, to optimise the process and to resolve process problems – trial test. Decotron® and Proton® are the protected registered trademarks of DCT Czech s.r.o.



## DCT FLUIDS

ARE MADE IN ACCORDANCE WITH ISO 9001 STANDARD



REACH SVHC



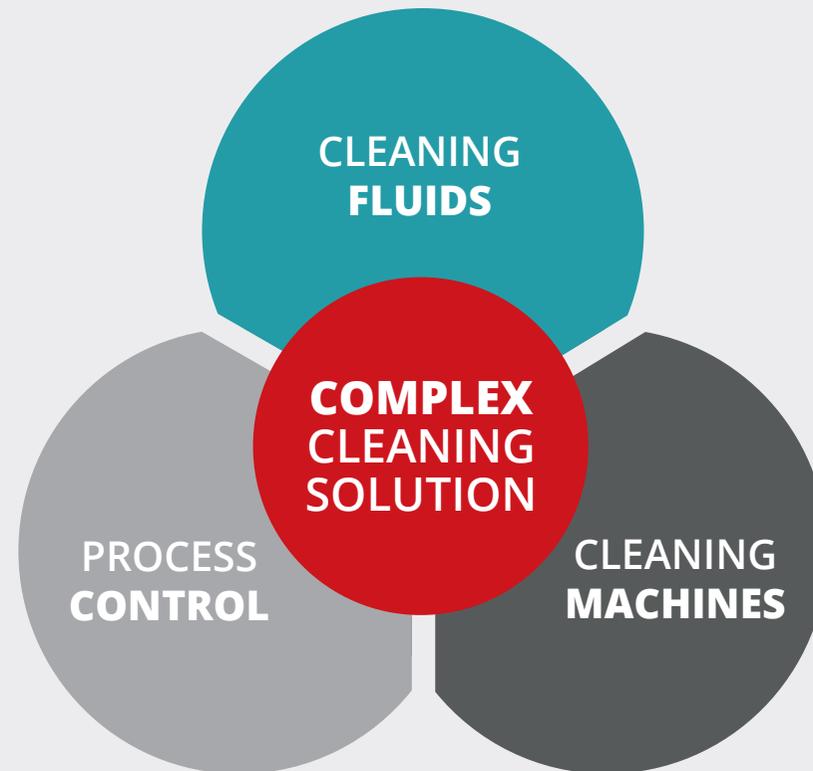
RoHS Compliant



BIODEGRADABLE

ENVIRONMENTAL FRIENDLY FLUIDS

DCT offer the **WHOLE CLEANING SOLUTION** for all cleaning applications in electrotechnical industry



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