



Vapor Degreaser & Ultrasonic **CLEANERS**



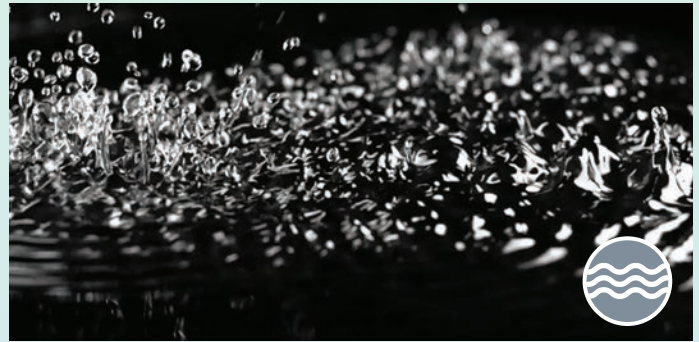
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Vapor Degreaser & Ultrasonic SOLVENTS



VAPOR DEGREASER CLEANING

Cleaning product is boiled so only pure solvent is sent up in the vapor zone. The solvent then condenses onto the part, providing the cleaning action. For more difficult soils, parts can be submerged into the boil sump, which is often supplemented with ultrasonics. Because this is a closed-loop process, where the cleaner evaporates and condenses over-and-over, a specialized solvent is needed.



ULTRASONIC CLEANING

Parts are submerged into a cleaning solvent, and transponders send sound waves through the material to break up the soils. Without some kind of rinse, like in a vapor degreaser, there is potential for cross contamination from previous cleanings in the same solvent bath. A nonflammable solvent is recommended, especially when the solvent is heated.

DEGREASERS

Electro-Wash® Tri-V

Extra-strength, nonflammable electronics cleaner degreaser for replacing n-propyl bromide

- Nonflammable
- Fast drying
- Does not contain n-propyl bromide, trichloroethylene, or perchloroethylene
- NSF registered K1 and K2
- Vapor pressure - 267 mmHg (@20°C/68°F)

Set temperatures:

Boil sump	127°F / 53°C
High solvent	136°F / 58°C
Refrigerant high	109°F / 43°C

VV114	1 gal / 3.7 L liquid
VV514	5 gal / 19 L liquid
VV5514	53 gallons / 200 L liquid



Max-Kleen™ Tri-V™

Extra-strength, nonflammable heavy duty degreaser for replacing n-propyl bromide

- Full azeotrope - ideal when reclamation process is required
- Nonflammable
- Fast drying
- Does not contain n-propyl bromide, trichloroethylene, or perchloroethylene
- NSF registered K1 and K2
- Vapor pressure - 405 mmHg (@ 77°F/25°C)

Set temperatures:

Boil sump	117°F / 47°C
High solvent	126°F / 52°C
Refrigerant high	99°F / 37°C

VV179	1 gal / 3.7 L liquid
VV579	5 gal / 19 L liquid
VV5579	53 gallons / 200 L liquid



The Max-Kleen™ Tri-V™ Advantage

Max-Kleen Tri-V is a true azeotrope, so both the liquid and vapor phases maintain the same composition. It acts as a single component product, so will not fractionate as it boils. This avoids any performance changes as it is used over a long period of time, or is run through a separate reclamation unit.



FLUX REMOVERS



Flux-Off® Tri-V™

Extra strength, nonflammable flux remover for replacing n-propyl bromide



- Nonflammable
- Can be used on energized equipment
- Fast drying
- Does not contain n-propyl bromide, trichloroethylene or perchloroethylene
- Vapor pressure - 267 mmHg (@20°C/68°F)

Set temperatures:

Boil sump 127°F / 53°C
High solvent 136°F / 58°C
Refrigerant high 109°F / 43°C

- VV195** 1 gal / 3.7 L liquid
VV595 5 gal / 18.9 L liquid
VV5595 53 gal / 200 L liquid

Flux-Off® Heavy-Duty

Heavy-duty flux remover for removing encrusted no-clean and rosin flux



- Nonflammable
- Dries fast
- Leaves no residue
- Test on plastics

ES131 1 gal / 3.7 L liquid

Flux-Off® Delta

Extra strength, nonflammable solvent that removes heavy and encrusted flux deposits



- Nonflammable
- Best AK225 replacement chemistry
- Fast drying
- Contains no ozone depleting compounds, low VOC's

DEL192 1 gal / 3.7 L liquid
DEL592 5 gal / 18.9 L liquid
DEL5592 53 gal / 200 L liquid

Flux-Off® VZ

Economical, non-ozone depleting, nonflammable flux remover



- Nonflammable
- Cleans R, RMA, RA, and no-clean flux
- Low odor
- Dries fast
- Leaves no residue

ES6201 1 gal / 3.7 L liquid
ES6255 53 gal / 200 L liquid

Flux-Off® Aqueous

Aqueous flux remover for use in ultrasonics and in-line cleaning systems



- Water-based saponifier for removing all flux types
- Safe on plastics
- Nonflammable
- Concentrated – dilute to adjust cleaning strength
- Requires a water rinse

ES132 1 gal / 3.7 L liquid



Electro-Wash® Delta

Extra-strength, nonflammable electronics cleaner degreaser



- Nonflammable
- Best AK225 replacement chemistry
- Fast drying
- Contains no ozone depleting compounds, low VOC's
- NSF registered K1 and K2

DEL101 1 gal / 3.7 L liquid
DEL5501 53 gal / 200 L liquid

Electro-Wash® NX0

Extra-strength, nonflammable cleaner degreaser



- Nonflammable
- Extra cleaning strength
- Dries fast
- Leaves no residue
- Test on plastics

ES107 1 gal / 3.7 L liquid

Electro-Wash® VZ

Economical, non-ozone depleting, nonflammable universal cleaner degreaser



- Nonflammable
- One cleaner for all soil types
- Low odor
- Evaporates quickly without leaving residue
- Penetrates to clean hard to reach areas

ES6101 1 gal / 3.7 L liquid
ES6155 53 gal / 200 L liquid

Electro-Wash® Two Step

Extra-strength, nonflammable ultrasonic and immersion cleaner

















- Nonflammable
- Extra cleaning strength
- Leaves no residue when rinsed with Electro-Wash PX or Electro-Wash CZ
- Increasing temperature increases solvency

ES125A 1 gal / 3.7 L liquid



Product Selection Guide

Cleaner Degreasers	Specifications					Degreasing				Flux Removal			Cleaning Methods		
	Plastic Safe	Nonflammable	VOC-EPA	GWP	Boiling Point	Grease	Oil	Ionic Soils	Rosin Based*	No-Clean SA-Synthetic	Water Soluble	Removes White Residue	Aerosol Available	Vapor Degreasing	Ultrasonics
Electro-Wash® Tri-V	NR	✓	95%	16	118°F/48°C	1	1	2	1	1	NR	✓			
Max-Kleen™ Tri-V	NR	✓	90%	32	108°F/42°C	1	1	2	1	1	NR	✓	✓		
Electro-Wash® Delta	2	✓	85%	229	99°F/37°C	2	1	2	1	1	NR	✓	✓		
Electro-Wash® NXO	3	✓	50%	160	102°F/39°C	1	1	2	1	1	2	✓	✓		
Electro-Wash® VZ	2	✓	45%	676	95°F/35°C	3	1	2	1	1	NR		✓		
Electro-Wash® Two Step	NR	✓	100%	-	400°F/204°C	1	1	1	2	2	NR	✓	✓		
Flux Removers															
Flux-Off® Tri-V	NR	✓	95%	16	118°F/48°C	1	1	2	1	1	NR	✓			
Flux-Off® Delta	2	✓	52%	2	99°F/37°C	1	1	3	1	1	NR	✓	✓		
Flux-Off® Heavy Duty	3	✓	50%	160	102°F/39°C	1	1	2	1	1	2	✓	✓		
Flux-Off® VZ	2	✓	75%	645	95°F/35°C	3	1	2	1	2	NR		✓		
Flux-Off® Aqueous	1	✓	16%**	-	212°F/100°C	2	1	1	1	1	1	✓			
1 – Excellent 2 – Good 3 – Fair NR – Not Recommended *R, RMA, RA, Rosin-based No-Clean **Diluting with DI water will reduce VOC															



nPB Replacements for Greater Safety

n-propyl bromide (also known as nPB or 1-Bromopropane, CAS 106-94-5) is under close scrutiny by local and national government officials and health and safety managers because of safety concerns.

Studies have shown that exposure to nPB can cause negative neurological and reproductive effects. The National Toxicology Program (NTP) has stated that nPB is "reasonably anticipated to be a human carcinogen", based on increased lung, large intestine and skin cancers observed in animal studies.

OSHA has issued a Hazard Alert detailing worker safety concerns. The American Conference of Governmental Industrial Hygienists (ACGIH) recommends a 10 ppm time-weighted average threshold limit, but has proposed a lower 0.1 ppm (ACGIH 2013). (Source: OSHA Hazard Alert - https://www.osha.gov/dts/hazardalerts/1bromopropane_hazard_alert.html)

Safety, regulatory and liability concerns are driving the change from nPB, and Chemtronics® has the ideal replacements with Tri-V™ High Performance Solvents. Electro-Wash® Tri-V, Max-Kleen™ Tri-V, and Flux-Off® Tri-V offer the cost and cleaning performance of nPB, but with much greater safety!



Contact us at 800-645-5244 x154 or AskChemtronics@chemtronics.com to schedule an in-house evaluation with a local sales representative.