

Chemtronics[®]

Solvent Cleaner Guide

INTRODUCING



Tri-V[™]

High Performance Solvents

The Safer Option for Your Cleaning Process

All Tri-V[™] solutions feature:

- Powerful cleaners for flux, oils, dirt, grease and more
- Nonflammable, no flash point
- Does not contain n-propyl bromide (nPB), trichloroethylene or perchloroethylene
- Ideal for vapor-degreasing
- Evaporates quickly and leaves no residues
- Stabilized for metals such as aluminum, magnesium, titanium and brass

Look inside for more information on Tri-V[™] and other powerful Chemtronics cleaners!



Chemtronics®

Nothing Performs Like Chemtronics



Tri-V™ – Safer, Nonflammable High Performance nPB Replacement Chemistry

Cleaning solvent choices are being constrained by regulations, safety concerns and cost. **Chemtronics Tri-V™ High Performance Solvents expand cleaning chemistry options.** These engineered cleaning solutions offer powerful cleaning performance for vapor degreasing, ultrasonic cleaning and cold cleaning.

- Cost and cleaning performance of n-propyl bromide (nPB), but without the safety concerns.
- Aerosol and bulk packaging available for benchtop cleaning, immersion cleaning, or in a vapor degreaser.
- Available in Electro-Wash® Tri-V for electronic cleaning, Max-Kleen™ Tri-V™ for heavy-duty cleaning, and Flux-Off® Tri-V™ for removing flux from electronic assemblies.

Chemtronics offers a wide variety of other high performance solvent cleaners:



Delta – Powerful, nonflammable AK225 replacement chemistry



Verizane™ (VZ) – Nonflammable and effective on most sensitive plastics



Cirozane™ (CZ) – Nonflammable and safest on sensitive plastics

Contact Chemtronics today! Application specialists are ready to identify the best choice for you.

770-424-4888 | 800-645-5244 • askchemtronics@chemtronics.com



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!



FLUX-OFF® Flux Removers

Flux removal is critical to insure reliable circuitry. Not only unsightly, some flux residue can promote short circuits and corrosion, degrading or destroying the printed circuit board. Flux-Off® flux removers are specially formulated to remove all types of lead-free, rosin (types R, RA and RMA), no-clean, water soluble and synthetic (type SA) flux.



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

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



VV195

VV595

Product Selection Guide

	Primary Flux Residue Cleaned				Features				Cleaning Methods								
	Rosin Based*	No-Clean SA-Synthetic	Water Soluble	Removes White Residue	Plastic Safe	Nonflammable	No Ozone Depleting Chemicals	Dries Fast	Aerosol Spray	BrushClean™ System	Hand Cleaning	Vapor Degreasing		Ultrasonics	Immersion	Benchtop Spray System	Rinsing Recommended
Flux-Off® Tri-V	1	1	NR	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	Strongest Cleaner
Flux-Off® Delta	1	1	NR	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	
Flux-Off® Heavy Duty	1	1	2	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Flux-Off® VZ	1	2	NR			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Flux-Off® Complete	1	1	NR				✓	✓	✓	✓		✓	✓				
Flux-Off® Lead-Free	1	2	2				✓	✓	✓	✓			✓	✓			
Flux-Off® No Clean Plus	1	1	2	✓			✓	✓	✓	✓			✓	✓			
Flux-Off® Rosin	1	2	2		✓		✓	✓	✓	✓			✓	✓			
Flux-Off® Water Soluble	2	NR	1		✓		✓	✓	✓	✓			✓	✓			
Flux-Off® Aqueous	1	2	1	✓	✓	✓	✓					✓	✓	✓	✓	✓	
Flux-Off® CZ	1	2	NR		✓	✓	✓	✓	✓	✓	✓						Most Plastic-Safe

1- Excellent 2- Good NR-Not Recommended *R, RMA, RA, Rosin-based No-Clean

Flux Removers



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



- DEL1692** 12 oz / 340 g aerosol
- DEL892B** 6 oz / 141 g BrushClean™ System
- 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
- Test on plastics
- Ideal AK225 replacement

- ES6200** 12 oz / 340 g aerosol
- ES6201** 1 gal / 3.7 L liquid
- ES6255** 53 gal / 200 L liquid

Flux-Off® Lead-Free

Powerful flux remover for high temperature, lead-free flux removal

- Engineered for removing high temperature, lead-free flux
- Can also be used to remove tin/lead fluxes
- Flammable
- Evaporates quickly without leaving residue

- ES1697** 12 oz / 340 g aerosol
- ES897B** 6 oz / 170 g BrushClean™ System
- ES197** 1 gal / 3.7 L liquid

Flux-Off® Rosin

Plastic safe flux remover for cleaning all rosin and rosin-based no-clean flux

- Safe on plastics
- Flammable
- Evaporates quickly
- Leaves no residue

- ES1035** 10 oz / 283 g aerosol
- ES1035B** 10 oz / 283 g BrushClean™ System
- ES835B** 5 oz / 141 g BrushClean™ System
- ES135** 1 gal / 3.7 L liquid
- ES535** 5 gal / 18.5 L liquid
- ES5535** 55 gal / 208 L liquid

Flux-Off® Water Soluble

Plastic safe flux remover for cleaning water-soluble flux

- Safe on plastics
- Flammable
- Dries fast
- Leaves no residue

- ES1530** 13.5 oz / 383 g aerosol
- ES130** 1 gal / 3.7 L liquid

Flux-Off® No Clean Plus

Powerful economical flux remover for cleaning no-clean flux

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

- ES1696** 12 oz / 340 g aerosol
- ES896B** 6 oz / 170 g BrushClean™ System
- ES196** 1 gal / 3.7 L liquid
- ES596** 5 gal / 18.5 L liquid
- ES5596** 55 gal / 208 L liquid

Flux-Off® Aqueous

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

- Safe on plastics
- Nonflammable
- Concentrated – dilute to adjust cleaning strength
- Requires a water rinse

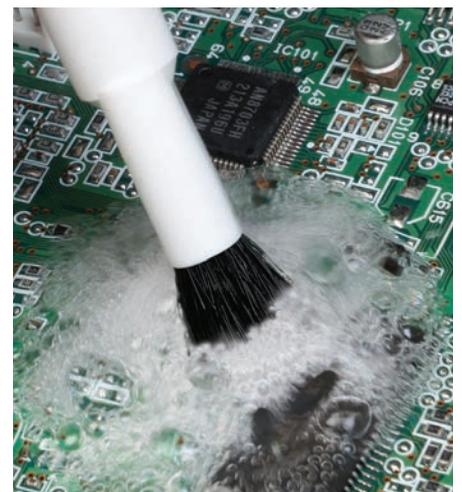
- ES132** 1 gal / 3.7 L liquid

Flux-Off® Complete

Powerful, economical flux remover for cleaning no-clean flux

- Test on plastics
- Flammable
- Not for use on energized equipment

- ES1698** 12 oz / 340 g aerosol
- ES198** 1 gal / 3.7 L liquid
- ES598** 5 gal / 18.9 L liquid
- ES5598** 53 gal / 200 L liquid



BrushClean™ System for difficult fluxes

Electro-Wash® Cleaner Degreasers

Electro-Wash® line of high purity solvents are the finest, most effective products made for critical cleaning and degreasing. Each cleaning agent possesses unique properties suited to specific applications — from precision cleaning of sensitive equipment to heavy duty degreasing. Electro-Wash® cleaner degreasers are engineered to clean a wide variety of soil, oil, grease, oxides and handling contamination from equipment and assemblies.

NEW!

Electro-Wash® Tri-V

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

- Nonflammable
- Can be used on energized equipment
- Fast drying
- Does not contain n-propyl bromide, trichloroethylene, or perchloroethylene

VV1614 12 oz / 340 g aerosol

VV114 1 gal / 3.7 L liquid

VV514 5 gal / 19 L liquid

VV5514 53 gallons / 200 L liquid



VV1614

VV114

VV514

Product Selection Guide

Product	Features						Cleaning Ability			Cleaning Methods				
	Plastic Safe	Nonflammable	No Ozone Depleting Chemicals	Dries Fast	Dielectric Breakdown (Aerosol)	Grease	Oil	Ionic Soils	Aerosol Spray	Vapor Degreasing	Ultrasonics	Hot Immersion	Cold Immersion	
Cleaner Degreasers														
Electro-Wash® Tri-V		✓	✓	✓	8kV	1	1	2	✓	✓	✓		✓	Strongest Cleaner
Electro-Wash® Delta		✓	✓	✓	31kV	2	1	2	✓		✓		✓	
Electro-Wash® NXO		✓	✓	✓	15kV	1	1	2	✓	✓	✓		✓	
Electro-Wash® QD	✓	✓	✓	✓	11kV	3	1	2	✓					
Electro-Wash® VZ		✓	✓	✓	17kV	3	1	2	✓	✓	✓		✓	
Electro-Wash® PX	✓		✓	✓		1	1	1	✓				✓	
Electro-Wash® MX	✓		✓			1	1	1	✓					
Electro-Wash® PR	✓		✓	✓		1	1	-	✓					
Electro-Wash® CZ	✓	✓	✓	✓	17kV	3	2	2	✓	✓	✓		✓	
Electro-Wash® Two Step		✓	✓			1	1	1			✓	✓	✓	
Industrial Degreasers														
Max-Kleen® Tri-V		✓	✓	✓	8kV	1	1	2	✓	✓	✓		✓	
Max-Kleen™ Citrus		✓	✓		62kV	2	2	2	✓		✓	✓	✓	
Max-Kleen™ Citrus HF			✓		62kV	1	1	3			✓	✓	✓	

1-Excellent 2-Good 3-Fair R-Regular Strength X-Extra Strength

Cleaner Degreasers



DEL1608B

DEL101

DEL2201

ES6100

ES810

ES1603

ES125A

ES1621

Electro-Wash® QD

Fast drying, nonflammable electronics cleaner degreaser

- Nonflammable, nonchlorinated
- Excellent material compatibility
- Displaces moisture
- Evaporates fast, minimizes down time

DEL1608B 12 oz / 340 g aerosol

Electro-Wash® Delta

Extra-strength, nonflammable electronics cleaner degreaser



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

DEL1601 12 oz / 340 g aerosol

DEL2201 19 oz / 538 g aerosol

DEL101 1 gal / 3.7 L liquid

DEL5501 53 gal / 200 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
- Test on plastics
- Ideal AK225 replacement

ES6100 12 oz / 340 g aerosol

ES6119 19 oz / 538 g aerosol

ES6101 1 gal / 3.7 L liquid

ES6155 53 gal / 200 L liquid

Electro-Wash® PX

Extra-strength universal cleaner and degreaser safe for use on plastics

- Safe on plastics
- Flammable
- Xtra cleaning strength
- Dries fast
- Leaves no residue
- Removes organic and ionic soils

ES810 5 oz / 141 g trigger aerosol

ES1210 12.5 oz / 354 g aerosol

ES110 1 gal / 3.7 L liquid

Electro-Wash® PR

Regular-strength cleaner safe for use on plastics

- Safe on plastics
- Flammable
- Dries fast
- Leaves no residue

ES1603 10 oz / 283 g aerosol

Electro-Wash® Two Step

Extra-strength, nonflammable ultrasonic and immersion cleaner

- Nonflammable
- Xtra cleaning strength
- Leaves no residue when rinsed with Electro-Wash PX or Electro-Wash CZ
- Test on plastics
- Increasing temperature increases solvency

ES125A 1 gal / 3.7 L liquid

Electro-Wash® NX0

Extra-strength, nonflammable cleaner degreaser

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

ES1607 12 oz / 340 g aerosol

ES107 1 gal / 3.7 L liquid

Electro-Wash® MX

Extra-strength, plastic safe universal cleaner with moderate evaporation time

- Safe on plastics
- Flammable
- Xtra cleaning strength
- Moderate evaporation rate increases cleaning power
- Leaves no residue
- Removes organic and ionic soils

ES1621 10 oz / 283 g aerosol

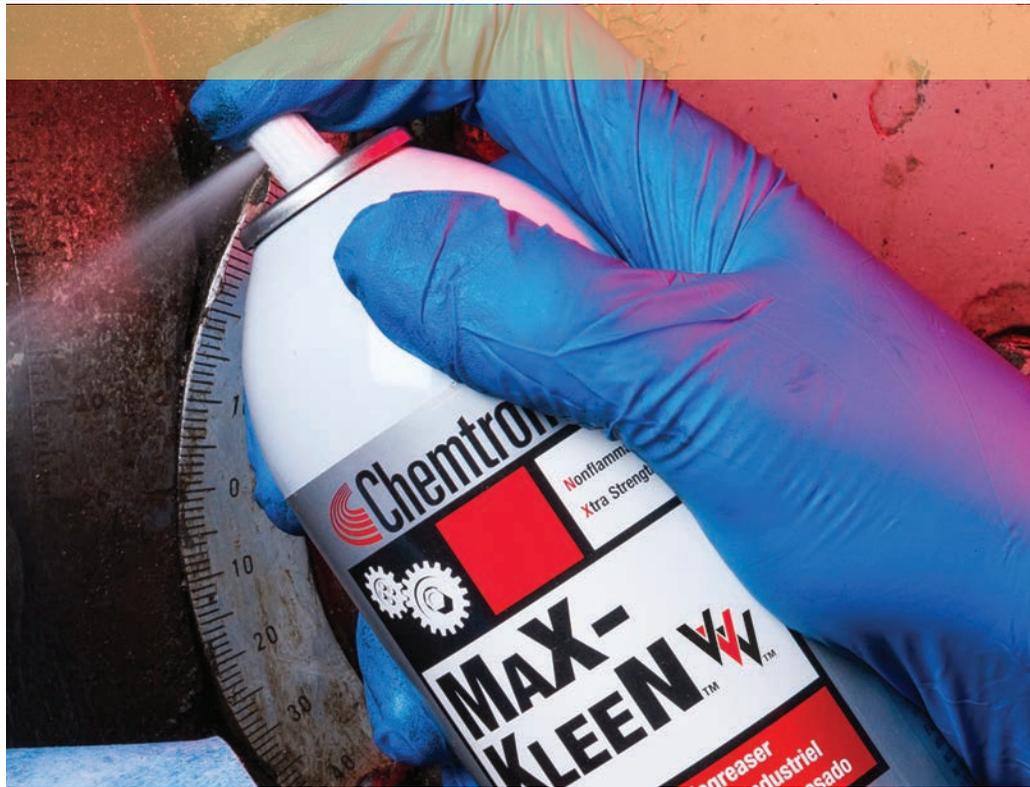
CP421 25 - 8" x 10" / 20.3 cm x 10" / 25.4 cm premoistened wipes (9 ml each)

FW2150 9 g / 0.32 oz pen



Max-Kleen™ Industrial Degreasers

Max-Kleen™ heavy-duty degreasers rise to the challenge of your most difficult jobs. These industrial strength cleaners offer fast, easy removal of grease, tar, asphalt, oil and grime. The extra-strength your toughest degreasing jobs require.



Max-Kleen™ Tri-V™

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

- Nonflammable
- Can be used on energized equipment
- Fast drying
- Does not contain n-propyl bromide, trichloroethylene, or perchloroethylene

VV2279	20 oz / 567 g aerosol
VV179	1 gal / 3.7 L liquid
VV579	5 gal / 19 L liquid
VV5579	53 gallons / 200 L liquid

Max-Kleen™ Citrus

Citrus-based extra-strength degreaser

- Citrus-based formula
- Engineered for fast removal of oxidized grease, sludge, wax, tar and oil
- Dielectric strength of 62 kV
- Does not contain chlorinated solvents
- Safe on most metals and plastics
- Non-corrosive and nonconductive
- NSF Registered — Nonfood Compounds/Code C1

ES2289	15 oz / 425 g aerosol
ES189	1 gal / 3.7 L liquid
ES5589	53 gallons / 200 L liquid

Max-Kleen™ Citrus HF

High flashpoint citrus-based degreaser for heavy greases

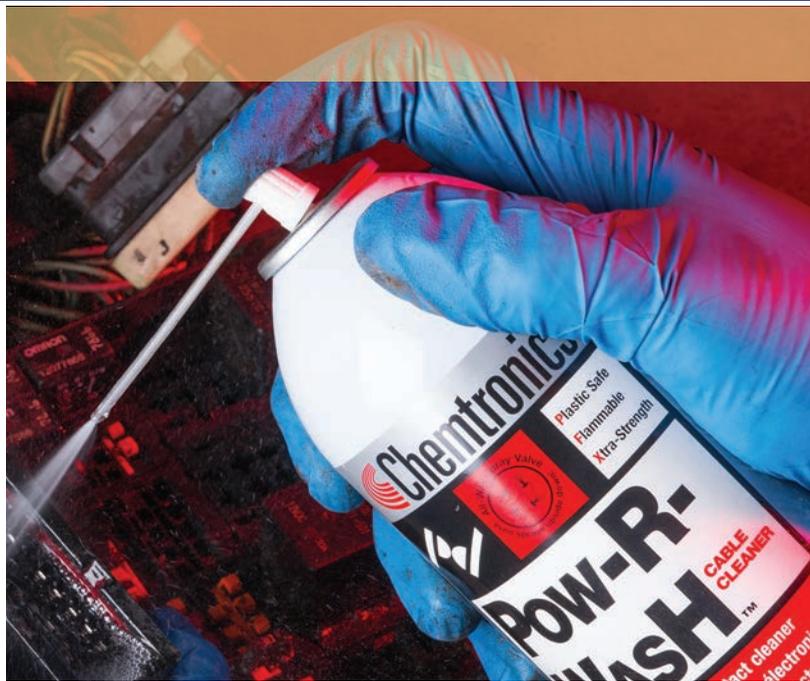
- Citrus-based formula with moderate evaporation
- Quickly removes all types of tough soils including oxidized oil and grease
- Safe for use on most metals and plastics
- Flashpoint greater than 140° F
- Non-corrosive and nonconductive
- Low Toxicity
- Leaves no residue

ES2291	13.5 oz / 383 g aerosol
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Contact Cleaners

Pow-R-Wash® Contact Cleaners

Pow-R-Wash™ high purity formulations remove environmental contaminants and protect contacts from corrosion and frictional wear. Contact cleaners restore electrical continuity to all electronic and electrical contacts by penetrating and removing insulating oil and grease, conductive carbon soil, and insulative oxides from contact surfaces. By restoring full circuit continuity, Chemtronics contact cleaners improve the performance of all equipment that rely on electrical contacts.



Pow-R-Wash™ VZ

Economical non-ozone depleting, nonflammable contact cleaner safe for use on live circuits

- Nonflammable
- Dielectric breakdown of 15 kV
- Noncorrosive
- Evaporates quickly without leaving residue
- Test on plastics
- Ideal AK225 replacement

ES6300 12 oz / 340 g aerosol

ES6301 1 gal / 3.7 L liquid

Pow-R-Wash™ Delta

Nonflammable cleaner safe for use on powered-up contacts and surrounding plastics

- Nonflammable
- Best AK225 replacement chemistry
- Fast drying
- Dielectric breakdown 30 kV
- Contains no ozone depleting compounds, low VOC's



DEL1681 12 oz / 340 gm aerosol

Pow-R-Wash™ Cable Cleaner

Extra-strength, plastic safe cable and contact cleaner with a moderate evaporation time

- Safe on plastics
- Flammable
- Dielectric breakdown of 63 kV
- Leaves no residue

ES2425 13.5 oz / 385 g aerosol

Pow-R-Wash™ PR

Regular-strength contact cleaner safe for use on plastics

- Safe on plastics
- Flammable
- Dielectric breakdown of 44 kV
- Dries fast
- Leaves no residue

ES1605 10 oz / 283 g aerosol

For more information, contact our

Technical Hotline at 770.424.4888 ext 137 or AskChemtronics@chemtronics.com.

Call 800-645-5244 ext. 154 to schedule an in-house evaluation with a local sales representative.

 **Chemtronics®**
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