Max-Kleen™ Tri-V™ Electronics Cleaner

Product# VVV2279, VVV579, VVV5579

Product Description

Max-Kleen Tri-V is ideal for removal of all types of soils from electronic circuits and relays. Tri-V nPB replacement chemistry is a novel new chemistry that does not contain any n-propyl bromide, TCE, any hazardous air pollutants or ozone depleting compounds. It is the ideal solvent for most electronic cleaning applications. This extra-strength cleaner evaporates quickly without leaving a residue behind.

- Quickly removes all types of tough soil
- Best product for electronic applications
- Dielectric strength of >30 kV (liquid)
- Does not contain n-propyl bromide, trichloroethylene, perchloroethylene, HAP's, or any ozone depleting compounds
- Nonflammable, no flash point
- Full azeotrope – ideal when reclamation process is required
- Stabilized for metals such as aluminum, magnesium, titanium, and brass
- Noncorrosive, safe for sensitive metals
- Leaves no residue

Specifications: Meets Airbus UK ABR 9-0140, Boeing BSS7432, GE SM2369-10, report #Q40358, GE 70-16-80 Hot Corrosion Test, APR 1755B Stock Loss Test

Typical Applications

Max-Kleen Tri-V can be used for all repair, maintenance, and manufacturing applications including:

- Removal of soils from electronic circuits
- Cleans contacts, relays and switches and fuse blocks
- All repair and maintenance cleaning including: electronic switches and logic controllers
- Medical instruments like monitoring devices, oxygen and gas lines
- Orthopedic implants

...and act as carrier fluid like for silicone-based lubricant coatings.

Availability

VVV2279	20 oz. / 567 g Aerosol 5 gal. /
VVV579	19 L Liquid 53 gal. / 200 L
VVV5579	Liquid

Typical Product Data and Physical Properties

Boiling Point:	Aerosol: 118°F / 48°C	Liquid: 108°F / 42°C
Solubility in Water:	Negligible	
Specific Gravity:	Aerosol: 1.22	Liquid: 1.27
Vapor Pressure @68°F	Aerosol: 175 mm Hg	Liquid: 405mmHg
Appearance	Clear, colorless liquid	
Odor	Mild	
Flash Point (TCC):	None	
Evaporation Rate: (butyl acetate =1)	>1	
Dielectric Breakdown (ASTM D-877)	Aerosol: 8 kV	Liquid: 32 kV
VOC* Content:	Aerosol:	Liquid
CARB	73%	100%
SCAQMD	854g/L	1138g/L
Federal	70%	90%
Kauri-Butanol (KB) Number	128	
Shelflife	Aerosol: 5 years from DOM	
	Liquid: 2 years after opening	
RoHS Compliant	Yes	

* Volatile Organic Compound (VOC) information is calculated on a weight basis using the VOC definition of California Air Resources Board (CARB) Consumer Product Regulations, South Coast Air Quality Management District (SCAQMD) Rule 102 and the Federal definition published in 40 CFR 51.100(s).

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Compatibility

Max-Kleen Tri-V is compatible with most metals. As with any solvent, compatibility with plastics should be determined on a non-critical area prior to use. Materials such as polystyrene, ABS, polycarbonate and PVC are not compatible with the cleaning solvent in Max-Kleen Tri-V.

Material	Compatibility
ABS	Non-Compatible
Buna-N	Fair
EPDM	Fair
Graphite	Excellent
HDPE	Excellent
LDPE	Good
Lexan	Poor
Neoprene	Fair
Noryl	Poor
Nylon 66	Excellent
Cross-Linked PE	Excellent
Polypropylene	Excellent
Polystyrene	Non-Compatible
PPSU	Excellent
PVC	Excellent
Silicone Rubber	Poor
Teflon	Excellent
Viton	Fair

Performance

Soil Removal – in Vapor Degreaser (non-aerosol only)	
Kester 186 Rosin Flux	100% Removal
Kester 44 Rosin Flux	100% Removal
Lubrizol Corrosion Inhibitor	100% Removal
Unilube All Purpose Grease	91.3% Removal
5W30 Synthetic Oil	100% Removal
Fire Resistant Hydraulic Fluid	100% Removal
Chain Lubricant	100% Removal
Silicone Fluid	100% Removal

Soil Removal – Ultrasonic Cleaning (non-aerosol only)	
Kester 186 Rosin Flux	100% Removal
Kester 44 Rosin Flux	100% Removal
Lubrizol Corrosion Inhibitor	100% Removal
Unilube All Purpose Grease	100% Removal
5W30 Synthetic Oil	100% Removal
Fire Resistant Hydraulic Fluid	100% Removal
Chain Lubricant	100% Removal
Silicone Fluid	100% Removal

Usage Instructions

For industrial use only. Read SDS carefully prior to use.

For aerosol usage - Spray 4-6 inches from surface to clean. Wash parts from top to bottom, allowing the liquid to flush away dissolved soils. For precise application use attached extension tube.

For vapor degreasing or ultrasonic cleaning application, charge sump tank with solvent. For ultrasonic or soak applications, be sure to cover tank when not in use to prevent evaporation.

Vapor Degreaser Setting Guidelines

Boiling point	**108°F / 42°C**
Boil sump temp set	**117°F / 47°C**
High solvent temp set	**126°F / 52°C**
Refrigerant high temp set	**99°F / 37°C**

As with all vapor degreaser equipment and processes, observe all safety precautions, guidelines and operating rules associated with these units. Failure to do so may put operations personnel at risk. Avoid excessive vapor losses, loss of refrigeration, excessive boil sump heat, etc. Make sure all equipment is operated in accordance with the manufacturer's guidelines and instructions. If in doubt, contact your manufacturer immediately.

For Liquid Chemistry ONLY:

Product displays no closed-cup flash point. However, the product contains halogenated compounds, which may present a masking effect on flashpoint testing results. Product contains flammable and nonflammable components, there are cases where flammable vapors may evolve under certain conditions and yet will not exhibit a closed-cup flash point. This phenomenon is noted when a nonflammable component is sufficiently volatile and present in sufficient quantity to inert the vapor space of the closed cup, thus preventing a flash. However, flammable/explosive vapor air mixture may form. Avoid vapor contact with ignition source or extreme heat.

Soak applications - Allow the soiled article to soak in Max-Kleen Tri-V for 5 - 10 minutes, then remove and loosen any remaining soils with a Controlwipes Wipe.

Wipe applications - Wet a Controlwipes Wipe with Max-Kleen Tri-V and wipe away soils.

Technical and Application Assistance

Chemtronics provides a technical hotline to answer your technical and application related questions.
The toll free number is: 1-800-TECH-401.

Note:

This information is believed to be accurate. It is intended for professional end users having the skills to evaluate and use the data properly. CHEMTRONICS does not guarantee the accuracy of the data and assumes no liability in connection with damages incurred while using it.

PHYSICAL PROPERTIES	Max-Kleen™ Tri-V	n-Propyl Bromide (nPB)	Trichloroethylene (TCE)	Perchloroethylene (Perc)	Methylene Chloride
Flash Point	None	None	None	None	None
KB Valu	128	125	129	90	136
Dielectric Strength (kV)	32	24	30	45.7	24
Surface Tension (dynes/cm)	22	24	29	32	27
Evaporation Rate (n-butyl acetate =1)	>1	0.28	4.45	1.5	7
Boiling Point	108°F / 42°C	158°F / 70°C	189°F / 87°C	250°F / 121°C	104°F / 40°C
Specific Gravity @ 20°C	1.26	1.35	1.46	1.62	1.31
Vapor Pressure (mm Hg) @ 20°C	405	111	58	14	355
Heat of Vaporization (cal/g)	68	59	57.2	50.1	78.7
ENVIROMENTAL & HEALTH REGULATORY					
Ozone Depleting Potential (ODP)	0	0.016-0.019	0	0	0
Global Warming Potential (GWP)	Low	0.31	140	Negligible	8.7
Volatile Organic Compounds (VOC)	Yes	Yes	Yes	Exempt	Exempt
SNAP Approved	Yes	Yes	Yes	Yes	Yes
Hazardous Air Pollutant (HAP)	No	Proposed	Yes	Yes	Yes
Prop 65 Chemical	No	Yes	Yes	Yes	Yes
Carcinogen (or suspected)	No	Yes	Yes	Suspected	Suspected
Threshold Limit Value (ppm) (TLV)	200	10	25	25	25
MATERIAL COMPATIBILITY		++ = Exellent + = Good O = Fair - = Poor - - = Not Compatible			
ABS	-	O	-		
Buna-N	O	+	-		
EPDM	O	-	- -		
Graphite	++	++	++		
HDPE	++	++	O		
LDPE	++	O	-		
Lexan	-	-	-		
Neoprene	O	O	-		
Noryl	-	+	-		
Nylon 66	+	++	O		
Cross-Linked PE	+	++			
Polypropylene	++	+	O		
Polystyrene	-	- -	- -		
PVC	+	+	-		
Silicone Rubber	O	- -	-		
Teflon	++	++	++		
Viton	+	++	++		

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