



MATERIAL SAFETY DATA SHEET

Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Precision-V Flux Remover
PRODUCT DESCRIPTION: Aerosol Flux Remover
PRODUCT CODE: 1651-16S
ACTIVE INGREDIENT(S): 1,2-transdichloroethylene

MANUFACTURER

Techspray, L.P.
 1001 N.W. 1st Street
 P.O. Box 949
 Amarillo, TX 79107
Emergency Contact: Chemtrec
Emergency Phone: 1-800-858-4043
Service Number: 1-800-858-4043

24 HR. EMERGENCY TELEPHONE NUMBERS

CHEMTREC CCN#21858 (US Transportation) :(800) 424 - 9300
CANUTEC (Canadian Transportation) :(613) 996 - 6666
Emergency Phone :(800) 858 - 4043

2. HAZARDS IDENTIFICATION

HAZARD DESIGNATION

"Xn" - Harmful
 R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Transparent, colorless liquid.

IMMEDIATE CONCERNS: Warning! High concentrations of vapor can reduce oxygen available for breathing. Harmful if inhaled. May decompose on contact with flames or extremely hot metal surfaces to produce toxic and corrosive products.

POTENTIAL HEALTH EFFECTS

EYES: Substance causes substantial eye irritation.

SKIN: Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

INGESTION: Harmful if swallowed.

INHALATION: High concentrations in immediate area can displace oxygen and can cause dizziness, unconsciousness, and possibly death with longer exposure. Keep people away from such vapors without self-contained breathing apparatus.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Liquid splashed in the eye may cause redness, irritation and conjunctivitis.

SKIN: Prolonged exposure causes redness, pain, drying and cracking of the skin.

INGESTION: Poison - may be fatal if swallowed.

INHALATION: High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis and loss of consciousness).

ACUTE TOXICITY: Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result.

3. COMPOSITION / INFORMATION ON INGREDIENTS

MATERIAL SAFETY DATA SHEET



Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

Chemical Name	Wt.%	CAS	EINECS
1,1,1,2,2,3,4,5,5,5-decafluoropentane (HFC-4310mee)	30 - 50	138495-42-8	
1,2-transdichloroethylene	25 - 45	156-60-5	205-860-2
Ethanol	1 - 5	64-17-5	200-578-6
Cyclopentane	1 - 5	287-92-3	206-016-6
1,1,1,2-Tetrafluoroethane	15 - 25	811-97-2	212-337-0
Carbon dioxide	1 - 3	124-38-9	

4. FIRST AID MEASURES

EYES: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and tested by medical personnel.

SKIN: Immediately flush skin with plenty of water. Remove clothing. Get medical attention immediately. Wash clothing separately before reuse.

INGESTION: If swallowed, gently wipe or rinse the inside of the mouth with water. DO NOT induce vomiting. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Immediately contact a poison control center, emergency room or physician as further treatment may be necessary.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: None to boiling point --- Pensky Marten Closed Cup

FLAMMABLE LIMITS: 4.8 vol. % to 12.9 vol. % @ 25C

Notes: Volume % in air per ASTM E681.

EXTINGUISHING MEDIA: Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

FIRE FIGHTING PROCEDURES: Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

FIRE FIGHTING EQUIPMENT: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposition products are hazardous. This compound can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrochloric and hydrofluoric acids - possibly carbonyl halides.

COMMENTS: Although this product exhibits no flash point, it does have vapor flammability limits in air. Material does not sustain combustion when the ignition source is removed.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Contain spill with dike to prevent entry into sewers.

LARGE SPILL: If this material is released into a work area, evacuate the area immediately.

GENERAL PROCEDURES: Dike area to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover spilled material on adsorbent, such as sawdust or vermiculite, and sweep

MATERIAL SAFETY DATA SHEET



Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

into closed containers for disposal. After all visible traces, including vapors, have been removed thoroughly wet vacuum the area. Do not flush to sewer. If area of spill is porous, remove as much contaminated earth, gravel, etc. as necessary and place in closed containers for disposal.

SPECIAL PROTECTIVE EQUIPMENT: Only personnel equipped with proper respiratory and skin/eye protection should be permitted in area. See Section 8 for details.

7. HANDLING AND STORAGE

HANDLING: Use with adequate ventilation.

STORAGE: Store away from heat.

ELECTROSTATIC ACCUMULATION HAZARD: Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or use an inert gas purge.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)							
		EXPOSURE LIMITS					
		OSHA PEL		ACGIH TLV		SupplierOEL	
Chemical Name		ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³
1,1,1,2,2,3,4,5,5,5-decafluoropentane (HFC-4310mee)	TWA	NE		NE		200 ppm	
	STEL	NE		NE		NE	
1,2-transdichloroethylene	TWA	NE [1]	[1]	200 ppm		NE	
	STEL	NE		200 ppm			
Ethanol	TWA	1000 ppm	1900 mg/m ³	1000 ppm	1880 mg/m ³	NL	NL
	STEL	NL ppm	NL mg/m ³	NL ppm	NL mg/m ³	NL	NL
Cyclopentane	TWA			600 ppm	1720 mg/m ³		
1,1,1,2-Tetrafluoroethane	TWA	NE		NE		1,000 ppm [2]	[2]

OSHA TABLE COMMENTS:

- NOT ESTABLISHED
- * (AEL)=Acceptable Exposure Limit as established by the manufacture

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid

MATERIAL SAFETY DATA SHEET



Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

contact, wear splash-proof goggles.

SKIN: The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection. Viton, Solvex, Butyl, Buna, Neoprene.

RESPIRATORY: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

WORK HYGIENIC PRACTICES: Avoid contact with eyes. Avoid fume inhalation. Limit skin contact.

OTHER USE PRECAUTIONS: Emergency shower and eyewash facility should be in close proximity.

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	Flash Point (°C)	Boiling Point (°C)	Freezing Point (°C)	Auto Ignition (°C)	Solubility in Water	Specific Gravity
1,2-transdichloroethylene	36	48	-50		slight	1.257
Cyclopentane	-33	49.26		361		0.751
1,1,1,2-Tetrafluoroethane		-26.4	-101		NEGLIGIBLE	1.21

PHYSICAL STATE: Liquid

ODOR: Faint ethereal odor

APPEARANCE: Clear, Colorless liquid

pH: Not Applicable

PERCENT VOLATILE: 100

VAPOR PRESSURE: 101.88 mmHg@20C (VOC Composite Vapor Pressure)

VAPOR DENSITY: > 1 (Air=1)

BOILING POINT: 33°C (91.4°F)

Notes: Initial boiling point

FREEZING POINT: Not Applicable

MELTING POINT: Not Applicable

FLASHPOINT AND METHOD: None to boiling point --- Pensky Marten Closed Cup

EVAPORATION RATE: Not Determined

DENSITY: 1.2815 at 25°C

VISCOSITY: Not Applicable

(VOC): 36.740 % by weight (EPA)

Notes: 75% weight VOC (CARB)

10. STABILITY AND REACTIVITY

STABILITY: Stable.

POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Stable. However, may decompose if heated.

HAZARDOUS DECOMPOSITION PRODUCTS: When exposed to high temperatures or flames this product may form hydrochloric and hydrofluoric acids - possibly carbonyl halides.



MATERIAL SAFETY DATA SHEET

Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

INCOMPATIBLE MATERIALS: Oxidizing agents, alkalis and bases.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD ₅₀ (rat)	DERMAL LD ₅₀ (rabbit)	INHALATION LC ₅₀ (rat)
1,2-transdichloroethylene		> 5000 mg/kg	24100 ppm
Cyclopentane	11400 mg/kg		106000 mg/m ³
1,1,1,2-Tetrafluoroethane			> 500000 ppm

EYES: Moderately to severely irritating

DERMAL LD₅₀: Mildly to moderately irritating.

ORAL LD₅₀: Slight to very low toxicity.

INHALATION LC₅₀: Slight to very low toxicity.

CARCINOGENICITY

Chemical Name	NTP Status	IARC Status	OSHA Status
1,1,1,2,2,3,4,5,5,5-decafluoropentane (HFC-4310mee)	NOT LISTED	NOT LISTED	NOT LISTED
1,2-transdichloroethylene	NOT LISTED	NOT LISTED	NOT LISTED
Ethanol	NOT LISTED	NOT LISTED	NOT LISTED
1,1,1,2-Tetrafluoroethane	NOT LISTED	NOT LISTED	NOT LISTED

IARC: NOT listed

NTP: NOT listed

OSHA: NOT listed

TERATOGENIC EFFECTS: Teratology (rat) - maternal and fetal tox. - 20,000 ppm / NOEL = 8,000 ppm
Teratology (rabbit) - Slight bodyweight loss - 4,200 ppm / NOEL = 1,400 ppm

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: There is limited information available on the environmental fate and effects of this material. The primary environmental concern for release is the impact on aquatic and terrestrial species. Due care should be taken to avoid the accidental release of this material into the environment.

13. DISPOSAL CONSIDERATIONS

FOR LARGE SPILLS: Contaminated sawdust, vermiculite, or porous surfaces must be disposed of in a permitted hazardous waste management facility. Recovered liquids may be reprocessed or incinerated or must be treated in a permitted hazardous waste management facility.



MATERIAL SAFETY DATA SHEET

Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

GENERAL COMMENTS: Dispose of in a manner consistent with federal, state, and local regulations.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: CONSUMER COMMODITY ORM-D

PRIMARY HAZARD CLASS/DIVISION: No classification

UN/NA NUMBER: N/A

PACKING GROUP: N/A

AIR (ICAO/IATA)

SHIPPING NAME: CONSUMER COMMODITY ID8000

UN/NA NUMBER: ID8000

PRIMARY HAZARD CLASS/DIVISION: 9

PACKING GROUP: N/A

VESSEL (IMO/IMDG)

SHIPPING NAME: AEROSOLS IN LIMITED QUANTITIES OF CLASS 2

UN/NA NUMBER: 1950

PRIMARY HAZARD CLASS/DIVISION: 2.2

PACKING GROUP: N/A

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: IMMEDIATE / DELAYED

PRESSURE GENERATING: Yes **ACUTE:** Yes **CHRONIC:** Yes

TITLE III NOTES: Not listed as an Extremely Hazardous Substance.

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA REGULATORY: Releases to air, land, or water which exceed the RQ must be reported to the National Response Center [(800)424-8802] and to your Local Emergency Planning Committee.

Chemical Name	Wt. %	CERCLA RQ
1,2-transdichloroethylene	25 - 45	1000 lbs.

CERCLA RQ: Trans-1,2-dichloroethylene is listed in Table 302.4 of 40 CFR Part 302 as a hazardous substance. Reportable Quantity = 1,000 lbs.

EPA

EPA RQ INGREDIENT: trans-1,2-dichloroethylene (# 156-60-5)

TSCA (TOXIC SUBSTANCE CONTROL ACT)

MATERIAL SAFETY DATA SHEET



Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

Chemical Name	CAS
1,2-transdichloroethylene	156-60-5
Ethanol	64-17-5
Cyclopentane	287-92-3
1,1,1,2-Tetrafluoroethane	811-97-2

TSCA REGULATORY: All chemicals in this product are listed on the TSCA Inventory.

CLEAN AIR ACT

Chemical Name	Wt. %	CAS
1,1,1,2-Tetrafluoroethane	15 - 25	811-97-2

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

29 CFR 1910.119---PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: None of the chemicals in this product are considered highly hazardous by OSHA.

CALIFORNIA PROPOSITION 65: This product does not contain any chemicals known to the State of California to cause cancer.

OSHA HAZARD COMM. RULE: Contents of this MSDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200.

CANADA

WHMIS CLASS: Class A, Class D2B.

EUROPEAN COMMUNITY

EEC LABEL SYMBOL AND CLASSIFICATION



"Xn" - Harmful
R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.

16. OTHER INFORMATION

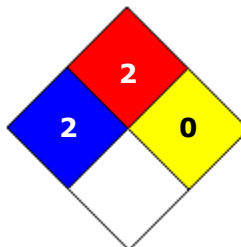
APPROVED BY: Pierce A. Pillon **TITLE:** Chemist

REVISION SUMMARY: This MSDS replaces the 09/20/2012 MSDS.

HMIS RATING

HEALTH	*	1
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

NFPA CODES



MANUFACTURER SUPPLEMENTAL NOTES: The use of this product for cleaning is subject to U.S. Patent no. 5,902,412 and use is restricted by Tech Spray, L.P.

DATA SOURCES: Code of Federal Regulations (CFR) The Sigma-Aldrich Library of Regulatory and Safety Data

MATERIAL SAFETY DATA SHEET



Date Issued: 10/13/2008
MSDS No: 1651-16S
Date Revised: 09/20/2012
Revision No: 4

Precision-V Flux Remover

OSHA Hazard Communication Standard (29CFR1910.1200) Various Federal, State and Local Regulations

MANUFACTURER DISCLAIMER: To the best of our knowledge, the information contained herein is accurate. However, neither Tech Spray, L.P., or any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.