

MATERIAL SAFETY DATA SHEET

Finished Product



Date Issued: 08/26/2003

MSDS No: 1660-A

Date Revised: 11/29/2006

Revision No: 5

No-Clean Flux Remover

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: No-Clean Flux Remover

PRODUCT DESCRIPTION: Azeotropic Mixture

PRODUCT CODE: 1660-6S/12S

ACTIVE INGREDIENT(S): 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca); 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb); 1,2-transdichloroethylene (Trans); Nitromethane

MANUFACTURER

Techspray, L.P.
1001 N.W. 1st Street
P.O. Box 949
Amarillo TX 79107

Emergency Contact: Chemtrec

Product Stewardship: 1-800-858-4043

Service Number: 1-800-858-4043

24 HR. EMERGENCY TELEPHONE NUMBERS

CHEMTREC (US Transportation) : (800) 424 - 9300

CANUTEC (Canadian Transportation) : (613) 996 - 6666

Emergency Phone : (800) 858 - 4043

COMMENTS: This MSDS was reviewed on 29 Nov. 2006.

2. HAZARDS IDENTIFICATION

HAZARD DESIGNATION

EEC LABEL SYMBOL AND CLASSIFICATION



"T" - Toxic

R23/25 - Toxic by inhalation and if swallowed.



"F" - Highly flammable

R11 - Highly flammable.

R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R63 - Possible risk of harm to the unborn child.

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: Substance may be 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: For large amounts; abdominal pain, nausea and vomiting.

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.

REPRODUCTIVE TOXICITY

TERATOGENIC EFFECTS: Contains Methanol which has been established as a teratogen by inhalation. See Sec.11 for details.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS	EINECS
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	16.5 - 20.7	422-56-0	2070169
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	20.6 - 24.8	507-55-1	2080769
1,2-transdichloroethylene (Trans)	5 - 60	156-60-5	205-860-2
Nitromethane	< 1	75-52-5	
Methanol	2 - 5	67-56-1	200-659-6
1,1,1,2-Tetrafluoroethane (HFC-134a)	18 - 23	811-97-2	223770
Carbon dioxide	1 - 2	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. If breathing is difficult, give oxygen. Get medical attention.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: None : ASTM D-56 (Tag C.C.)

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: Toxic oxides of carbon and corrosive vapors of hydrogen chloride.

6. ACCIDENTAL RELEASE MEASURES

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

LARGE SPILL: -Implement cleanup procedures. -If in public area, keep public away and advise authorities. -Recover by pumping (use an explosion proof or hand pump) or with a suitable absorbent.

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 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

GENERAL PROCEDURES: Use only in a well ventilated area.

HANDLING: Use with sufficient ventilation to keep employee exposure below recommended limits. Provide adequate ventilation for storage, handling and use, especially for enclosed or low spaces. Avoid contact of liquid with eyes and prolonged skin exposure. Do not allow product to contact open flame or electrical heating elements because dangerous decomposition products may form.

STORAGE: Store away from heat.

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
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	TWA	[1]	[1]	[1]	[1]	50* ppm [2]	[2]
	STEL	[1]	[1]	[1]	[1]		
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	TWA	[1]	[1]	[1]	[1]	400* ppm [2]	[2]
	STEL	[1]	[1]	[1]	[1]		
1,2-transdichloroethylene (Trans)	TWA	NE [1]	[1]	200 ppm		NE	
	STEL	NE		200 ppm			
Nitromethane	TWA	100 ppm	250 mg/m ³	20 ppm	50 mg/m ³		
Methanol	TWA	S 200 ppm [3]	260 mg/m ³ [3]	S 200 ppm	262 mg/m ³	NL ppm	NL mg/m ³
	STEL	250 ppm	310 mg/m ³	250 ppm	328 mg/m ³	NL ppm	NL
1,1,1,2-Tetrafluoroethane (HFC-134a)	TWA	NE		NE		1,000 ppm [2]	[2]

OSHA TABLE COMMENTS:

1. NOT ESTABLISHED
2. * (AEL)=Acceptable Exposure Limit as established by the manufacture
3. S = Skin

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product.

PERSONAL PROTECTIVE EQUIPMENT

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Chemical Name	Flash Point	Boiling Point (°C)	Freezing Point (°C)	Auto Ignition (°C)	Solubility in Water	Specific Gravity	Specific Volume
1,2-transdichloroethylene (Trans)	36	48	-50		slight	1.257	
1,1,1,2-Tetrafluoroethane (HFC-134a)		-26.4	-101		NEGLIGIBLE	1.21	

ODOR: Faint ethereal odor

APPEARANCE: Clear, Colorless liquid

PERCENT VOLATILE: 100 at 20°C (68°F)

VAPOR DENSITY: 4 (Air=1)

BOILING POINT: to 44.6°C (114°F)

SOLUBILITY IN WATER: Insoluble

EVAPORATION RATE: > 1 (H₂O=1)

SPECIFIC GRAVITY: 1.400 (water=1)

(VOC): 517.000 g/L (non-exempt VOC)

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.

INCOMPATIBLE MATERIALS: Incompatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc.

11. TOXICOLOGICAL INFORMATION

ACUTE

Chemical Name	ORAL LD ₅₀ (rat)	DERMAL LD ₅₀ (rabbit)	INHALATION LC ₅₀ (rat)
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	> 5000 mg/kg	> 2000 mg/kg	37300 ppm
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	> 5000 mg/kg	> 2000 mg/kg	36800 ppm
1,2-transdichloroethylene (Trans)		> 5000 mg/kg	24100 ppm
Methanol	6.2 to 12.98 mg/kg	16 g/kg	64000 ppm
1,1,1,2-Tetrafluoroethane (HFC-134a)			> 500000 ppm

EYES:

Notes: Moderately to severely irritating

DERMAL LD₅₀:

Notes: Mildly to moderately irritating.

ORAL LD₅₀:

Notes: Slight to very low toxicity.

INHALATION LC₅₀:

Notes: Slight to very low toxicity.

CARCINOGENICITY

Chemical Name	NTP Status	IARC Status	OSHA Status	Other	General Toxicity
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	NOT LISTED	NOT LISTED	NOT LISTED		
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	NOT LISTED	NOT LISTED	NOT LISTED		
1,2-transdichloroethylene (Trans)	NOT LISTED	NOT LISTED	NOT LISTED		
Nitromethane		GROUP 2B			
Methanol	NOT LISTED	NOT LISTED	NOT LISTED		
1,1,1,2-Tetrafluoroethane (HFC-134a)	NOT LISTED	NOT LISTED	NOT LISTED		

TERATOGENIC EFFECTS: Test results indicate this compound/mixture is not teratogenic.

GENERAL COMMENTS: Data from acute toxicity studies indicate that HCFC-225ca and HCFC-225cb have very low acute toxicity. Neither isomer causes eye irritation nor dermal toxicity in standardized tests; skin application of both isomers at high doses (2,000 mg/kg body weight) produces no adverse effects. Therefore, the dermal LD50s are greater than 2,000 mg/kg body weight. Oral administration of either isomer at high doses (5,000 mg/kg body weight) does not cause any mortality and the oral LD50s are greater than 5,000 mg/kg body weight. Both isomers also have very low acute inhalation toxicity as measured by the concentration that cause 50% mortality in experimental animals. In 28-day inhalation studies with rat, the activity and responsiveness of the animals was reduced at 5,000 ppm or greater for

each isomer. Toxicity was otherwise confined to the liver; liver enlargement and induction of peroxisomes was seen following treatment with either of the isomers. HCFC-225ca was more potent than HCFC-225cb in eliciting these liver effects. In a 90-day study of HCFC-225ca/HCFC-225cb mixture (45/55%) with rat, toxic effects were observed in the liver; liver enlargement and induction of peroxisomes. In a 28-day study with marmoset, exposure to HCFC-225ca at 1,000 ppm caused effects on the liver, such as slight fat deposition associated with changes in serum biochemical parameters. In the same study, exposure to HCFC-225cb at 5,000 ppm caused somnolence during exposure and an increase of cytochrome P-450, indicative of an adaptive response to HCFC-225cb. However, no liver enlargement was seen and virtually no peroxisome induction was observed in either isomer.

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.

ECOTOXICOLOGICAL INFORMATION: Invertebrate toxicity: LC50 (30 min) Photobacterium phosphoreum = 1540 ppm Microtoxicity test.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Recover by distillation or remove to permitted waste disposal facility. Comply with Federal, State and Local regulations.

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.

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

ROAD AND RAIL (ADR/RID):

KEMLER NUMBER: UN1950

HAZARD CLASS: 2.3

AIR (ICAO/IATA)

SHIPPING NAME: CONSUMER COMMODITY ID8000

PRIMARY HAZARD CLASS/DIVISION: 9

VESSEL (IMO/IMDG)

SHIPPING NAME: AEROSOLS IN LIMITED QUANTITIES OF CLASS 2

UN/NA NUMBER: 1950

PRIMARY HAZARD CLASS/DIVISION: 2.3

PACKING GROUP: N/A

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: IMMEDIATE / DELAYED

313 REPORTABLE INGREDIENTS: 3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC_225ca) 1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	Wt. %	CAS	Comments
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	16.5 - 20.7	422-56-0	
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	20.6 - 24.8	507-55-1	
Methanol	2 - 5	67-56-1	

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

302/304 EMERGENCY PLANNING

EMERGENCY PLAN: Methanol (#67-56-1)

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 (Trans)	5 - 60	1000 lbs.
Methanol	2 - 5	1* 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.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS	TSCA SECTION
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	422-56-0	
1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	507-55-1	
1,2-transdichloroethylene (Trans)	156-60-5	
Methanol	67-56-1	
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	

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

CLEAN AIR ACT

Chemical Name	Wt. %	CAS
3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	16.5 - 20.7	422-56-0
1,1,1,2-Tetrafluoroethane (HFC-134a)	18 - 23	811-97-2

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

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM): This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS CLASS: Class A, Class D2B.

EUROPEAN COMMUNITY

EEC LABEL SYMBOL AND CLASSIFICATION



"T" - Toxic
R23/25 - Toxic by inhalation and if swallowed.



"F" - Highly flammable
R11 - Highly flammable.

R52/53 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R63 - Possible risk of harm to the unborn child.

16. OTHER INFORMATION

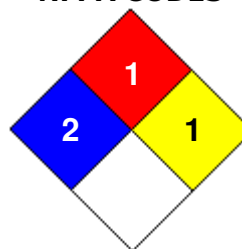
APPROVED BY: Pierce A. Pillon **TITLE:** Chemist

REVISION SUMMARY: Revision #: 5 This MSDS replaces the March 15, 2005 MSDS. Any changes in information are as follows: In Section 1 Comments

HMIS RATING

HEALTH:	2
FLAMMABILITY:	1
PHYSICAL HAZARD:	1
PERSONAL PROTECTION:	

NFPA CODES



DATA SOURCES: Code of Federal Regulations (CFR) The Sigma-Aldrich Library of Regulatory and Safety Data OSHA Hazard Communication Standard (29CFR1910.1200) Various Federal, State and Local Regulations

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