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Safety Data Sheet

Material Name: VINYL FLUORIDE

SDS ID: MAT24980

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

VINYL FLUORIDE

Synonyms

MTG MSDS 98; FLUOROETHYLENE; MONOFLUOROETHYLENE; FLUOROETHENE; VINYL FLUORIDE, INHIBITED; UN 1860

Chemical Family

halogenated, aliphatic

Product Use

Industrial and Specialty Gas Applications.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Gases - Category 1

Gases Under Pressure - Liquefied gas

Germ Cell Mutagenicity - Category 2

Carcinogenicity - Category 1B

Specific target organ toxicity - Single exposure - Category 3

Specific target organ toxicity - Repeated exposure - Category 2

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement(s)

Extremely flammable gas.

Contains gas under pressure; may explode if heated.

Suspected of causing genetic defects.

May cause cancer.

May cause drowsiness and dizziness.

May cause damage to liver through prolonged exposure.

Precautionary Statement(s)

Prevention



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Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use Personal Protective equipment as required.
Do not breathe gas.
Use only outdoors or in a well-ventilated area.

Response

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
IF exposed or concerned: Get medical advice/attention.
Eliminate all ignition sources if safe to do so.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

Store in a well-ventilated place.
Protect from sunlight.
Keep container tightly closed.
Store locked up.

Disposal

Dispose in accordance with all applicable regulations.

Other Hazards

May cause frostbite upon sudden release of liquefied gas. May cause asphyxia.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
75-02-5	VINYL FLUORIDE	100

Section 4 - FIRST AID MEASURES**Inhalation**

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115°F; 41-46°C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion

If swallowed, get medical attention.

Most Important Symptoms/Effects**Acute**

frostbite, suffocation, central nervous system depression

Delayed

liver damage, mutagenic effects, cancer

Note to Physicians

For inhalation, consider oxygen.

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Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media**Suitable Extinguishing Media**

carbon dioxide, regular dry chemical, Large fires: water spray or fog

Unsuitable Extinguishing Media

Do not direct water at source of leak or safety devices; icing may occur.

Special Hazards Arising from the Chemical

Severe fire hazard. Severe explosion hazard. Gas/air mixtures are explosive. The gas is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products

Oxides of carbon, Hydrogen fluoride, CARBONYL FLUORIDE

Fire Fighting Measures

Move container from fire area if it can be done without risk. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn.

Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire.

For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Stop flow of gas.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Avoid heat, flames, sparks and other sources of ignition. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition.

Ventilate closed spaces before entering. Water Release: Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use Personal Protective equipment as required.

Do not breathe gas. Use only outdoors or in a well-ventilated area.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place.

Protect from sunlight.

Keep container tightly closed.

Store locked up.

Store and handle in accordance with all current regulations and standards. Protect from sunlight. Store in a well-ventilated area. Keep locked up. Keep container tightly closed. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep away from incompatible materials.



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oxidizing materials

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**Component Exposure Limits**

VINYL FLUORIDE	75-02-5
ACGIH:	1 ppm TWA
NIOSH:	1 ppm TWA
	5 ppm Ceiling
	250 mg/m ³ IDLH asF (related to Fluorides)
OSHA (US):	2.5 mg/m ³ TWA asF (related to Fluorides)
Mexico:	2.5 mg/m ³ TWA VLE-PPT asF (related to Fluorides)

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)**VINYL FLUORIDE (75-02-5)**

2 mg/l Medium: urine Time: prior to shift Parameter: Fluoride (background, nonspecific); 3 mg/l Medium: urine Time: end of shift Parameter: Fluoride (background, nonspecific) (related to Fluorides)

Engineering Controls

Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment**Eye/face protection**

For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles with a faceshield. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

Respiratory Protection

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. 10 ppm. Any air-purifying half-mask respirator equipped with organic vapor cartridge(s). Any supplied-air respirator. 25 ppm. Any supplied-air respirator operated in a continuous-flow mode. Any powered, air-purifying respirator with organic vapor cartridge(s). 50 ppm. Any air-purifying respirator with a full facepiece and an organic vapor canister. Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister. Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s). Any self-contained breathing apparatus with a full facepiece. Any supplied-air respirator with a full facepiece. 200 ppm. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode. Emergency or planned entry into unknown concentrations or IDLH conditions -. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Escape -. Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister. Any appropriate escape-type, self-contained breathing apparatus.

Glove Recommendations

For the gas: Protective gloves are not required. For the liquid: Wear insulated gloves.



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Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless gas	Physical State	gas
Odor	faint odor ,sweet odor	Color	colorless
Odor Threshold	Not available	pH	Not available
Melting Point	-161 °C (-258 °F)	Boiling Point	-72 °C (-98 °F)
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	Not available	Flammability (solid, gas)	Not available
Autoignition Temperature	460 °C (860 °F)	Flash Point	(Flammable)
Lower Explosive Limit	2.6 %	Decomposition temperature	Not available
Upper Explosive Limit	21.7 %	Vapor Pressure	18001 mmHg @ 21 °C
Vapor Density (air=1)	1.6	Specific Gravity (water=1)	0.7 at 0 °C
Water Solubility	(Slightly soluble)	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Kinematic viscosity	Not available
Solubility (Other)	Not available	Density	Not available
KOC	24 (Estimated)	Log KOW	1.19
Physical Form	gas	Molecular Formula	C-H ₂ -C-H-F
Molecular Weight	46		

Solvent Solubility**Soluble**

alcohol, ether, acetone

Section 10 - STABILITY AND REACTIVITY**Chemical Stability**

Polymerizes with evolution of heat. Avoid contact with heat, air, light or moisture and monitor inhibitor content.

Possibility of Hazardous Reactions

Polymerizes with evolution of heat. Monitor inhibitor content.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Incompatible Materials

oxidizing materials



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Material Name: VINYL FLUORIDE**SDS ID: MAT24980****Hazardous decomposition products**

Oxides of carbon, Hydrogen fluoride, CARBONYL FLUORIDE

Section 11 - TOXICOLOGICAL INFORMATION**Information on Likely Routes of Exposure****Inhalation**

cough, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tremors, loss of coordination, blurred vision, Unconsciousness, cancer

Skin Contact

irritation, frostbite

Eye Contact

frostbite, blurred vision

Ingestion

ingestion of a gas is unlikely

Acute and Chronic Toxicity**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and no selected endpoints have been identified.

Product Toxicity Data**Acute Toxicity Estimate**

No data available.

Immediate Effects

frostbite, suffocation, central nervous system depression

Delayed Effects

liver damage, mutagenic effects, cancer

Irritation/Corrosivity Data

No data available.

Respiratory Sensitization

No data available.

Dermal Sensitization

No data available.

Component Carcinogenicity

VINYL FLUORIDE	75-02-5
ACGIH:	A2 - Suspected Human Carcinogen
IARC:	Monograph 97 [2008] ; Monograph 63 [1995] ; Supplement 7 [1987] (Overall evaluation upgraded from 2B to 2A based on mechanistic and other relevant data. For practical purposes vinyl fluoride should be considered to act similarly to the human carcinogen vinyl chloride) (Group 2A (probably carcinogenic to humans))
NTP:	Reasonably Anticipated To Be A Human Carcinogen
OSHA:	Present

Germ Cell Mutagenicity

Available data characterizes this substance as mutagenic.

Tumorigenic Data



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No data available

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

central nervous system

Specific Target Organ Toxicity - Repeated Exposure

liver

Aspiration hazard

Not applicable.

Medical Conditions Aggravated by Exposure

No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

Persistence and Degradability

No data available.

Bioaccumulative Potential

Bioconcentration potential in aquatic organisms is low based on a BCF value of 2.

Mobility

Expected to have high mobility in soil.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. D001. D003.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: VINYL FLUORIDE, STABILIZED

Hazard Class: 2.1

UN/NA #: UN1860

Required Label(s): 2.1

IMDG Information:

Shipping Name: VINYL FLUORIDE, STABILIZED

Hazard Class: 2.1

UN#: UN1860

Required Label(s): 2.1

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.



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VINYL FLUORIDE	75-02-5
SARA 313:	0.1 % de minimis concentration

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Flammable; Gas Under Pressure; Carcinogenicity; Specific Target Organ Toxicity; Germ Cell Mutagenicity

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
VINYL FLUORIDE	75-02-5	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer

VINYL FLUORIDE	75-02-5
Carc:	carcinogen , 5/1/1997

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)

The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

Component Analysis - Inventory

VINYL FLUORIDE (75-02-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN - NCI (Draft)
Yes	NSL	EIN	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	No	No

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 3 Fire: 4 Reactivity: 2

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Updated: 05/01/2015

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA -

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Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; NDSL - Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN NCI (Draft) - Vietnam National Chemicals Inventory (NCI) (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada) .

Other Information**Disclaimer:**

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