1,1,2-Trichloroethane

sc-237645

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
1,1,2-Trichloroethane

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA


SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C2-H3-Cl3, "ethane, 1, 1, 2-trichloro", "ethane trichloride", beta-T, beta-trichloroethane, "1, 1, 2-trichlorethane", "1, 2, 2-trichloroethane", "vinyl trichloride"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	2		
Body Contact:	2		
Reactivity:	1		
Chronic:	2		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Forms very sensitive explosive metallic compounds.
Irritating to skin.
Limited evidence of a carcinogenic effect.
Harmful by inhalation, in contact with skin and if swallowed.
Repeated exposure may cause skin dryness and cracking.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
■ Ingestion of 1,1,2-trichloroethane (TCE) produced sedation, gastric irritation, lung haemorrhage and liver and kidney damage in rodents.
When mice were given > 44 mg/kg/day in the drinking water for 90-days they showed decreased haemaglutination, decreased phagocytosis and reduced macrophage function.

EYE

■ Although the liquid is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

SKIN

■ Skin contact with the material may be harmful; systemic effects may resultfollowing absorption.
■ The material may cause moderate inflammation of the skin either following direct contact or after a delay of some time.
Repeated exposure can cause contact dermatitis which is characterized by redness, swelling and blistering.
■ Topical application of 1440 mg 1,1,2-trichloroethane (TCE) to male and female guinea pigs induced local perinuclear oedema in the basal cells within 15 minutes, localised epidermal degeneration with pyknosis within 30 minutes and caused complete separation of epidermis cells from the basement membrane within 12-hours.
Repeated application of 144 mg/day for 10-days produced fissuring, scaling and increased skin fold thickness in guinea pigs and rats.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

■ Inhalation of vapors or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.
■ The material is not thought to produce respiratory irritation (as classified using animal models).
Nevertheless inhalation of vapors, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
■ Inhalation of vapors may cause drowsiness and dizziness.
This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo.
■ Narcotic concentrations of 1,1,2-trichloroethane (TCE) produce ocular and upper respiratory irritation.
In cats concentrations producing deep narcosis, respiratory arrest and death are in the order of 13600 ppm TCE for a 2-hour exposure.
■ Inhalation hazard is increased at higher temperatures.
■ Anesthetics and narcotic effects (with dulling of senses and odor fatigue) are a consequence of exposure to chlorinated solvents.
Individual response varies widely; odor may not be considered objectionable at levels which quickly induce central nervous system effects.
■ Acute intoxication by halogenated aliphatic hydrocarbons appears to take place over two stages.
Signs of a reversible narcosis are evident in the first stage and in the second stage signs of injury to organs may become evident, a single organ alone is (almost) never involved.

CHRONIC HEALTH EFFECTS

■ There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment.
Chronic exposure to 1,1,2-trichloroethane (TCE) may result in liver and kidney damage. Long-term exposure to the vapor produces chronic gastric symptoms, fat deposition in the kidneys and lung damage in man.
When rats received 0.002 or 0.006 mg/week subcutaneously there was no significant increase in benign mesenchymal and epithelial tumours though the high-dose group had a higher incidence of sarcomas. When administered by gavage there was positive evidence of carcinogenicity in mice characterised by hepatocellular carcinomas and pheochromocytomas of the adrenal gland. This was not the case in rats.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
1,1,2-trichloroethane	79-00-5	>98

Section 4 - FIRST AID MEASURES

SWALLOWED
· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:. · Avoid giving milk or oils. · Avoid giving alcohol.

EYE
■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN
■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED
· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN
■ for poisons (where specific treatment regime is absent):
----------BASIC TREATMENT

· Establish a patent airway with suction where necessary.
· Watch for signs of respiratory insufficiency and assist ventilation as necessary.
for intoxication due to Freons/ Halons;
A: Emergency and Supportive Measures
· Maintain an open airway and assist ventilation if necessary
· Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias. Tachyarrhythmias caused by increased myocardial sensitization may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microgm/kg/min IV.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	18.752 @ 20 C
Upper Explosive Limit (%):	13.3
Specific Gravity (water=1):	1.439
Lower Explosive Limit (%):	8.4

EXTINGUISHING MEDIA
· Foam.
· Dry chemical powder.

FIRE FIGHTING
· Alert Emergency Responders and tell them location and nature of hazard.
· Wear full body protective clothing with breathing apparatus.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 800 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
¦ Combustion products include: carbon dioxide (CO2), hydrogen chloride, phosgene, other pyrolysis products typical of burning organic material.
May emit poisonous fumes.
· Combustible.
· Slight fire hazard when exposed to heat or flame.

FIRE INCOMPATIBILITY
¦ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

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Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Remove all ignition sources.
· Clean up all spills immediately.
MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
· DO NOT allow clothing wet with material to stay in contact with skin.
· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.

RECOMMENDED STORAGE METHODS
¦ DO NOT use aluminum or galvanized containers.
Glass container.
· Lined metal can, Lined metal pail/drum
· Plastic pail.
For low viscosity materials
· Drums and jerricans must be of the non-removable head type.
· Where a can is to be used as an inner package, the can must have a screwed enclosure.
Inhibited grades may be stored in metal drums.

STORAGE REQUIREMENTS
· Store in original containers.
· Keep containers securely sealed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Canada - British Columbia Occupational Exposure Limits	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10							Skin
US - Minnesota Permissible Exposure Limits (PELs)	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45						
US ACGIH Threshold Limit Values (TLV)	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10							TLV Basis: central nervous system impairment; liver damage
US NIOSH Recommended Exposure Limits (RELs)	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45						See Appendix A; See Appendix C (Chloroethanes); Ca; [skin]

Canada - Alberta Occupational Exposure Limits	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	55		
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
US - California Permissible Exposure Limits for Chemical Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
US - Idaho - Limits for Air Contaminants	1,1,2-trichloroethane (1, 1, 2-Trichloroethane)	10	45		
US OSHA Permissible Exposure Levels (PELs) - Table Z1	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
US - Hawaii Air Contaminant Limits	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45	20	90
US - Alaska Limits for Air Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
US - Michigan Exposure Limits for Air Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45		
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	1,1,2-trichloroethane (1,1,2-Trichloroethane - Skin)	10	45	20	90
US - Washington Permissible exposure limits of air contaminants	1,1,2-trichloroethane (1, 1, 2-Trichloroethane)	10		20	

Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10		15			Skin
Canada - Prince Edward Island Occupational Exposure Limits	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10					TLV Basis: central nervous system impairment; liver damage
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	45				
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10	55				
US - Oregon Permissible Exposure Limits (Z-1)	1,1,2-trichloroethane (1, 1, 2-Trichloroethane)	10	45				
Canada - Northwest Territories Occupational Exposure Limits (English)	1,1,2-trichloroethane (1,1,2-Trichloroethane - Skin)	10	45	20	90		
Canada - Nova Scotia Occupational Exposure Limits	1,1,2-trichloroethane (1,1,2-Trichloroethane)	10					TLV Basis: central nervous system impairment; liver damage
US TSCA New Chemical Exposure Limits (NCEL)	1,1,2-trichloroethane (Halogenated alkanes (P84-106/107))	1.0					

ENDOELTABLE

PERSONAL PROTECTION




RESPIRATOR

•Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE

· Safety glasses with side shields.
· Chemical goggles.

HANDS/FEET

Wear chemical protective gloves, eg. PVC.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
· Neoprene gloves.

OTHER
· Overalls.
· Eyewash unit.

ENGINEERING CONTROLS
Local exhaust ventilation usually required. If risk of overexposure exists, wear an approved respirator.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES
Liquid.
Does not mix with water.
Sinks in water.

State	Liquid	Molecular Weight	133.4
Melting Range (°F)	-34	Viscosity	Not Available
Boiling Range (°F)	237	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	>108	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	860	Vapor Pressure (mmHg)	18.752 @ 20 C
Upper Explosive Limit (%)	13.3	Specific Gravity (water=1)	1.439
Lower Explosive Limit (%)	8.4	Relative Vapor Density (air=1)	4.55
Volatile Component (%vol)	100	Evaporation Rate	Fast

1,1,2-trichloroethane		
	log Kow (Sangster 1997):	1.89

APPEARANCE
Liquid with sweet odor; does not mix well with water (4.5 g/l @ 20 C). Soluble in ethanol, chloroform, diethyl ether.

log Kow 2.05-2.38

Material	Value

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
¦ 1,1,2-Trichloroethane:
· although not easily ignited forms a flammable mixture with air above 42 deg. C.
· is incompatible with strong oxidisers, acetone, strong bases/ caustics, and chemically active metals (especially powders), aluminium, magnesium, potassium, sodium and sodium/ potassium alloys, zinc, sodium amide (may cause fire/ explosion)
· reacts with aqueous sodium hydroxide forming 1,1-dichloroethylene; reacts with aqueous lime, forming a mixture of 1,1- and 1,2-dichloroethylene
· storage with oxygen in gas or liquid form and nitrogen dioxide should be avoided
· contact with water may result in slow formation of hydrochloric acid
· is corrosive to aluminium, iron, and zinc especially at elevated temperatures
· attacks some plastics, natural rubber, and coatings.
Haloalkanes:

· are highly reactive:some of the more lightly substituted lower members are highly flammable; the more highly substituted may be used as fire suppressants, not always with the anticipated results.
· may react with the lighter divalent metals to produce more reactive compounds analogous to Grignard reagents.
· may produce explosive compounds following prolonged contact with metallic or other azides
· may react on contact with potassium or its alloys - although apparently stable on contact with a wide rage of halocarbons, reaction products may be shock-sensitive and may explode with great violence on light impact; severity generally increases with the degree of halocarbon substitution and potassium-sodium alloys give extremely sensitive mixtures .
BRETHERICK L.: Handbook of Reactive Chemical Hazards
· react with metal halides and active metals, eg. sodium (Na), potassium (K), lithium (Li),calcium (Ca), zinc (Zn), powdered aluminium (Al) and aluminium alloys, magnesium (Mg) and magnesium alloys.
· may react with brass and steel.
· may react explosively with strong oxidisers
· may degrade rubber, and plastics such as methacrylate polymers, polyethylene and polystyrene, paint and coatings.
Segregate from alcohol, water.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

1,1,2-trichloroethane

TOXICITY AND IRRITATION

1,1,2-TRICHLOROETHANE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 836 mg/kg	Skin (rabbit): 500 mg(open)-Mild
Inhalation (rat) LCLo: 2000 ppm/4h	Skin (rabbit): 810 mg/24h-SEVERE
Dermal (rabbit) LD50: 5377 mg/kg	Skin (rabbit): 500 mg/24h - Mild
Inhalation (Rat) LC: 500 ppm/4h	Eye (rabbit): 162 mg - Mild
Intraperitoneal (Rat) LD50: 265 mg/kg	Eye (rabbit): 500 mg/24h - Mild
Subcutaneous (Rabbit) LD: 500 mg/kg	
Intraperitoneal (Guinea pig) LD: 970 mg/kg	
Oral (Mouse) LD50: 378 mg/kg	
Intraperitoneal (Mouse) LD50: 494 mg/kg	
Subcutaneous (Mouse) LD50: 227 mg/kg	
Oral (Dog) LD: 500 mg/kg	
Intraperitoneal (Dog) LD50: 450 mg/kg	
Intravenous (Dog) LD: 95 mg/kg	

■ For 1,1,2-trichloroethane (TCE)
Acute toxicity: TCE is irritating to the skin, eyes, upper respiratory tract and stomach. There is no available information on skin sensitisation.
In humans,TCE was reported to act as a narcotic in low concentration, and irritate the conjunctiva, the mucosa of the respiratory tract and the external skin. Moreover, gastrointestinal tract complaints, fatty degeneration of the kidneys and lung damage by prolonged exposure were reported.
Repeat dose toxicity: In a 90 days drinking water study of mice at the concentration of 0, 20, 200, or 2,000 mg/l, reduction of P-450 contents in the liver were observed and the NOEL was considered as 3.9 mg/kg/day. Repeated inhalation exposure (7 hours/day, 5 days/week) to 83 mg/m3 air for 6 months did not lead to any chemical-related changes in the rat, guinea pig and rabbit. The daily intake is equivalent to roughly 11 mg/kg/day in rat, 7.4 mg/kg/day in guinea pig, and 25 mg/kg/day in rabbit.
Developmental toxicity: In a developmental toxicity study, TCE was administered by gavage to mice on days 8 through 12 of gestation at dose of only 350 mg/kg/day. No changes including teratogenicity and embryo/fetal viability, and/or postnatal growth and viability were observed. Therefore, NOEL for developmental toxicity was considered to be 350 mg/kg/day.
Carcinogenicity: Carcinogenicity study of this chemical by gavage showed hepatocellular carcinomas and pheochromocytomas in mice but no carcinogenicity in rats. Initiation/promotion screening studies on male rat liver demonstrated that this chemical has neither initiation nor promotion activity. A carcinogenicity study in skin of rats given 0, 2.05 or 6.24 mg by subcutaneous injection once a week for two years indicated no chemical related changes.
Genotoxicity: Bacterial mutagenicity study showed negative results in all strains of Salmonella typhimurium TA1535, TA1537, TA1538, TA98, TA100 with and without metabolic activation. Unscheduled DNA synthesis was not observed in livers of treated mice. On the other hand, mutation study in Saccharomyces cerevisiae and in vitro micronucleus test of human lymphocytes showed positive.
Although the above core genotoxicity studies demonstrate negative results, the genotoxicity of this chemical is inconclusive because of some positive results in non-core in vitro studies.
The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling,

the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reproductive effector

CARCINOGEN

1,1,2-Trichloroethane	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3
1,1,2-Trichloroethane	US EPA Carcinogens Listing	Carcinogenicity	C
1,1,2-Trichloroethane	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	C
1,1,2-Trichloroethane	US ACGIH Threshold Limit Values (TLV) - Carcinogens	Carcinogen Category	A3
1,1,2-trichloroethane	US - Rhode Island Hazardous Substance List	IARC	C
1,1,2-TRICHLOROETHANE	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
1,1,2-TRICHLOROETHANE	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
TRICHLOROETHANE (ALL ISOMERS)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
1,1,2-Trichloroethane (vinyl trichloride)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	3
1,1,2-Trichloroethane	US NIOSH Recommended Exposure Limits (RELs) - Carcinogens	Carcinogen	Ca
1,1,2-trichloroethane	US - Maine Chemicals of High Concern List	Carcinogen	C
TWAPPM~	US - Maine Chemicals of High Concern List	Carcinogen	A3
VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65
VPVB_(VERY~	US - Maine Chemicals of High Concern List	Carcinogen	

SKIN

1,1,2-trichloroethane	US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants - Skin	Skin Designation	X
1,1,2-trichloroethane	US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants - Skin	Skin Designation	X
1,1,2-trichloroethane	US - Washington Permissible exposure limits of air contaminants - Skin	Skin	X
1,1,2-trichloroethane	US ACGIH Threshold Limit Values (TLV) - Skin	Skin Designation	Yes
1,1,2-trichloroethane	US AIHA Workplace Environmental Exposure Levels (WEELs) - Skin	Notes	TLV Basis: central nervous system impairment; liver damage
1,1,2-trichloroethane	US NIOSH Recommended Exposure Limits (RELs) - Skin	Skin	Yes

1,1,2-trichloroethane	US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELs) - Skin	Skin	X
1,1,2-trichloroethane	US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs) - Skin	Skin	X
1,1,2-trichloroethane	US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants - Skin	Skin Designation	X
1,1,2-trichloroethane	Canada - British Columbia Occupational Exposure Limits - Skin	Notation	Skin
1,1,2-trichloroethane	US - Minnesota Permissible Exposure Limits (PELs) - Skin	Skin Designation	X
1,1,2-trichloroethane	US - Hawaii Air Contaminant Limits - Skin Designation	Skin Designation	X
1,1,2-trichloroethane	US OSHA Permissible Exposure Levels (PELs) - Skin	Skin Designation	X
1,1,2-trichloroethane	US - Oregon Permissible Exposure Limits (Z2) - Skin	Skin	X
1,1,2-trichloroethane	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	X
1,1,2-trichloroethane	US - California Permissible Exposure Limits for Chemical Contaminants - Skin	Skin	S
1,1,2-trichloroethane	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1

Section 12 - ECOLOGICAL INFORMATION

This material and its container must be disposed of as hazardous waste.

GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / EHS TRN A1a A1b A1 A2 B1 B2 C1 C2 C3 D1 D2 D3 E1 E2 E3 Cas No / RTECS No _____ 1, 1, 132 3 2 1 NR 2 0 1 0 1 2 1 SD 2 2- 7 Trichlo roethan e / CAS:79- 00- 5 /

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ships) NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradation, B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg), C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corrosion, D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

B. Component Waste Numbers
When 1,1,2-trichloroethane is present as a solid waste as a discarded commercial chemical product, off-specification species, as a container residue, or a spill residue, use EPA waste number U227 (waste code T).

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
· Reduction
· Reuse
· Recycling

· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible or consult manufacturer for recycling options.
· Consult Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION

DOT:
Symbols: None Hazard class or Division: 6.1
Identification Numbers: UN2810 PG: III
Label Codes: 6.1 Special provisions: IB3, T7,
TP1, TP28
Packaging: Exceptions: 153 Packaging: Non- bulk: 203
Packaging: Exceptions: 153 Quantity limitations: 60 L
Passenger aircraft/rail:
Quantity Limitations: Cargo 220 L Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: 40
Hazardous materials descriptions and proper shipping names:
Toxic, liquids, organic, n.o.s.

Air Transport IATA:

UN/ID Number: 2810 Packing Group: III
Special provisions: A3
Cargo Only
Packing Instructions: 663 Maximum Qty/Pack: 220 L
Passenger and Cargo Passenger and Cargo
Packing Instructions: Y642 Maximum Qty/Pack: 60 L
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 655 Maximum Qty/Pack: 2 L
Shipping Name: TOXIC LIQUID, ORGANIC, N.O.S. *(CONTAINS 1,1,
2-TRICHLOROETHANE)

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 2810 Packing Group: III
EMS Number: F-A,S-A Special provisions: 223 274
Limited Quantities: 5 L
Shipping Name: TOXIC LIQUID, ORGANIC, N.O.S.(contains 1,1,2-trichloroethane)

Section 15 - REGULATORY INFORMATION

1,1,2-trichloroethane (CAS: 79-00-5) is found on the following regulatory lists;

"Canada - Alberta Occupational Exposure Limits","Canada - British Columbia Occupational Exposure Limits","Canada - Northwest Territories Occupational Exposure Limits (English)","Canada - Nova Scotia Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Canada - Saskatchewan Environmental Persistent or Chronic Hazardous Substances","Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits","Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances","Canada Ingredient Disclosure List (SOR/88-64)","Canada National Pollutant Release Inventory (NPRI)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","GESAMP/EHS Composite List - GESAMP Hazard Profiles","IMO IBC Code Chapter 17: Summary of minimum requirements","International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs","US - Alaska Limits for Air Contaminants","US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emissions must be quantified","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substances List","US - California Permissible Exposure Limits for Chemical Contaminants","US - California Proposition 65 - Carcinogens","US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens","US - California Toxic Air Contaminant List Category II","US - Connecticut Hazardous Air Pollutants","US - Hawaii Air Contaminant Limits","US - Idaho - Limits for Air Contaminants","US - Maine Chemicals of High Concern List","US - Massachusetts Oil & Hazardous Material List","US - Michigan Exposure Limits for Air Contaminants","US - Minnesota Hazardous Substance List","US - Minnesota Permissible Exposure Limits (PELs)","US - New Jersey Right to Know Hazardous Substances","US - Oregon Permissible Exposure Limits (Z-1)","US - Pennsylvania - Hazardous Substance List","US - Rhode Island Hazardous Substance List","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Vermont Hazardous Constituents","US - Vermont Hazardous wastes which are Discarded Commercial Chemical Products or Off-Specification Batches of Commercial Chemical Products or Spill Residues of Either","US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants","US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Dangerous waste constituents list","US - Washington Discarded Chemical Products List - ""U"" Chemical Products","US -

Washington Permissible exposure limits of air contaminants","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US ACGIH Threshold Limit Values (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","US American Apparel & Footwear Association (AAFA) Restricted Substance List (RSL)","US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)","US CAA (Clean Air Act) - HON Rule - Organic HAPs (Hazardous Air Pollutants)","US CERCLA Priority List of Hazardous Substances","US Clean Air Act - Hazardous Air Pollutants","US CWA (Clean Water Act) - Priority Pollutants","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA Carcinogens Listing","US EPA High Production Volume Program Chemical List","US EPA Master Testing List - Index I Chemicals Listed","US EPA Master Testing List - Index II Chemicals Removed","US EPA National Priorities List - Superfund Chemical Data Matrix (SCDM) - Hazard Ranking System - Hazardous Substance Benchmarks","US EPCRA Section 313 Chemical List","US FDA Indirect Food Additives: Adhesives and Components of Coatings - Substances for Use Only as Components of Adhesives - Adhesives","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US NIOSH Recommended Exposure Limits (RELs)","US OSHA Permissible Exposure Levels (PELs) - Table Z1","US RCRA (Resource Conservation & Recovery Act) - Appendix IX to Part 264 Ground-Water Monitoring List 1","US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Inorganic and Organic Constituents 1","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Wastes","US RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards","US -Texas Air Monitoring Comparison Values for Evaluating Carbonyls","US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory","US TSCA Section 12(b) - List of Chemical Substances Subject to Export Notification Requirements","US TSCA Section 4/12 (b) - Sunset Date/Status","US TSCA Section 8 (d) - Health and Safety Data Reporting"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

■ Vapors potentially cause drowsiness and dizziness*.
* (limited evidence).

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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