

MATERIAL SAFETY DATA SHEET

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Version 1.9

Section 1 - Product and Company Information

Product Name 1,1,1-TRICHLOROETHANE, ACS, STAB.
Product Number 91099
Brand FLUKA

Company Sigma-Aldrich
Address 3050 Spruce Street
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832
Fax: 800-325-5052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
1,1,1-TRICHLOROETHANE, STABILIZED	71-55-6	Yes

Ingredient Name	CAS #	Percent	SARA 313
LOW ALKYL EPOXIDE	None	0.05	No

Formula C2H3Cl3
Synonyms Aerothene TT * CF 2 * Chloroform, methyl- *
Chlorothene * Chloroethene (inhibited) *
Chlorothene NU * Chlorothene SM * Chlorothene VG
* Chlorten * Ethana NU * F 140a * HCC 140a *
ICI-CF 2 * Inhibisol * Methylchloroform * Methyl
chloroform (ACGIH:OSHA) * Methyltrichloromethane
* NCI-C04626 * RCRA waste number U226 * Solvent
111 * alpha-T * Tafclean * 1,1,1-Trichloorethaan
(Dutch) * 1,1,1-Trichloraethan (German) *
Trichloro-1,1,1-ethane (French) *
1,1,1-Trichloroethane (DOT:OSHA) *
1,1,1-Tricloroetano (Italian) *
Trichloromethylmethane

RTECS Number: KJ2975000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Harmful. Dangerous for the environment.

Harmful by inhalation. Irritating to eyes, respiratory system and skin. Dangerous for the ozone layer.

Target organ(s): Liver. Kidneys.

HMIS RATING

HEALTH: 3*

FLAMMABILITY: 0

REACTIVITY: 0

NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

N/A

EXPLOSION LIMITS

Lower: 7.5 % Upper: 15 %

AUTOIGNITION TEMP

537 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	STEL	450 PPM
USA	ACGIH	TWA	350 PPM
USA	MSHA Standard-air	TWA	350 PPM (1900 MG/M3)
USA	OSHA.	PEL	8H TWA 350 PPM (1900 MG/M3)
New Zealand OEL			
Remarks: check ACGIH TLV			
USA	NIOSH	Ceiling	co350 PPM/15M

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	300 MG/M3
Poland		NDSch	600 MG/M3
Poland		NDSP	-

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Clear liquid Color: Colorless	
Property	Value	At Temperature or Pressure
Molecular Weight	133.41 AMU	
pH	N/A	
BP/BP Range	72.0 - 75.0 °C	
MP/MP Range	- 35.0 °C	
Freezing Point	N/A	
Vapor Pressure	100 mmHg	20 °C
Vapor Density	4.6 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.336 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	

Volatile%	N/A
VOC Content	N/A
Water Content	N/A
Solvent Content	N/A
Evaporation Rate	N/A
Viscosity	N/A
Surface Tension	N/A
Partition Coefficient	N/A
Decomposition Temp.	N/A
Flash Point	N/A
Explosion Limits	Lower: 7.5 % Upper: 15 %
Flammability	N/A
Autoignition Temp	537 °C
Refractive Index	1.438
Optical Rotation	N/A
Miscellaneous Data	N/A
Solubility	N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Reactions to Avoid: Reacts violently with:

Materials to Avoid: Potassium, Strong oxidizing agents, Sodium, Magnesium, Zinc, Strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen chloride gas.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes eye irritation.

Inhalation: Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Central nervous system. Kidneys. Liver. Cardiovascular system.

SIGNS AND SYMPTOMS OF EXPOSURE

Damage to the kidneys. Damage to the liver. Narcotic effect.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure to and/or consumption of alcohol may increase toxic effects. Prolonged exposure can cause:

TOXICITY DATA

Oral

Rat

9600 mg/kg

LD50

Remarks: Cardiac:Pulse rate. Nutritional and Gross

Metabolic:Weight loss or decreased weight gain.

Inhalation
Rat
18,000 ppm
LC50

Intraperitoneal
Rat
3593 MG/KG
LD50

Oral
Mouse
6000 mg/kg
LD50

Remarks: Nutritional and Gross Metabolic:Weight loss or decreased weight gain. Cardiac:Pulse rate.

Inhalation
Mouse
3,911 ppm
LC50
Remarks: Behavioral:Excitement.

Intraperitoneal
Mouse
2568 MG/KG
LD50

Subcutaneous
Mouse
16 GM/KG
LD50
Remarks: Behavioral:Sleep. Behavioral:Ataxia.

Oral
Dog
750 mg/kg
LD50

Intraperitoneal
Dog
3100 MG/KG
LD50
Remarks: Liver:Liver function tests impaired.

Inhalation
Cat
24,400 mg/m3
LC50

Oral
Rabbit
5660 mg/kg
LD50

Oral
Guinea pig
9470 mg/kg
LD50

IRRITATION DATA

Eyes
Man
450 ppm
8H

Skin
Rabbit
5,000 mg
12D
I

Remarks: Mild irritation effect

Skin
Rabbit
20 mg
24H
Remarks: Moderate irritation effect

Eyes
Rabbit
100 mg
Remarks: Mild irritation effect

Eyes
Rabbit
2 mg
24H
Remarks: Severe irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC CARCINOGEN LIST

Rating: Group 3

NTP CARCINOGEN LIST

Rating: Inadequate studies
Species: Mouse/rat
Route: Gavage

ACGIH CARCINOGEN LIST

Rating: A4

CHRONIC EXPOSURE - TERATOGEN

Result: Laboratory experiments have shown teratogenic effects.

Species: Rat
Dose: 43 MG/KG
Route of Application: Oral
Exposure Time: (1-22D PREG/21D POST)
Result: Specific Developmental Abnormalities: Cardiovascular (circulatory) system.

Species: Rat
Dose: 2100 PPM/6H

Route of Application: Inhalation
Exposure Time: (1-20D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

CHRONIC EXPOSURE - MUTAGEN

Result: Laboratory experiments have shown mutagenic effects.

Species: Rat
Dose: 99 UMOL/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Mouse
Dose: 31300 UG/L (+S9)
Cell Type: lymphocyte
Mutation test: Mutation in microorganisms

Species: Mouse
Dose: 20 MG/L
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Hamster
Dose: 562 MG/L
Cell Type: kidney
Mutation test: Morphological transformation.

Species: Hamster
Dose: 100 UL/PLATE
Cell Type: Embryo
Mutation test: Morphological transformation.

Species: Hamster
Dose: 160 MG/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Species: Rat
Dose: 7000 PPM/3H
Route of Application: Inhalation
Exposure Time: (13-19D PREG)
Result: Effects on Newborn: Behavioral. Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).
Maternal Effects: Other effects.

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish
Species: Pimephales promelas (Fathead minnow)
Time: 96 h
Value: 53 mg/l

ODC (OZONE DEPLETING CHEMICAL) - CAA602

Ozone Depletion Class: I
Ozone Depletion Group: V

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: 1,1,1-Trichloroethane
UN#: 2831
Class: 6.1
Packing Group: Packing Group III
Hazard Label: Toxic Substance
PIH: Not PIH

IATA

Proper Shipping Name: 1,1,1-Trichloroethane
IATA UN Number: 2831
Hazard Class: 6.1
Packing Group: III

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn-N
Indication of Danger: Harmful. Dangerous for the environment.
R: 20-59
Risk Statements: Harmful by inhalation. Dangerous for the ozone layer.
S: 24/25-59-61
Safety Statements: Avoid contact with skin and eyes. Refer to manufacturer/supplier for information on recovery/recycling. Avoid release to the environment. Refer to special instructions/safety data sheets.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful. Dangerous for the environment.
Risk Statements: Irritating to eyes, respiratory system and skin. Harmful by inhalation. Dangerous for the ozone layer.
Safety Statements: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. Refer to manufacturer/supplier for information on recovery/recycling. Avoid release to the environment. Refer to special instructions/safety data sheets.
US Statements: Target organ(s): Liver. Kidneys.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes
DEMINIMIS: 1 %
NOTES: This product is subject to SARA section 313 reporting requirements.
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.