

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
+1.703.527.3887 (INT)

SAFETY DATA SHEET

Chloroform w/ Ethanol

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: Trichloromethane; Methylidyne trichloride
Other means of identification: CAS No. 67-66-3
EINECS No. 200-663-8

Recommended use of the chemical and restrictions on use:

Supplier Details:

Greenfield Global USA, Inc.
58 Vale Road, Brookfield,
CT 06804, USA.
Tel: 203.740.3471
Fax: 203.740.3481
CCN17213

Greenfield Global USA, Inc.
1101 Isaac Shelby Drive, Shelbyville,
KY 40065, USA.
Tel: 502.232.7600
Fax: 502.633.6100
CCN17213

Emergency Contact: CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)

2. HAZARDS IDENTIFICATION

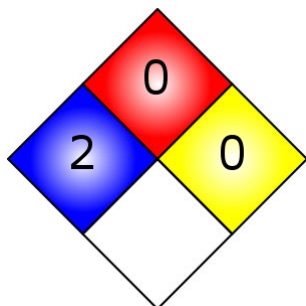
OSHA Hazards:

Carcinogen, Harmful by ingestion, Irritant, Target organ effect

Target Organs:

Blood, Cardiovascular system, Central nervous system, Kidney, Liver

NFPA



GHS label elements, including precautionary statements

**Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
+1.703.527.3887 (INT)**



Signal Word:

WARNING!

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.
H336	May cause drowsiness or dizziness.
H332	Harmful if inhaled.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Precautionary statement(s)

P281	Use personal protective equipment as required.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P501	Dispose of contents and container to an approved waste disposal plant.

GHS Classification(s)

Skin irritation (Category 2)
Specific target organ toxicity - single exposure (Category 3)
Carcinogenicity (Category 2)
Acute Toxicity, Inhalation (Category 4)
Reproductive toxicity (Category 2)
Specific target organ toxicity - repeated exposure (Category 2)
Eye irritation (Category 2)
Acute toxicity, Oral (Category 4)

Other hazards which do not result in classification:

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
Potential Health Effects: +1.703.527.3887 (INT)

Organ	Description
Eyes	Causes eye irritation.
Ingestion	Harmful if swallowed.
Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	Harmful if absorbed through skin. Causes skin irritation.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity:	Chloroform
Common name / Synonym:	Trichloromethane; Methylidyne trichloride
CAS number:	67-66-3
EINECS number:	200-663-8
ICSC number:	0027
RTECS #:	FS9100000
UN #:	UN1888
EC #:	602-006-00-4

% Weight	Material	CAS
>98	Chloroform	67-66-3
<2	Ethyl Alcohol	64-17-5

4. FIRST AID MEASURES

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid.
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Skin

Wash skin with soap and copious amounts of water. Seek medical attention.

Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Eyes

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Keep rinsing while in transport to hospital.

Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

**Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
+1.703.527.3887 (INT)**

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

No data available.

Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Classification

Not flammable or combustible.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Use personal protective equipment. Do not inhale vapors/mist/gas/dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions:

Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up:

Absorb with an inert dry material and place in an appropriate waste disposal container. Keep disposal containers closed when finished.

7. HANDLING AND STORAGE

Precautions for safe handling:

Do not get on skin or in eyes. Do not inhale vapor or mist. Take normal fire prevention measures.

Conditions for safe storage, including any incompatibilities:

Store in a cool, dry, well ventilated location. Opened containers should be resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

**Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
Occupational Exposure Limits +1.703.527.3887 (INT)**

Component	Source	Type	Value	Note
Chloroform	US (ACGIH)	TWA	10 ppm, 49 mg/m ³	ACGIH Threshold Limit Values
Chloroform	US (OSHA)	Ceiling	50 ppm, 240 mg/m ³	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants
Ethyl alcohol	US (ACGIH)	STEL	1000 ppm	Upper Respiratory Tract irritation Confirmed animal carcinogen with unknown relevance to humans
Ethyl alcohol	US (OSHA)	IDHL	3300 ppm	None
Ethyl alcohol	US (OSHA)	TWA	1000 ppm / 1,900 mg/m ³	29 CFR 1910.1000 Table Z-1 Limits for Air Contaminants.

Appropriate engineering controls:

General room or local exhaust ventilation is usually required to meet exposure limit(s). Electrical equipment should be grounded and conform to applicable electrical code.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (<i>physical state, color, etc.</i>)	Liquid. Colorless, clear.
Freezing point	-64 °C (-83 °F)

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)

Initial boiling point and boiling range	61°C (142 °F)	+1.703.527.3887 (INT)
Vapor pressure	213.3 hPa (160.0 mmHg) at 20.0 °C (68.0 °F)	
Relative Density	1.492 g/mL at 25 °C (77 °F)	
Formula (CHLOROFORM)	CHCl ₃	
Formula (ETHANOL)	C ₂ H ₆ O	
Molecular Weight (CHLOROFORM)	119.38 g/mol	
Molecular Weight (ETHANOL)	46.07 g/mol	

10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	No data available
Conditions to avoid (e.g., static discharge, shock or vibration)	No data available
Incompatible materials	Strong oxidizing agents, Strong bases, Magnesium, Sodium/sodium oxides, Lithium
Hazardous decomposition products	Hazardous decomposition products formed under fire conditions. - Carbon oxides, hydrogen chloride gas

11. TOXICOLOGICAL INFORMATION

- Ethyl Alcohol 64-17-5

Signs and Symptoms of Exposure

Central nervous system depression, narcosis, damage to the heart. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Product Summary:

Ethanol is not toxic by OSHA standards. Coingestion of sedative hypnotics or tranquilizers can increase the toxic affects of ethanol.

Acute Toxicity:

LC50 (inhl)	Rat	20000ppm	10 hrs.
LC50 (Oral)	Rat	7060mg/Kg BWT	
LDLo (Oral)	Human	1400 mg/Kg BWT	

Irritation:

Eyes (ETHANOL)

Eye exposure to Ethanol generally causes transient pain, irritation, and reflex lid closure. A foreign-body sensation may persist for one to two days. Vapors produce transient stinging and tearing, but no apparent adverse effects. Transiently impaired preception of color may occur with acute ingestion or chronic alcoholism. Standard Draize eye test (rabbit) - Dose: 500 mg Reaction: Severe Dose: 500 mg/24 hrs Reaction: Mild

Skin

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)

Standard Draize skin test (rabbit) - Dose: 20 mg/24 hrs Reaction: Moderate Repeated exposure may cause dryness or cracking.

Carcinogenicity

IARC: Not classifiable as a human carcinogen.

ACGIH: Not classifiable as a human carcinogen.

NTP: Not classifiable as a human carcinogen.

OSHA: Not classifiable as a human carcinogen.

Other Hazards

Organ	Description
Eyes	Irritating to the eyes. May cause painful sensitization to light. May cause chemical conjunctivitis and corneal damage.
Ingestion	May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. Advanced stages can lead to respiratory failure, kidney failure, coma, and death.
Inhalation	Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation.
Skin	Mildly irritating to the skin. May cause dermatitis by de-fating the skin from prolonged or repeated contact.
Chronic	Prolonged exposure can cause liver, kidney, and heart damage. Long term exposure can cause loss of appetite, weight loss, nervousness, memory loss, mental retardation.

- Chloroform 67-66-3

Product Summary:

Laboratory tests have shown mutagenic effects. No data available for the teratogenic or reproductive effects of the product.

Acute Toxicity:

LC50 (Inhalation)	Rat	47,702 mg/m3	4 hours
LD50 (Dermal)	Rabbit	>20,000 mg/kg	
LD50 (Oral)	Rat	695 mg/kg	

Irritation:

Eyes

Rabbit - Irritating to eyes - 24 hours

Skin

Rabbit - Severe skin irritation - 24 hours

Carcinogenicity

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)

IARC: Group 2B: Possibly carcinogenic to humans

+1.703.527.3887 (INT)

NTP: Reasonably anticipated to be a human carcinogen

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Other Hazards

Organ	Description
Eyes	Irritating to the eyes.
Ingestion	Harmful if ingested.
Inhalation	May be harmful if inhaled. Irritating to the respiratory tract.
Skin	Harmful if absorbed through skin. Irritating to skin.

12. ECOLOGICAL INFORMATION

- Ethyl Alcohol 64-17-5

Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish toxicity (ETHANOL)

LC50 / 96 HOUR Oncorhynchus mykiss (rainbow trout) > 10,000 mg/l

LC50 / 96 HOUR Pimephales promelas (fathead minnow) > 13,400 mg/l

Toxicity to aquatic plants (ETHANOL)

Growth inhibition / 96 HOURS Chlorella vulgaris (Fresh water algae) 1,000 mg/l

Toxicity to microorganisms (ETHANOL)

Toxicity Threshold / Pseudomonas putida 6,500 mg/l

Summary: Inhibition of cell multiplication begins.

Persistence and degradability:

Biodegradation is expected.

Bioaccumulative potential:

Biaccumulation is unlikely

- Chloroform 67-66-3

Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (CHLOROFORM)

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
LC50 / 48 hours Golden Orfe - 162 mg/L **+1.703.527.3887 (INT)**

Acute Fish Toxicity (CHLOROFORM)
LC100 / 48 hours Golden Orfe - 220 mg/L

Acute Fish Toxicity (CHLOROFORM)
NOEC / 96 hours Rainbow Trout - 24 mg/L

Persistence and degradability:
No data available

Bioaccumulative potential:
Bioaccumulation: Bluegill - 14 days, Bioconcentration factor (BCF): 6

13. DISPOSAL CONSIDERATIONS

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:

Offer surplus and non-recyclable solutions to a licensed disposal company. 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.

14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	1888
UN proper shipping name	Chloroform
Transport hazard class(es)	6.1
Packing group (if applicable)	III

Reportable Quantity

10 lbs.

IMDG

UN-Number: 1888 Class: 6.1 Packing Group: III

EMS-No: F-A, S-A

Proper shipping name: CHLOROFORM

Marine pollutant: No

IATA

UN-Number: 1888 Class: 6.1 Packing Group: III

Proper shipping name: Chloroform

Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)

15. REGULATORY INFORMATION

+1.703.527.3887 (INT)

Safety, health and environmental regulations specific for the product in question:

OSHA Hazards

Carcinogen, Harmful by ingestion, Irritant, Target organ effect

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS
United States of America	TSCA

SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

CHLOROFORM CAS-No. 67-66-3 Revision Date 2007-07-01

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

CHLOROFORM CAS-No. 67-66-3 Revision Date 2007-07-01

SARA 311/312 Hazards

Acute Health Hazard

Chronic Health Hazard

CERCLA

Chloroform CAS-No. 67-66-3, RQ: 10 lbs.

Massachusetts Right To Know Components

Chloroform CAS-No. 67-66-3 Revision Date 2007-07-01

Ethanol CAS-No.64-17-5 Revision Date 2007-03-01

Pennsylvania Right To Know Components

Chloroform CAS-No. 67-66-3 Revision Date 2007-07-01

Ethanol CAS-No.64-17-5 Revision Date 2007-03-01

**Product Information: 203.740.3471 Emergency Assistance (CHEMTREC): 1.800.424.9300 (USA)
+1.703.527.3887 (INT)**

New Jersey Right To Know Components

Chloroform CAS-No. 67-66-3 Revision Date 2007-07-01

Ethanol CAS-No.64-17-5 Revision Date 2007-03-01

California Prop 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm: CHLOROFORM CAS-No. 67-66-3 Revision Date 2008-10-10

16. OTHER INFORMATION: INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

Disclaimer

Greenfield Global USA, Inc. believes that the information on this SDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, Greenfield Global USA, Inc. does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable. Information is correct to the best of our knowledge at the date of the SDS publication.