



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	CHLOROFORM, DISTILLED IN GLASS, ALCOHOL STABILIZED
Catalog #	3778
Version #	02
Revision date	25-Apr-2008
CAS #	67-66-3
Synonym(s)	TRICHLOROMETHANE
Manufacturer information	GFS Chemicals, Inc. P.O. Box 245 Powell, OH 43065 US www.gfschemicals.com Fax 740-881-5989 Phone 740-881-5501 Toll Free 800-858-9682 Emergency Assistance Chemtrec 800-424-8300

2. Hazards Identification

Emergency overview	CAUTION Harmful in contact with eyes. Cancer hazard. Irritating to skin. Irritating to respiratory system. Prolonged exposure may cause chronic effects.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Contact may irritate or burn eyes. Eye contact may result in corneal injury. Do not get this material in contact with eyes.
Skin	Irritating to skin. Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash). Do not get this material in contact with skin.
Inhalation	Irritating to respiratory system. May cause cancer by inhalation. Avoid breathing dust/fume/gas/mist/vapors/spray.
Ingestion	Components of the product may be absorbed into the body by ingestion. Do not ingest.
Target organs	Eyes. Kidney. Liver. Skin.
Chronic effects	Conjunctiva. Edema. Jaundice. Liver injury may occur. Kidney injury may occur. Prolonged skin contact may defat the skin and produce dermatitis.
Signs and symptoms	Corneal damage. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash. Irritation.
Potential environmental effects	Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

Health effects of additional components

ETHYL ALCOHOL

Chronic effects: Unconsciousness. Conjunctiva. Jaundice. Cyanosis. Sterility. Liver injury may occur. Can cause adverse reproductive effects. Pregnant women or women of child-bearing age should not be exposed to this product. Prolonged skin contact may defat the skin and produce dermatitis.

Emergency overview: WARNING

FLAMMABLE LIQUID AND VAPOR. Will be easily ignited by heat, spark or flames.

Harmful in contact with eyes. Cancer hazard. Can cause adverse reproductive effects.

Prolonged exposure may cause chronic effects.

Eyes: Contact may irritate or burn eyes. Eye contact may result in corneal injury. Do not get this material in contact with eyes.

Ingestion: Components of the product may be absorbed into the body by ingestion. Do not ingest.

Inhalation: May cause cancer by inhalation. Avoid breathing dust/fume/gas/mist/vapors/spray.

Main symptoms: Unconsciousness. Corneal damage. Cyanosis. Liver enlargement. Jaundice. Conjunctivitis. Defatting of the skin. Rash. Irritation. Birth defects. Sterility.

Potential environmental effects: May cause long-term adverse effects in the environment.

Regulatory status: This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Skin: Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash). Do not get this material in contact with skin.

Target organs: Blood. Eyes. Liver. Respiratory system. Skin.

3. Composition / Information on Ingredients

Components	CAS #	Percent
CHLOROFORM	67-66-3	90 - 100

Composition comments Occupational Exposure Limits for stabilizers are listed in Section 8.

4. First Aid Measures

First aid procedures

Eye contact

Immediately 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.

Skin contact

Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. Get medical attention if irritation develops or persists. For minor skin contact, avoid spreading material on unaffected skin.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician if symptoms develop or persist.

Ingestion

Have victim rinse mouth thoroughly with water. Do not induce vomiting without advice from poison control center. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If ingestion of a large amount does occur, call a poison control center immediately.

Notes to physician

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General advice

If exposed or concerned: get medical attention/advice. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties

Not a fire hazard.

Extinguishing media

Suitable extinguishing media Water.

Protection of firefighters

Specific hazards arising from the chemical Fire may produce irritating, corrosive and/or toxic gases.

Protective equipment and precautions for firefighters Use water spray to cool unopened containers. Cool containers with flooding quantities of water until well after fire is out.

Specific methods In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions Local authorities should be advised if significant spillages cannot be contained. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering. Keep unnecessary personnel away. Stay upwind. Keep out of low areas.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up Should not be released into the environment.

Large Spills: Dike far ahead of liquid spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly. After removal flush contaminated area thoroughly with water.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling Do not get this material in contact with eyes. Do not get this material in contact with skin. Do not breathe dust/fume/gas/mist/vapors/spray. Use only with adequate ventilation. Wear personal protective equipment. Avoid prolonged exposure. Wash thoroughly after handling. Avoid release to the environment. Handle and open container with care.

Storage Keep in a well-ventilated place. Keep container tightly closed. Keep this material away from food, drink and animal feed. Keep out of the reach of children. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Material	CAS #	Type	Value	Form
CHLOROFORM	67-66-3	TWA	10 ppm	

Stabilizers

ETHYL ALCOHOL	64-17-5	TWA	1000 ppm	
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U.S. - OSHA

Material	CAS #	Type	Value	Form
CHLOROFORM	67-66-3	Ceiling	240 mg/m3	
			50 ppm	
		TWA	2 ppm	
			9.78 mg/m3	

Stabilizers

ETHYL ALCOHOL	64-17-5	PEL	1000 ppm	
			1900 mg/m3	
		TWA	1900 mg/m3	
			1000 ppm	

Engineering controls

Ensure adequate ventilation, especially in confined areas.

Personal protective equipment**Respiratory protection**

Do not breathe dust/fume/gas/mist/vapors/spray. Use an organic vapor respirator for concentrations exceeding the Occupational Exposure Limit.

Hand protection

Protective gloves.

Eye / face protection

Do not get this material in contact with eyes. Wear chemical goggles.

Skin protection

Do not get this material in contact with skin. Wear appropriate chemical resistant gloves. Wear appropriate chemical resistant clothing.

General hygiene considerations

Do not get this material in contact with eyes. Do not get this material in contact with skin. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

General

Avoid contact with skin. Avoid contact with eyes.

9. Physical & Chemical Properties

Appearance	Clear.
Color	Colorless.
Odor	Ether-like.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	-81.4 °F (-63.2 °C)
Freezing point	-81.4 °F (-63.2 °C)
Boiling point	141.8 °F (61.2 °C)
Flash point	Not available.
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	26.264 kPa at 25°C
Vapor density	4.12
Specific gravity	1.484
Relative density	Not available.
Solubility (water)	0.5 % at 77°F
Partition coefficient (n-octanol/water)	1.97
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.

VOC	100 % estimated
Percent volatile	100 % estimated
Molecular weight	119.3800 g/mol
Molecular formula	CHCl3

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	May decompose on long exposure to light.
Hazardous decomposition products	Chlorine. Hydrogen chloride. Phosgene. Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.

11. Toxicological Information

Acute effects

Acute Inhalation: LC 50

CHLOROFORM 67-66-3 Rat 47.702 mg/l 4 h

Acute Oral: LD 50

CHLOROFORM 67-66-3 Mouse 36 mg/kg

Toxicology data for the preparation

Acute LC50: 47.7 mg/l, Rat, Inhalation
 Acute LD50: 2250 mg/kg, Dog, Oral
 Acute LD50: 36 mg/kg, Mouse, Oral
 Acute LD50: 9827 mg/kg, Rabbit, Oral
 Acute LD50: 1117 mg/kg, Rat, Oral
 Acute LD50: 2180 mg/kg, Rat, Oral
 Acute LD50: 908 mg/kg, Rat, Oral

Local effects Contact may irritate or burn eyes. Liver toxicity. Irritating to skin. Irritating to respiratory system. Components of the product may be absorbed into the body through the skin.

Chronic effects Hazardous by OSHA criteria. Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood. Prolonged exposure may cause chronic effects.

Subchronic effects Kidney injury may occur.

Carcinogenicity Hazardous by OSHA criteria. Risk of cancer cannot be excluded with prolonged exposure.

IARC Monographs on Occupational Exposures to Chemical Agents: Evidence of carcinogenicity in humans

CHLOROFORM 67-66-3 Inadequate data.

ETHYL ALCOHOL 64-17-5 Sufficient data.

US ACGIH Threshold Limit Values: A3 carcinogen

CHLOROFORM 67-66-3 Group A3 Confirmed animal carcinogen with unknown relevance to humans.

US ACGIH Threshold Limit Values: A4 carcinogen

ETHYL ALCOHOL 64-17-5 Group A4 Not classifiable as a human carcinogen.

US NTP Report on Carcinogens: Anticipated carcinogen

CHLOROFORM 67-66-3 Anticipated carcinogen.

US NTP Report on Carcinogens: Known carcinogen

ETHYL ALCOHOL 64-17-5 Known carcinogen.

Epidemiology Hazardous by OSHA criteria.

Further information Symptoms may be delayed.

12. Ecological Information

Ecotoxicity Components of this product are hazardous to aquatic life.

Invertebrate Toxicity: EC 50

ETHYL ALCOHOL 64-17-5 Water flea (Daphnia magna) 7.7 - 11.2 mg/l 48 h Static Intoxication

Environmental effects Harmful to aquatic life.

Persistence and degradability Not available.

Partition coefficient 1.97

13. Disposal Considerations

Waste codes D022: Waste chloroform

US RCRA Hazardous Waste U List: Reference

CHLOROFORM 67-66-3 U044

Disposal instructions Dispose of this material and its container at hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not applicable.

14. Transport Information

DOT

Basic shipping requirements:

Proper shipping name Chloroform

Hazard class 6.1

UN number UN1888

Packing group III

Additional information:

Special provisions IB3, N36, T7, TP2

Packaging exceptions 153

Packaging non bulk 203

Packaging bulk 241

ERG number 151



15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity

CHLOROFORM 67-66-3 10 LBS

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity

CHLOROFORM 67-66-3 10000 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

CHLOROFORM 67-66-3 0.1 %

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance Yes

Section 311 hazardous chemical Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

CHLOROFORM	67-66-3	Listed.
ETHYL ALCOHOL	64-17-5	Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

CHLOROFORM	67-66-3	Listed: October 1, 1987 Carcinogenic.
ETHYL ALCOHOL	64-17-5	Listed: July 1, 1988 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

ETHYL ALCOHOL	64-17-5	Listed: October 1, 1987 Developmental toxin.
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US - New Jersey Community RTK (EHS Survey): Reportable threshold

CHLOROFORM	67-66-3	500 LBS
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US - Pennsylvania RTK - Hazardous Substances: Listed substance

CHLOROFORM	67-66-3	Listed.
ETHYL ALCOHOL	64-17-5	Listed.

US - Pennsylvania RTK - Hazardous Substances: Special hazard

CHLOROFORM	67-66-3	Special hazard.
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16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 2*
Flammability: 0
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 0
Instability: 0

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Issue date

25-Apr-2008

This data sheet contains changes from the previous version in section(s):

This document has undergone significant changes and should be reviewed in its entirety.