

Material Safety Data Sheet

Chloroform, GR



Section 1. Product and Company Identification

Product name : Chloroform, GR
Product code : CX1055
Synonym : Trichloromethane
Material uses : Other non-specified industry: Analytical reagent.
Manufacturer : EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday - Friday: 8:00 - 5:00 PM
Validation date : 6/8/2006.
Print date : 6/21/2006.
In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state : Liquid. (Colorless.)
Odor : Pleasant. Ethereal.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : WARNING!
HARMFUL IF INHALED OR SWALLOWED.
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, HEART, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
SUSPECT CANCER HAZARD.
MAY CAUSE CANCER.
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.
Do not ingest. Avoid contact with skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.
Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Eyes : Irritating to eyes.
Skin : Irritating to skin.
Inhalation : Toxic by inhalation. Irritating to respiratory system.
Ingestion : Toxic if swallowed.
Carcinogenic effects : May cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenic effects : No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.

See toxicological information (section 11)

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Section 3. Composition/Information on Ingredients

United States

Name

Chloroform

CAS number

67-66-3

% by Weight

100

Section 4. First Aid Measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire Fighting Measures

Flammability of the product : No specific hazard.

Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special remarks on fire hazards** : Emits very toxic fumes when heated to decomposition.

Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 6. Accidental Release Measures

- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

- Handling** : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Product name

United States

Chloroform

Exposure limits

ACGIH (United States, 1996).

TWA: 49 mg/m³

OSHA (United States, 1989).

TWA: 9.78 mg/m³

OSHA PEL (United States, 8/1997).

CEIL: 240 mg/m³ Form: All forms

CEIL: 50 ppm Form: All forms

OSHA PEL 1989 (United States, 3/1989).

TWA: 9.78 mg/m³ 8 hour/hours. Form: All forms

TWA: 2 ppm 8 hour/hours. Form: All forms

ACGIH TLV (United States, 1/2006). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. 1996 Adoption Substances for which the TLV is higher than the OSHA Permissible Exposure Limit (PEL) and/or the NIOSH Recommended Exposure Limit (REL). See CFR 58(124) :36338-33351, June 30, 1993, for revised OSHA PEL. Refers to Appendix A -- Carcinogens.

TWA: 49 mg/m³ 8 hour/hours. Form: All forms

TWA: 10 ppm 8 hour/hours. Form: All forms

NIOSH REL (United States, 12/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen

STEL: 9.78 mg/m³ 60 minute/minutes. Form: All forms

STEL: 2 ppm 60 minute/minutes. Form: All forms

Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.
Recommended: splash goggles

Skin

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Body: Recommended: lab coat

Respiratory

- : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 8. Exposure Controls/Personal Protection

- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: Viton
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

- Physical state** : Liquid. (Colorless.)
- Color** : Colorless.
- Odor** : Pleasant. Ethereal.
- Molecular weight** : 119.37 g/mole
- Molecular formula** : C-H-Cl₃
- Boiling/condensation point** : 60.5°C (140.9°F)
- Melting/freezing point** : -63°C (-81.4°F)
- Critical temperature** : 263.3°C (505.9°F)
- Relative density** : 1.49 (Water = 1)
- Vapor pressure** : 22.3 kPa (167 mm Hg) (at 20°C)
- Vapor density** : 4.1 (Air = 1)
- Volatility** : 100% (v/v)
- Odor threshold** : 205 ppm
- Evaporation rate** : 10.2 compared with Butyl acetate.
- VOC** : 100 (%)

Section 10. Stability and Reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Reactive or incompatible with the following materials: oxidizing materials, metals and alkalis.
- Hazardous decomposition products** : Phosgene gas. carbon oxides (CO, CO₂)
- Hazardous polymerization** : Will not occur.
- Conditions of reactivity** : Emits very toxic fumes when heated to decomposition.

Section 11. Toxicological Information

Toxicity data

United States

Product/ingredient name

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Chloroform	LD50	695 mg/kg	Oral	Rat
	LD50	1250 mg/kg	Oral	Rat
	LD50	36 mg/kg	Oral	Mouse
	LDLo	500 mg/kg	Oral	Rabbit
	LDLo	2514 mg/kg	Oral	man
	LC50	47702 mg/m ³ (4 hour/hours)	Inhalation	Rat

Section 11. Toxicological Information

Chronic effects on humans : **CARCINOGENIC EFFECTS** Classified + (Proven.) by NIOSH. Classified A3 (Proven for animals.) by ACGIH, 2B (Possible for humans.) by IARC, 3 (Possible for humans.) by European Union. Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP.

Causes damage to the following organs: kidneys, liver, heart, skin, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : Very hazardous in case of eye contact (irritant), of ingestion, of inhalation.
Hazardous in case of skin contact (irritant).

Specific effects

Carcinogenic effects : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / : No known significant effects or critical hazards.

Reproductive toxicity

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : Irritating to respiratory system.

Eyes : Irritating to eyes.

Skin : Irritating to skin.

Section 12. Ecological Information

Ecotoxicity data

United States

Product/ingredient name

Chloroform

Species

Scenedesmus subspicatus
(EC50)

Period

48 hour/hours

Result

560 mg/l

Scenedesmus subspicatus
(EC50)

48 hour/hours

950 mg/l

Lepomis macrochirus (LC50)

96 hour/hours

13.3 mg/l

Oncorhynchus mykiss (LC50)

96 hour/hours

15.1 mg/l

Lepomis macrochirus (LC50)

96 hour/hours

16.2 mg/l

Oncorhynchus mykiss (LC50)

96 hour/hours

17.1 mg/l

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides (CO, CO₂) and water, halogenated compounds.

Toxicity of the products of biodegradation : The products of degradation are as toxic as the product itself.

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.


Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

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Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN1888	CHLOROFORM	6.1	III		Reportable quantity 10 lbs. (4.536 kg)

PG* : Packing group

Section 15. Regulatory Information

United States

HCS Classification : Toxic material
Irritating material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(b) inventory: Listed
SARA 302/304/311/312 extremely hazardous substances: Chloroform
SARA 302/304 emergency planning and notification: Chloroform
SARA 302/304/311/312 hazardous chemicals: Chloroform
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Chloroform
: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Chloroform
Clean Water Act (CWA) 311: Chloroform
Clean Air Act (CAA) 112 accidental release prevention: Chloroform
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: Chloroform

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Chloroform	67-66-3	100
Supplier notification	: Chloroform	67-66-3	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Pennsylvania RTK: Chloroform : (special hazard, environmental hazard, generic environmental hazard)
Massachusetts RTK: Chloroform
New Jersey: Chloroform
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Chloroform	Yes.	No.	20 µg/day (ingestion) 40 µg/day (inhalation)	No.

Canada

WHMIS (Canada) : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2A: Material causing other toxic effects (Very toxic).

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Section 15. Regulatory Information

CEPA DSL/CEPA NDSL : CEPA DSL: Chloroform

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

Hazard symbol/symbols :



Risk phrases

: R40- Limited evidence of a carcinogenic effect.
R22- Harmful if swallowed.
R48/20/22- Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R38- Irritating to skin.

Safety phrases

: S2- Keep out of the reach of children.
S36/37- Wear suitable protective clothing and gloves.

International regulations

International lists

: Australia (NICNAS): Chloroform

China: Chloroform

Germany water class: Chloroform

Japan (METI): Chloroform

Korea (TCCL): Chloroform

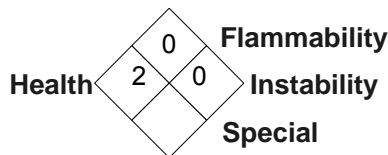
Philippines (RA6969): Chloroform

Section 16. Other Information

Label requirements

: WARNING!
HARMFUL IF INHALED OR SWALLOWED.
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, HEART, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
SUSPECT CANCER HAZARD.
MAY CAUSE CANCER.
WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

National Fire Protection Association (U.S.A.) :



Other special considerations

: Contains stabilizer. (<1% wt/wt)

Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION

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Section 16. Other Information

HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.