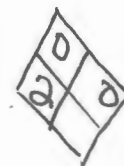


Chloroform



Material Safety Data Sheet

Section 1. Product and Company Identification

Product Name Chloroform

Product Code VW1430

Manufacturer EMD Chemicals Inc.

Effective Date 3/3/2003

P.O. Box 70

480 Democrat Road

Gibbstown, NJ 08027

Prior to January 1, 2003 EMD Chemicals Inc. was

EM Industries, Inc. or EM Science, Division of

EM Industries, Inc.

For More Information Call

856-423-6300 Technical Service

Monday-Friday: 8:00 AM - 5:00 PM

In Case of Emergency Call

800-424-9300 CHEMTREC

(USA)

613-996-6666 CANUTEC

(Canada)

24 Hours/Day: 7 Days/Week

Synonym TRICHLOROMETHANE

Material Uses Analytical reagent.

Chemical Solvent.

Family

Section 2. Composition and Information on Ingredients

Component	CAS #	% by Weight
Chloroform	67-66-3	100

+ Section 3. Hazards Identification

Physical State and Liquid. (Colorless.)

Appearance

Emergency

Overview

WARNING!

HARMFUL IF INHALED OR SWALLOWED.

CAUSES EYE IRRITATION.

CAUSES DAMAGE TO THE FOLLOWING ORGANS: KIDNEYS, LIVER, HEART, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.

MAY CAUSE SKIN IRRITATION.

POSSIBLE CANCER HAZARD.

MAY CAUSE CANCER BASED ON ANIMAL DATA.

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

Routes of Entry Absorbed through skin. Eye contact. Inhalation. Ingestion.

Potential Acute Health

Effects

Eyes Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.

Skin May be hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Inhalation Hazardous in case of inhalation.

Ingestion Hazardous in case of ingestion.

Chloroform

Potential Chronic Health Effects

Carcinogenic Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by Effects ACGIH, 2B (Possible for human.) by IARC, 3 (Possible for human.) by European Union.

Additional information See Toxicological Information (section 11)

Medical Conditions Repeated exposure to a highly toxic material may produce general
Aggravated by deterioration of health by an accumulation in one or many human organs.
Overexposure:

Section 4. First Aid Measures

Eye Contact Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.

Skin Contact In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Inhalation If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion If conscious, drink water and induce vomiting immediately as directed by medical personnel. NEVER give an unconscious person anything to ingest.

Section 5. Fire Fighting Measures

Flammability of the Product May be combustible at high temperature.

Auto-ignition Temperature Not available.

Flash Points Not available.

Flammable Limits Not available.

Products of Combustion These products are carbon oxides (CO, CO₂), halogenated compounds.

Fire Hazards in Presence of Various Substances Not available.

Explosion Hazards in Presence of Various Substances Risks of explosion of the product in presence of static discharge: No.
Risks of explosion of the product in presence of mechanical impact: No.

Fire Fighting Media and Instructions SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Protective Clothing (Fire) Be sure to use an approved/certified respirator or equivalent.

Special Remarks on Fire Hazards When heated to decomposition it emits very toxic fumes.

Special Remarks on Explosion Hazards Not available.

Section 6. Accidental Release Measures

Small Spill and Dilute with water and mop up, or absorb with an inert dry material and

Chloroform

Leak	place in an appropriate waste disposal container.
Large Spill and Leak	Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.
Spill Kit Information	No specific spill kit required for this product.

Section 7. Handling and Storage

Handling	Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing vapors or spray mists.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.
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Personal Protection

Eyes Splash goggles.

Body Lab coat.

Respiratory Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hands Gloves.

Feet Not applicable.

Protective Clothing

(Pictograms)

Personal Protection in Case of a Large Spill	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
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Product Name

Chloroform

Exposure Limits

TWA: 49 mg/m³ from ACGIH (United States, 1996).

TWA: 49 mg/m³ from ACGIH (United States, 1996).

Period: 8 hour(s).

TWA: 10 ppm from ACGIH (United States, 1996). Period: 8 hour(s).

STEL: 9.78 mg/m³ from NIOSH REL (United States, 1994).

Period: 60 minute(s).

STEL: 2 ppm from NIOSH REL (United States, 1994).

Period: 60 minute(s).

TWA: 9.78 mg/m³ from OSHA (United States, 1989).

TWA: 9.78 mg/m³ from OSHA Final Rule (United States, 1989). Period: 8 hour(s).

TWA: 2 ppm from OSHA Final Rule (United States, 1989).

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Period: 8 hour(s).

Section 9. Physical and Chemical Properties

Odor	Pleasant. Ethereal.
Color	Colorless.
Physical State and Appearance	Liquid. (Colorless.)
Molecular Weight	119.37 g/mole
Molecular Formula	C-H-Cl ₃
pH	Not available.
Boiling/Condensation Point	60.55°C (141°F)
Melting/Freezing Point	-62.95°C (-81.3°F)
Critical Temperature	263.3°C (505.9°F)
Specific Gravity	1.49 (Water = 1)
Vapor Pressure	22.3 kPa (167 mmHg) (@ 20°C)
Vapor Density	4.1 (Air = 1)
Volatility	100% (v/v).
Odor Threshold	205 ppm
Evaporation Rate	10.2 compared to (n-BUTYL ACETATE=1)
VOC	100 (%)
LogKow	Not available.
Dispersion Properties	See solubility in water.
Solubility	Partially soluble in water.

Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	Not available.
Incompatibility with Various Substances	Reactive with oxidizing agents, metals, alkalis.
Rem/Incompatibility	Not available.
Hazardous Decomposition Products	Phosgene Gas. carbon oxides (CO, CO ₂)
Hazardous Polymerization	Will not occur.

Section 11. Toxicological Information

RTECS Number:	Chloroform	FS9100000
Toxicity	Acute oral toxicity (LD50): 36 mg/kg [Mouse]. Acute toxicity of the vapor (LC50): 47702 mg/m ³ 4 hour(s) [Rat].	
Chronic Effects on Humans	CARCINOGENIC EFFECTS: Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC, 3 (Possible for human.) by European Union.	

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Acute Effects on Humans	Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching. May be hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Hazardous in case of inhalation. Hazardous in case of ingestion.
Synergetic Products (Toxicologically)	Not available.
Irritancy	Draize Test (Rabbit): Eyes: 20 mg/24h. Reaction: Moderate. Draize Test (Rabbit) Skin: 500 mg/24h mild
Sensitization	Not available.
Carcinogenic Effects	Classified + (Proven.) by NIOSH. Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC, 3 (Possible for human.) by European Union.
Toxicity to Reproductive System	orl-rat TDLo:4 gm/kg (6-15D preg) ; REPRODUCTIVE(Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus)
Teratogenic Effects	Tests on laboratory animals for teratogenic effects are cited in Registry of Toxic Effects on Chemical Substances (RTECS).
Mutagenic Effects	Tests on laboratory animals for mutagenic effects are cited in Registry of Toxic Effects of Chemical Substances (RTECS).

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Toxicity of the Products of Biodegradation	The products of degradation are as toxic as the product itself.

Section 13. Disposal Considerations

EPA Waste Number	U044 D022
Treatment	Specified Technology – Incineration or fuels blending to less than the TCLP standard. Contact your local permitted waste disposal site (TSD) for permissible treatment sites. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

Section 14. Transport Information

DOT Classification	Proper Shipping Name: CHLOROFORM Hazard Class: 6.1 UN number: UN1888 Packing Group: III RQ: 10 lbs. (4.536 kg)
TDG Classification	Not available.
IMO/IMDG Classification	Proper Shipping Name: CHLOROFORM Hazard Class: 6.1 UN number: UN1888 Packing Group: III RQ: 10

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ICAO/IATA Classification

Not available.

Section 15. Regulatory Information

U.S. Federal Regulations

TSCA 8(b) inventory: Chloroform
 TSCA 8(d) H and S data reporting: Chloroform: 1987
 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
 SARA 313 toxic chemical notification and release reporting: Chloroform
 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.

WHMIS (Canada)

Clean air act (CAA) 112 regulated toxic substances: Chloroform
 Class D–1A: Material causing immediate and serious toxic effects (VERY
 TOXIC). Class D–2A: Material causing other toxic effects (VERY
 TOXIC). Class D–2A: Material causing other toxic effects (VERY
 TOXIC).
 CLASS D–2B: Material causing other toxic effects (TOXIC).
 CEPA DSL: Chloroform
 This product has been classified in accordance with the hazard criteria of
 the Controlled Product Regulations and the MSDS contains all required
 information.

International Regulations

EINECS

Chloroform 200–663–8

DSCL (EEC)

R22– Harmful if swallowed.
 R38– Irritating to skin.
 R40– Possible risks of irreversible effects.
 R48/20/22– Harmful: danger of serious damage to health by prolonged
 exposure through inhalation and if swallowed.

International Lists

Australia (NICNAS): Chloroform

Japan (MITI): Chloroform

Korea (TCCL): Chloroform

Philippines (RA6969): Chloroform

China: No products were found.

State Regulations

Pennsylvania RTK: Chloroform: (special hazard, environmental hazard,
 generic environmental hazard)

Massachusetts RTK: Chloroform

New Jersey: Chloroform

California prop. 65: This product contains the following ingredients for
 which the State of California has found to cause cancer, birth defects or
 other reproductive harm, which would require a warning under the statute:

Chloroform

Chloroform

California prop. 65 (no significant risk level): Chloroform: 20 mg/day (value), 40 mg/day (inhalation)

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Chloroform

Section 16. Other Information

National Fire	0	Fire
Protection	20	Hazard
Association	Health	
(U.S.A.)		Reactivity
		Specific
		Hazard

Changed Since Last
Revision +

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 HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.
