Material Safety Data Sheet
Methyl chloroformate, 97%

ACC# 23961

Section 1 - Chemical Product and Company Identification

MSDS Name: Methyl chloroformate, 97%
Catalog Numbers: AC126530000, AC126530050, AC126531000, AC126535000, NC9314888, NC9314911, XXAC12653-125K
Synonyms: Methyl chlorocarbonate; Chloroformic acid methyl ester.
Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
79-22-1	Methyl chloroformate	97	201-187-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear almost colorless liquid. Flash Point: 5 deg C.
Danger! May be fatal if inhaled. Causes eye and skin burns. **Flammable liquid and vapor.** Harmful if swallowed. Lachrymator (substance which increases the flow of tears). May be harmful if absorbed through the skin. May cause severe digestive tract irritation with possible burns. May cause severe respiratory tract irritation with possible burns. Keep refrigerated. (Store below 4°C/39°F.) Moisture sensitive.
Target Organs: Lungs, eyes, skin, mucous membranes.

Potential Health Effects
Eye: Contact with eyes may cause severe irritation, and possible eye burns. Lachrymator (substance which increases the flow of tears).
Skin: May be absorbed through the skin in harmful amounts. May cause severe irritation and possible burns.
Ingestion: Harmful if swallowed. May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns.
Inhalation: May be fatal if inhaled. Causes chemical burns to the respiratory tract. Vapors may cause dizziness or suffocation. A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid immediately.
Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.
Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.
Inhalation: POISON material. If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: Evacuate area and fight fire from a safe distance. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Use of water will produce irritating and toxic vapors of hydrogen chloride. Hydrochloric acid solutions react with most metals, forming flammable hydrogen gas.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Do NOT use water directly on fire. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.
Flash Point: 5 deg C (41.00 deg F)
Autoignition Temperature: 485 deg C (905.00 deg F)
Explosion Limits, Lower:7.8 vol %
Upper: 23.3 vol %
NFPA Rating: (estimated) Health: 4; Flammability: 3; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Evacuate unnecessary personnel. Approach spill from upwind.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Do not breathe vapor. Keep away from heat, sparks and flame. Use only with adequate ventilation or respiratory protection.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Refrigerator/flammables. Do not store in metal containers. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Ventilation fans and other electrical service must be non-sparking and have an explosion-proof design. Use substance with extreme caution and designate regulated areas for use. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels. Utilize a closed system process where feasible.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Methyl chloroformate	none listed	none listed	none listed

OSHA Vacated PELs: Methyl chloroformate: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles and face shield.
Skin: Wear appropriate protective gloves to prevent skin exposure. Rubber gloves do not appear to afford complete protection.
Clothing: Wear a chemical apron. Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear almost colorless
Odor: unpleasant odor - sharp odor - pungent odor
pH: Not available.
Vapor Pressure: 159 mm Hg @ 25 deg C
Vapor Density: 3.26 (air=1)
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 70 - 72 deg C @ 760 mm Hg
Freezing/Melting Point:-61 deg C
Decomposition Temperature:> 500 deg C
Solubility: gradually forms HCl
Specific Gravity/Density:1.2230 g/cm3
Molecular Formula:C2H3ClO2
Molecular Weight:94.50

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Material hydrolyzes in contact with moisture/water releasing toxic and corrosive fumes of hydrogen chloride and aqueous hydrochloric acid.
Conditions to Avoid: Ignition sources, moisture, metals, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, dimethyl sulfoxide, rubber, dimethyl formamide, organic matter.
Hazardous Decomposition Products: Hydrogen chloride, phosgene, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 79-22-1: FG3675000
LD50/LC50:
CAS# 79-22-1:
Inhalation, mouse: LC50 = 185 mg/m3/2H;
Inhalation, rat: LC50 = 88 ppm/1H;

Oral, mouse: LD50 = 67 mg/kg;
Oral, rat: LD50 = 60 mg/kg;
Skin, rabbit: LD50 = 7120 mg/kg;
.
Inhalation rat LC50: 44 ppm/4H (calculated)
Carcinogenicity:
CAS# 79-22-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: Terrestrial: Rapidly hydrolyzes especially when soil is wet. Aquatic: Rapidly hydrolyzes, not expected to settle in sediment. Atmospheric: Photooxidizes, half life = 74 days. Not expected to bioconcentrate.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series:
CAS# 79-22-1: waste number U156 (Ignitable waste, Toxic waste).

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	METHYL CHLOROFORMATE	METHYL CHLOROFORMATE
Hazard Class:	6.1	6.1(3)(8)
UN Number:	UN1238	UN1238
Packing Group:	I	I

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 79-22-1 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 79-22-1: 1000 lb final RQ; 454 kg final RQ
SARA Section 302 Extremely Hazardous Substances
CAS# 79-22-1: 500 lb TPQ
SARA Codes
CAS # 79-22-1: immediate, fire.
Section 313
This material contains Methyl chloroformate (CAS# 79-22-1, 97%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
CAS# 79-22-1 is considered highly hazardous by OSHA.
STATE
CAS# 79-22-1 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T F

Risk Phrases:

R 11 Highly flammable.
R 23 Toxic by inhalation.
R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 33 Take precautionary measures against static discharges.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)

CAS# 79-22-1: 2

Canada - DSL/NDSL

CAS# 79-22-1 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, E, D1A.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 79-22-1 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 2/13/1998
Revision #5 Date: 3/22/2006