

# Material Safety Data Sheet

## Chloroform

ACC# 04770

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Chloroform

**Catalog Numbers:** AC95232184, S79960, S79960-1, S79960HPLC-2, S79960SPEC-1, S79960SPEC-2, C2974LC, C297POP19, C297POP200, C297POP50, C297RS115, C297RS200, C297RS28, C297RS50, C297SS115, C297SS19, C297SS200, C297SS28, C297SS50, C29820LC, C298FB115, C298FB19, C298FB200, C298FB50, C298J1, C298POP19, C298POP200, C298POP50, C298POPB19, C298POPB200, C298POPB50, C298RB115, C298RB19, C298RB200, C298RB50, C298RB500, C298RS115, C298RS19, C298RS200, C298RS28, C298RS50, C298SS-11, C298SS19, C298SS28, C605-1, C605-4, C606POP19, C606POP200, C606POP50, C606RS115, C606RS200, C606RS28, C606RS50, C606SS115, C606SS19, C606SS200, C606SS28, C606SS50

**Synonyms:** Formyl Trichloride; Methane Trichloride; Methenyl Trichloride; Methyl Trichloride; Trichlormethan; Trichloroform; Trichloromethane.

**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
67-66-3	Chloroform	100	200-663-8
25377-72-4	Amylene	<1.0	246-916-6

**Hazard Symbols:** XN**Risk Phrases:** 22 38 40 48/20/22

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. May cause central nervous system depression. May cause cardiac disturbances. May cause cancer based on animal studies. This substance has caused adverse reproductive and fetal effects in animals. May be harmful if swallowed. **Caution!** Causes eye and skin irritation. Causes digestive and respiratory tract irritation. Light sensitive.

**Target Organs:** Blood, kidneys, heart, central nervous system, liver, cardiovascular system, excretory system, reproductive system.

#### Potential Health Effects

**Eye:** Causes moderate eye irritation. Contact with liquid causes immediate burning pain, tearing, and reddening of the conjunctiva.

**Skin:** Causes mild skin irritation. Prolonged or repeated contact may dry/defat the skin and cause irritation. Absorption of liquid through intact skin is possible and may cause systemic poisoning if contact with liquid is prolonged.

**Ingestion:** Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver damage. May cause cardiac disturbances. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal. Possible aspiration hazard. May cause hallucinations and distorted perceptions.

**Inhalation:** Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. May cause cardiac sensitization and possible failure. Inhalation of large amounts may cause respiratory stimulation, followed by respiratory depression, convulsions and possible death due to respiratory paralysis. May be absorbed through the lungs. Causes irritation of the mucous membrane and upper respiratory tract.

**Chronic:** Possible cancer hazard based on tests with laboratory animals. Prolonged or repeated skin contact may cause dermatitis. May cause reproductive and fetal effects. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects. Toxicity may be increased by exposure to alcohol, steroids, and ketones. Prolonged exposure may cause liver, kidney, and heart damage.

## Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Notes to Physician:** Causes cardiac sensitization to endogenous catecholamines which may lead to cardiac arrhythmias. Do NOT use adrenergic agents such as epinephrine or pseudoepinephrine. Persons with liver, kidney, or central nervous system diseases may be at increased risk from exposure to this product. Alcoholic beverage consumption may enhance the toxic effects of this substance. Effects may be delayed.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. 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. Substance is nonflammable. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

**Extinguishing Media:** Use extinguishing media most appropriate for the surrounding fire. Do NOT get water inside containers. Do NOT use straight streams of water. For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use water spray, fog or regular foam. Cool containers with flooding quantities of water until well after fire is out.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 0

## 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. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Approach spill from upwind.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Avoid contact with eyes, skin, and clothing. Do not breathe dust, vapor, mist, or gas. Do not ingest or inhale. Store protected from light.

**Storage:** Do not store in direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not store near alkaline substances. Separate from strong mineral acids.

## 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. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Chloroform	10 ppm TWA	500 ppm IDLH	50 ppm Ceiling; 240 mg/m <sup>3</sup> Ceiling
Amylene	none listed	none listed	none listed

**OSHA Vacated PELs:** Chloroform: 2 ppm TWA; 9.78 mg/m<sup>3</sup> TWA Amylene: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** 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 a respirator's use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid  
**Appearance:** clear, colorless  
**Odor:** sweet, fruity odor - ethereal odor  
**pH:** Not available.  
**Vapor Pressure:** 160 mm Hg @ 20 deg C  
**Vapor Density:** 4.12 (Air=1)  
**Evaporation Rate:** 11.6 (Butyl acetate=1)  
**Viscosity:** 0.58 cps @ 20 deg C  
**Boiling Point:** 60.5-61.5 deg C  
**Freezing/Melting Point:** -63 deg C  
**Decomposition Temperature:** Not available.  
**Solubility:** Slightly soluble.  
**Specific Gravity/Density:** 1.492 (Water=1)  
**Molecular Formula:** CHCl3  
**Molecular Weight:** 119.366

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions. Light sensitive.

**Conditions to Avoid:** High temperatures, incompatible materials, light.

**Incompatibilities with Other Materials:** Strong oxidizing agents, aluminum, fluorine, magnesium, sodium potassium, lithium, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), dinitrogen tetroxide, sodium + methanol, potassium-tert-butoxide, chemically active metals, Attacks some forms of plastics, rubbers, and coatings., nitrogen tetroxide, acetone + alkali, disilane, perchloric acid + phosphorus pentoxide, sodium methylate, triisopropylphosphine, sodium methoxide + methanol.

**Hazardous Decomposition Products:** Hydrogen chloride, carbon monoxide, carbon dioxide, chlorine, phosgene gas.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 67-66-3: FS9100000

**CAS#** 25377-72-4 unlisted.

**LD50/LC50:**

CAS# 67-66-3:

Draize test, rabbit, eye: 148 mg;

Draize test, rabbit, eye: 20 mg/24H Moderate;

Draize test, rabbit, skin: 500 mg/24H Mild;

Inhalation, rat: LC50 = 47702 mg/m<sup>3</sup>/4H;

Oral, mouse: LD50 = 36 mg/kg;

Oral, rat: LD50 = 695 mg/kg;

Skin, rabbit: LD50 = >20 gm/kg;

CAS# 25377-72-4:

**Carcinogenicity:**

CAS# 67-66-3:

**ACGIH:** A3 - Animal Carcinogen

**California:** carcinogen; initial date 10/1/87

**NIOSH:** potential occupational carcinogen

**NTP:** Suspect carcinogen

**OSHA:** Possible Select carcinogen

**IARC:** Group 2B carcinogen CAS# 25377-72-4: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** Oral, rat: TDLo = 13832 mg/kg/2Y-C (Tumorigenic - Carcinogenic by RTECS criteria - Blood - leukemia).; Oral, mouse: TDLo = 127 gm/kg/92W-I (Tumorigenic - Carcinogenic by RTECS criteria - Liver - tumors).; Oral, rat: TD = 98 gm/kg/78W-I (Tumorigenic - neoplastic by RTECS criteria - Kidney, Ureter, Bladder - Kidney tumors and Endocrine - thyroid tumors).; Oral, mouse: TD = 18 gm/kg/17W-I (Tumorigenic - neoplastic by RTECS criteria - Liver - tumors).;

**Teratogenicity:** Oral, rat: TDLo = 1260 mg/kg (female 6-15 day(s) after conception) Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus) Specific Developmental Abnormalities - musculoskeletal system.; Inhalation, rat: TCLo = 100 ppm/7H (female 6-15 day(s) after conception) Specific Developmental Abnormalities - gastrointestinal system and homeostasis.; Inhalation, mouse: TCLo = 100 ppm/7H (female 8-15 day(s) after conception) Specific Developmental Abnormalities - craniofacial (including nose and tongue).

**Reproductive Effects:** Inhalation, rat: TCLo = 30 ppm/7H (female 6-15 day(s) after conception) Fertility - other measures of fertility.; Inhalation, rat: TCLo = 300 ppm/7H (female 6-15 day(s) after conception) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated) and post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).

**Neurotoxicity:** No information available.

**Mutagenicity:** DNA Inhibition: Human, HeLa cell = 19 mmol/L.; Sister Chromatid Exchange: Human, Lymphocyte = 10 mmol/L.; Micronucleus Test: Oral, rat = 4 mmol/kg.; Unscheduled DNA Synthesis: Oral, rat = 1 gm/kg.; Sister Chromatid Exchange: Hamster, Embryo = 100 umol/L.

**Other Studies:** Open irritation test: Administration onto the skin (rabbit) 10 mg/24H (Mild). Standard Draize Test: Administration onto the skin (rabbit) = 500 mg/24H (Mild). Standard Draize Test: Administration into the eye (rabbit) = 20 mg /24H (Moderate).

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Channel catfish: LC50 = 75 ppm; 96 Hr; Unspecified Rainbow trout: LC50 = 43.8 mg/L; 96 Hr; Static bioassay Fathead Minnow: LC50 = 129.0 mg/L; 96 Hr; Static bioassay (pH = 7.6-8.3) Bluegill/Sunfish: LC50 = 100.0 mg/L; 96 Hr; Static bioassay flea Daphnia: EC50 = 28.9 mg/L; 48 Hr; Static bioassay The majority of the environmental releases from industrial uses are to the atmosphere; releases to water and land will be primarily lost by evaporation and will end up in the atmosphere. Release to the atmosphere may be transported long distances and will photodegrade with a half-life of a few months. Spills and other releases on land will also leach into the groundwater where it will reside for long periods of time.

**Environmental:** Chloroform will not be expected to bioconcentrate into the food chain but contamination of food is likely due to its use as an extractant and its presence in drinking water.

**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# 67-66-3: waste number U044.

## Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
<b>Shipping Name:</b>	CHLOROFORM				CHLOROFORM
<b>Hazard Class:</b>	6.1				6.1(9.2)
<b>UN Number:</b>	UN1888				UN1888
<b>Packing Group:</b>	III				II

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 67-66-3 is listed on the TSCA inventory.

CAS# 25377-72-4 is listed on the TSCA inventory.

#### Health & Safety Reporting List

CAS# 67-66-3: Effective Date: 6/1/87; Sunset Date: 6/1/97

#### 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.

#### SARA

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 67-66-3: 10 lb final RQ; 4.54 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

CAS# 67-66-3: 10,000 lb TPQ

#### SARA Codes

CAS # 67-66-3: acute, chronic. CAS # 25377-72-4: acute, flammable.

#### Section 313

This material contains Chloroform (CAS# 67-66-3, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

#### Clean Air Act:

CAS# 67-66-3 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

#### Clean Water Act:

CAS# 67-66-3 is listed as a Hazardous Substance under the CWA. CAS# 67-66-3 is listed as a Priority Pollutant under the Clean Water Act. CAS# 67-66-3 is listed as a Toxic Pollutant under the Clean Water Act.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 67-66-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 25377-72-4 can be found on the following state right to know lists: New Jersey.

**The following statement(s) is(are) made in order to comply with the California Safe**

**Drinking Water Act:** WARNING: This product contains Chloroform, a chemical known to the state

of California to cause cancer. California No Significant Risk Level: CAS# 67-66-3: 20 ug/day NSRL (oral); 40 ug/day NSRL (inhalation)

## European/International Regulations

### European Labeling in Accordance with EC Directives

#### Hazard Symbols:

XN

#### Risk Phrases:

R 22 Harmful if swallowed.

R 38 Irritating to skin.

R 40 Limited evidence of a carcinogenic effect.

R 48/20/22 Harmful : danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

#### Safety Phrases:

S 36/37 Wear suitable protective clothing and gloves.

#### WGK (Water Danger/Protection)

CAS# 67-66-3: 3

CAS# 25377-72-4: No information available.

#### Canada - DSL/NDSL

CAS# 67-66-3 is listed on Canada's DSL List.

CAS# 25377-72-4 is listed on Canada's DSL List.

#### Canada - WHMIS

This product has a WHMIS classification of D2A, D1B.

#### Canadian Ingredient Disclosure List

CAS# 67-66-3 is listed on the Canadian Ingredient Disclosure List.

#### Exposure Limits

CAS# 67-66-3: OEL-ARAB Republic of Egypt:TWA 10 ppm (50 mg/m<sup>3</sup>) OEL-AUSTRALIA:TWA 10 ppm (50 mg/m<sup>3</sup>); Carcinogen OEL-AUSTRIA:TWA 10 ppm (50 mg/m<sup>3</sup>) OEL-BELGIUM:TWA 10 ppm (49 mg/m<sup>3</sup>); Carcinogen JAN9 OEL-CZECH SLOVAKIA:TWA 10 mg/m<sup>3</sup>; STEL 20 mg/m<sup>3</sup> OEL-DENMARK:TWA 2 ppm (10 mg/m<sup>3</sup>); Carcinogen OEL-FINLAND:TWA 10 ppm (50 mg/m<sup>3</sup>); STEL 20 ppm; Skin; CAR OE L-FRANCE:TWA 5 ppm (25 mg/m<sup>3</sup>); STEL 50 ppm (250 mg/m<sup>3</sup>); CAR OEL-GERMANY :TWA 10 ppm (50 mg/m<sup>3</sup>); Carcinogen JAN9 OEL-HUNGARY:STEL 10 mg/m<sup>3</sup> OEL -INDIA:TWA 10 ppm (50 mg/m<sup>3</sup>); Carcinogen OEL-JAPAN:TWA 50 ppm (240 mg/m<sup>3</sup>); Carcinogen OEL-THE NETHERLANDS:TWA 10 ppm (50 mg/m<sup>3</sup>) OEL-THE PHILIPPINES:TWA 50 ppm (240 mg/m<sup>3</sup>) OEL-POLAND:TWA 50 mg/m<sup>3</sup> OEL-RUSSIA:TWA 50 ppm OEL-SWEDEN:TWA 2 ppm (10 mg/m<sup>3</sup>); STEL 5 ppm (25 mg/m<sup>3</sup>); CAR OEL-SWITZERLAND:TWA 10 ppm (50 mg/m<sup>3</sup>); STEL 20 ppm (100 mg/m<sup>3</sup>) OEL-THAILAND:TWA 50 ppm (240 mg/m<sup>3</sup>) OEL-TURKEY:TWA 50 ppm (240 mg/m<sup>3</sup>) OEL-UNITED KINGDOM:TWA 2 ppm (9.9 mg/m<sup>3</sup>); Skin OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV

## Section 16 - Additional Information

**MSDS Creation Date:** 6/09/1999

**Revision #7 Date:** 9/11/2002

*The information above is believed to be accurate and represents the best information currently available to us. However, we make*

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