# SAFETY DATA SHEET

**Creation Date** 20-January-2010 **Revision Date** 25-September-2018 **Revision Number** 4

## 1. Identification

**Product Name** **Chloroform, stabilized with ethanol**

**Cat No. :** **C298-1; C298-1EA; C298-1LC; C298-4; C298-20; C298-200; C298-200LC; C298-500; C298FB-19; C298FB-50; C298FB-115; C298FB-200; C298RB-115; C298RB-200; C298RS-19; C298RS-28; C298RS-50; C298RS-115; C298RS-200; C298S-4; C298SK-4; C298SS-50; C298SS-115; C298SS-200**

**CAS-No** 67-66-3
**Synonyms** Formyl trichloride; Methane trichloride; Methenyl trichloride

**Recommended Use** Laboratory chemicals.
**Uses advised against**

**Details of the supplier of the safety data sheet**

**Company**
**Importer/Distributor**
Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

**Manufacturer**
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

**Emergency Telephone Number**
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

## 2. Hazard(s) identification

**Classification**

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

| | |
|---|---|
| **Acute oral toxicity** | Category 4 |
| **Acute Inhalation Toxicity** | Category 3 |
| **Skin Corrosion/irritation** | Category 2 |
| **Serious Eye Damage/Eye Irritation** | Category 2 |
| **Carcinogenicity** | Category 2 |
| **Reproductive Toxicity** | Category 2 |
| **Specific target organ toxicity (single exposure)** | Category 3 |
| Target Organs - Respiratory system, Central nervous system (CNS). | |
| **Specific target organ toxicity - (repeated exposure)** | Category 2 |
| Target Organs - Heart, Liver, Kidney, Blood. | |

**Label Elements**

**Signal Word**
Danger

**Hazard Statements**
Harmful if swallowed
Toxic if inhaled
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation
May cause drowsiness and dizziness
Suspected of causing cancer
Suspected of damaging the unborn child
May cause damage to organs through prolonged or repeated exposure

**Precautionary Statements**
**Prevention**
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fumes/gas/mist/vapours/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
**Response**
IF exposed or concerned: Get medical advice/attention
IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell
IF ON SKIN: Wash with plenty of soap and water
IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Rinse mouth
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing
**Storage**
Store locked up
Store in a well-ventilated place. Keep container tightly closed
**Disposal**
Dispose of contents/container to an approved waste disposal plant

**Other Hazards**
Light sensitive

## 3. Composition/Information on Ingredients

| Component | CAS-No | Weight % |
|---|---|---|
| Chloroform | 67-66-3 | >99 |
| Ethyl alcohol | 64-17-5 | <0.8 |

## 4. First-aid measures

| | |
|---|---|
| **General Advice** | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. |
| **Eye Contact** | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |
| **Skin Contact** | Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required. |
| **Inhalation** | Move to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. |
| **Ingestion** | Do not induce vomiting. Call a physician or Poison Control Center immediately. |
| **Most important symptoms/effects** | . Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing: May cause decreases in blood pressure and other cardiac effects: Symptoms may be delayed |
| **Notes to Physician** | Treat symptomatically |

## 5. Fire-fighting measures

| | |
|---|---|
| **Suitable Extinguishing Media** | Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. |
| **Unsuitable Extinguishing Media** | No information available |
| **Flash Point** | No information available |
| **Method -** | No information available |
| **Autoignition Temperature** | No information available |
| **Explosion Limits** | |
| **Upper** | No data available |
| **Lower** | No data available |
| **Sensitivity to Mechanical Impact** | No information available |
| **Sensitivity to Static Discharge** | No information available |

**Specific Hazards Arising from the Chemical**
Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

**Hazardous Combustion Products**
Carbon monoxide (CO) Carbon dioxide ($CO_2$) Hydrogen chloride gas phosgene
**Protective Equipment and Precautions for Firefighters**
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

| Health | Flammability | Instability | Physical hazards |
|---|---|---|---|
| 2 | 1 | 1 | N/A |

## 6. Accidental release measures

| | |
|---|---|
| **Personal Precautions** | Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. |
| **Environmental Precautions** | Should not be released into the environment. |
| **Methods for Containment and Clean Up** | Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. |

## 7. Handling and storage

**Handling** Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe vapors or spray mist. Do not ingest.

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Store under an inert atmosphere. Protect from moisture.

## 8. Exposure controls / personal protection

**Exposure Guidelines**

| Component | Alberta | British Columbia | Ontario TWAEV | Quebec | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---|---|---|---|---|---|---|---|
| Chloroform | TWA: 10 ppm TWA: 49 mg/m³ | TWA: 2 ppm | TWA: 10 ppm | TWA: 5 ppm TWA: 24.4 mg/m³ | TWA: 10 ppm | (Vacated) TWA: 2 ppm (Vacated) TWA: 9.78 mg/m³ Ceiling: 50 ppm Ceiling: 240 mg/m³ | IDLH: 500 ppm STEL: 2 ppm STEL: 9.78 mg/m³ |
| Ethyl alcohol | TWA: 1000 ppm TWA: 1880 mg/m³ | STEL: 1000 ppm | STEL: 1000 ppm | TWA: 1000 ppm TWA: 1880 mg/m³ | STEL: 1000 ppm | (Vacated) TWA: 1000 ppm (Vacated) TWA: 1900 mg/m³ TWA: 1000 ppm TWA: 1900 mg/m³ | IDLH: 3300 ppm TWA: 1000 ppm TWA: 1900 mg/m³ |

**Legend**

*ACGIH - American Conference of Governmental Industrial Hygienists*

*OSHA - Occupational Safety and Health Administration*

*NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health*

**Engineering Measures**

Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment**

**Eye Protection** Goggles

**Hand Protection** Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time | Glove thickness | Glove comments |
|---|---|---|---|
| Viton (R) | > 480 minutes | 0.30 mm | As tested under EN374-3 Determination of Resistance to Permeation by Chemicals |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** low boiling organic solvent Type AX Brown conforming to EN371

When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls**
Prevent product from entering drains.

**Hygiene Measures**
Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

| | |
|---|---|
| **Physical State** | Liquid |
| **Appearance** | Colorless |
| **Odor** | aromatic Slight sweet |
| **Odor Threshold** | No information available |
| **pH** | No information available |
| **Melting Point/Range** | -63 °C / -81.4 °F |
| **Boiling Point/Range** | 61 °C / 141.8 142.7 °F |
| **Flash Point** | No information available |
| **Evaporation Rate** | 11.6 (Butyl Acetate = 1.0) |
| **Flammability (solid,gas)** | Not applicable |
| **Flammability or explosive limits** | |
| **Upper** | No data available |
| **Lower** | No data available |
| **Vapor Pressure** | 213 mbar @ 20 °C |
| **Vapor Density** | 4.12 (Air = 1.0) |
| **Specific Gravity** | 1.480 |
| **Solubility** | Slightly soluble in water |
| **Partition coefficient; n-octanol/water** | No data available |
| **Autoignition Temperature** | No information available |
| **Decomposition Temperature** | No information available |
| **Viscosity** | 0.56 mPa.s @ 20 °C |
| **Molecular Formula** | C H Cl3 |
| **Molecular Weight** | 119.38 |

## 10. Stability and reactivity

**Reactive Hazard** None known, based on information available

**Stability** Stable under normal conditions. Unstable upon depletion of inhibitor. Light sensitive.

**Conditions to Avoid** Incompatible products. Heat, flames and sparks. Excess heat. Exposure to light. Protect from moisture.

**Incompatible Materials** Strong oxidizing agents, Alkali metals, Aluminium, Acetone

**Hazardous Decomposition Products** Carbon monoxide (CO), Carbon dioxide ($CO_2$), Hydrogen chloride gas, phosgene

**Hazardous Polymerization** Hazardous polymerization does not occur.

**Hazardous Reactions** None under normal processing.

## 11. Toxicological information

**Acute Toxicity**

**Product Information**
**Component Information**

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Chloroform | LD50 = 695 mg/kg ( Rat )<br>LD50 = 450 mg/kg ( Rat ) | LD50 > 20 g/kg ( Rabbit ) | 47,702 mg/L ( Rat ) 4 h |
| Ethyl alcohol | 3450 mg/kg ( Mouse ) | Not listed | 20000 ppm/10H ( Rat ) |

**Toxicologically Synergistic Products** No information available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Irritation** Irritating to eyes and skin

**Sensitization** No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen. Limited evidence of a carcinogenic effect. Ethanol has been shown to be carcinogenic in long-term studies only when consumed and abused as an alcoholic beverage.

| Component | CAS-No | IARC | NTP | ACGIH | OSHA | Mexico |
|---|---|---|---|---|---|---|
| Chloroform | 67-66-3 | Group 2B | Reasonably Anticipated | A3 | X | A3 |
| Ethyl alcohol | 64-17-5 | Group 1 | Known | A3 | X | Not listed |

*IARC: (International Agency for Research on Cancer)*
*IARC: (International Agency for Research on Cancer)*
*Group 1 - Carcinogenic to Humans*
*Group 2A - Probably Carcinogenic to Humans*
*Group 2B - Possibly Carcinogenic to Humans*

*NTP: (National Toxicity Program)*
*NTP: (National Toxicity Program)*
*Known - Known Carcinogen*
*Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen*

*ACGIH: (American Conference of Governmental Industrial Hygienists)*
*A1 - Known Human Carcinogen*
*A2 - Suspected Human Carcinogen*
*A3 - Animal Carcinogen*
*ACGIH: (American Conference of Governmental Industrial Hygienists)*

*Mexico - Occupational Exposure Limits - Carcinogens*
*Mexico - Occupational Exposure Limits - Carcinogens*
*A1 - Confirmed Human Carcinogen*
*A2 - Suspected Human Carcinogen*
*A3 - Confirmed Animal Carcinogen*
*A4 - Not Classifiable as a Human Carcinogen*
*A5 - Not Suspected as a Human Carcinogen*

**Mutagenic Effects** No information available

**Reproductive Effects** Suspect reproductive hazard - contains material which may injure unborn child.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** Respiratory system Central nervous system (CNS)
**STOT - repeated exposure** Heart Liver Kidney Blood

**Aspiration hazard** No information available

**Symptoms / effects,both acute and delayed** Symptoms of overexposure are dizziness, headache, tiredness, nausea, unconsciousness, cessation of breathing: May cause decreases in blood pressure and other cardiac effects: Symptoms may be delayed

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.

## 12. Ecological information

**Ecotoxicity**

Do not empty into drains. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The

product contains following substances which are hazardous for the environment.

| Component | Freshwater Algae | Freshwater Fish | Microtox | Water Flea |
|---|---|---|---|---|
| Chloroform | EC50 = 560 mg/L/48h | LC50: = 300 mg/L, 96h static (Poecilia reticulata)<br>LC50: = 18 mg/L, 96h flow-through (Lepomis macrochirus)<br>LC50: = 18 mg/L, 96h flow-through (Oncorhynchus mykiss)<br>LC50: = 71 mg/L, 96h flow-through (Pimephales promelas) | Photobacterium phosphoreum: EC50 = 520 mg/L/5 min<br>Photobacterium phosphoreum: EC50 = 670 mg/L/15 min<br>Photobacterium phosphoreum: EC50 = 670 mg/L/30min | EC50 = 28.9 mg/L/48h |
| Ethyl alcohol | EC50 (72h) = 275 mg/l (Chlorella vulgaris) | Fathead minnow (Pimephales promelas) LC50 = 14200 mg/l/96h | Photobacterium phosphoreum:EC50 = 34634 mg/L/30 min<br>Photobacterium phosphoreum:EC50 = 35470 mg/L/5 min | EC50 = 9268 mg/L/48h<br>EC50 = 10800 mg/L/24h |

**Persistence and Degradability** Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its volatility.

| Component | log Pow |
|---|---|
| Chloroform | 2 |
| Ethyl alcohol | -0.32 |

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

| Component | RCRA - U Series Wastes | RCRA - P Series Wastes |
|---|---|---|
| Chloroform - 67-66-3 | U044 | - |

## 14. Transport information

**DOT**

**UN-No** UN1888
**Proper Shipping Name** CHLOROFORM
**Hazard Class** 6.1
**Packing Group** III

**TDG**

**UN-No** UN1888
**Proper Shipping Name** CHLOROFORM
**Hazard Class** 6.1
**Packing Group** III

**IATA**

**UN-No** UN1888
**Proper Shipping Name** CHLOROFORM
**Hazard Class** 6.1
**Packing Group** III

**IMDG/IMO**

**UN-No** UN1888
**Proper Shipping Name** CHLOROFORM
**Hazard Class** 6.1
**Packing Group** III

## 15. Regulatory information

**International Inventories**

| Component | DSL | NDSL | TSCA | EINECS | ELINCS | NLP | PICCS | ENCS | AICS | IECSC | KECL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloroform | X | - | X | 200-663-8 | - | | X | X | X | X | X |
| Ethyl alcohol | X | - | X | 200-578-6 | - | | X | X | X | X | X |

**Canada**

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

| Component | Canada - National Pollutant Release Inventory (NPRI) | Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances | Canada's Chemicals Management Plan (CEPA) |
|---|---|---|---|
| Chloroform | Part 1, Group A Substance Part 4 Substance | | |
| Ethyl alcohol | Part 5, Individual Substances Part 4 Substance | | |

## 16. Other information

**Prepared By** Regulatory Affairs
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**Revision Summary** This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

**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**

**End of SDS**