1. Product and Company Identification

Material name: CHLOROFORM
Version #: 01
Revision date: 04-28-2011
CAS #: 67-66-3
Product Codes: J.T.Baker: 9174, 9175, 9180, 9182, 9183, 9184, 9186, 9188, 9257
Macron: 11207, 4432, 4440, 4441, 4443, 4444, H407, V551

Synonym(s): Trichloromethane; Methyl trichloride; Methane trichloride

Manufacturer: Avantor Performance Materials, Inc.
Address: 222 Red School Lane
Phillipsburg, NJ 08865
US

Customer Service: 800-582-2537
24 Hour Emergency: 908-859-2151
Chemtrec: 800-424-9300

2. Hazards Identification

Emergency overview: DANGER

Possible cancer hazard - may cause cancer based on animal data. Harmful if inhaled or swallowed. Causes skin and eye irritation. Vapors may cause drowsiness and dizziness. Causes central nervous system effects. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility based on animal data. May cause damage to the liver and kidneys.

OSHA regulatory status: This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects:
- Routes of exposure: Inhalation. Ingestion. Skin contact. Eye contact.
- Eyes: Causes eye irritation.
- Skin: Causes skin irritation. Prolonged or repeated exposure may cause severe irritation.
- Inhalation: Harmful if inhaled. Vapors may cause drowsiness and dizziness. Can cause severe central nervous system depression (including unconsciousness).
- Ingestion: Harmful if swallowed. Irritating. May cause nausea, stomach pain and vomiting. Can cause severe central nervous system depression (including unconsciousness).


Chronic effects:
Possible cancer hazard - may cause cancer based on animal data. Can cause cardiovascular effects. Can cause liver damage. Can cause kidney damage. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility based on animal data. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

Potential environmental effects: Harmful to aquatic organisms.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLOROFORM</td>
<td>67-66-3</td>
<td>98 - 100</td>
</tr>
</tbody>
</table>

4. First Aid Measures

First aid procedures:
- Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.
5. Fire Fighting Measures

Flammable properties

This product is not flammable. May burn, but does not ignite readily.

Extinguishing media

Suitable extinguishing media

Water. Carbon dioxide (CO2). Dry chemical powder. Foam.

Unsuitable extinguishing media

None known.

Protection of firefighters

Specific hazards arising from the chemical

Fire may produce irritating, corrosive and/or toxic gases.

Protective equipment and precautions for firefighters

Use water spray to cool unopened containers. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Specific methods

In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products

Carbon monoxide and carbon dioxide. Hydrogen Chloride (HCl).

6. Accidental Release Measures

Personal precautions

Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

Methods for containment

Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Collect in a non-combustible container for prompt disposal.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Handling

Wear appropriate personal protective equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.
8. Exposure Controls / Personal Protection

### Occupational exposure limits

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLOROFORM (67-66-3)</td>
<td>TWA</td>
<td>10.0000 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLOROFORM (67-66-3)</td>
<td>Ceiling</td>
<td>50.0000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>240.0000 mg/m³</td>
</tr>
</tbody>
</table>

**Engineering controls**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal protective equipment**

- **Eye / face protection**: Wear safety glasses with side shields (or goggles) and a face shield.
- **Skin protection**: Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.
- **Respiratory protection**: Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.
- **General hygiene considerations**: Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
- **General**: Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Clear</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Colorless</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Ether-like</td>
</tr>
<tr>
<td><strong>Odor threshold</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Form</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Melting point</strong></td>
<td>-81.4 °F (-63.41 °C)</td>
</tr>
<tr>
<td><strong>Freezing point</strong></td>
<td>-81.4 °F (-63.41 °C)</td>
</tr>
<tr>
<td><strong>Boiling point</strong></td>
<td>141.8 °F (61.17 °C)</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>11.6 BuAc</td>
</tr>
<tr>
<td><strong>Flammability limits in air, upper, % by volume</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammability limits in air, lower, % by volume</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Vapor pressure</strong></td>
<td>26.264 kPa at 25°C</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>4.12</td>
</tr>
<tr>
<td><strong>Specific gravity</strong></td>
<td>1.4835</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Solubility (water)</strong></td>
<td>5 g/l at 77°F</td>
</tr>
</tbody>
</table>

Material name: CHLOROFORM

MSDS US COV 3 / 8
### Partition coefficient

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>1.97</td>
</tr>
</tbody>
</table>

### Auto-ignition temperature

Not available.

### Decomposition temperature

437 °F (225 °C)

### Percent volatile

100 %

### Molecular weight

119.38 g/mol

### Molecular formula

C-H-Cl3

### Chemical Stability & Reactivity Information

**Chemical stability**

Stable under normal temperature conditions.

**Conditions to avoid**

Heat, flames and sparks. Exposure to air.

**Incompatible materials**


**Hazardous decomposition products**


**Possibility of hazardous reactions**

Hazardous polymerization does not occur.

### Toxicological Information

#### Toxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLOROFORM (67-66-3)</td>
<td>Acute Inhalation LC50 Rat: 47.702 mg/l 4.00 Hours</td>
</tr>
<tr>
<td></td>
<td>Acute Oral LD50 Rat: 444 mg/kg</td>
</tr>
</tbody>
</table>

**Sensitization**

Not a skin sensitizer.

**Acute effects**

Harmful if inhaled or swallowed.

**Local effects**

Causes skin and eye irritation.

**Chronic effects**

Causes central nervous system effects. Can cause liver damage. Can cause kidney damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

**Carcinogenicity**

Possible cancer hazard - may cause cancer based on animal data.

**ACGIH Carcinogens**

CHLOROFORM (CAS 67-66-3)  A3 Confirmed animal carcinogen with unknown relevance to humans.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

CHLOROFORM (CAS 67-66-3)  2B Possibly carcinogenic to humans.

**US NTP Report on Carcinogens: Anticipated carcinogen**

CHLOROFORM (CAS 67-66-3)  Anticipated carcinogen.

**Skin corrosion/irritation**

Causes skin irritation.

**Epidemiology**

No epidemiological data is available for this product.

**Mutagenicity**

Not classified.

**Neurological effects**

High vapor/aerosol concentrations (attainable only at elevated temperatures) may cause central nervous system effects such as dizziness, drowsiness or headaches. Central and/or peripheral nervous system damage.

**Reproductive effects**

Suspected of damaging fertility or the unborn child.

**Teratogenicity**

Components in this product have been shown to cause birth defects and reproductive disorders in laboratory animals.

**Symptoms and target organs**

12. Ecological Information

Ecotoxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLOROFORM (67-66-3)</td>
<td>LC50 Fathead minnow (Pimephales promelas): 62.81 mg/l 96.00 hours</td>
</tr>
</tbody>
</table>

Ecotoxicity Harmful to aquatic life.
Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability The product is not readily biodegradable.
Partition coefficient (n-octanol/water) 1.97

13. Disposal Considerations

Waste codes

<table>
<thead>
<tr>
<th>US RCRA Hazardous Waste U List: Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHLOROFORM (CAS 67-66-3) U044</td>
</tr>
</tbody>
</table>

Disposal instructions
Dispose of this material and its container to hazardous or special waste collection point.
Incinerate the material under controlled conditions in an approved incinerator. All wastes must be handled in accordance with local, state and federal regulations.
Contaminated packaging
Offer rinsed packaging material to local recycling facilities. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Basic shipping requirements:
- UN number UN1888
- Proper shipping name Chloroform
- Hazard class 6.1
- Packing group III

Additional information:
- Special provisions IB3, N36, T7, TP2

IMDG

Basic shipping requirements:
- UN number 1888
- Proper shipping name CHLOROFORM
- Hazard class 6.1

IATA

Basic shipping requirements:
- UN number 1888
- Proper shipping name Chloroform
- Hazard class 6.1
- Packing group III

Additional information:
- ERG number 6A
15. Regulatory Information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity

CHLOROFORM (CAS 67-66-3) 10 LBS

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity

CHLOROFORM (CAS 67-66-3) 10000 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

CHLOROFORM (CAS 67-66-3) 0.1 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

CHLOROFORM (CAS 67-66-3) Listed.

CERCLA (Superfund) reportable quantity

CHLOROFORM: 10.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 311 hazardous chemical

Yes

Clean Air Act (CAA)

HAPS list

Clean Water Act (CWA)

Hazardous substance
Priority pollutant
Toxic pollutant

Safe Drinking Water Act (SDWA)

0.07 mg/l
0.080 mg/l

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Country(s) or region | Inventory name | On inventory (yes/no) *
--- | --- | ---
Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes

*A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
CHLOROFORM (CAS 67-66-3) Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

US - California Proposition 65 - CRT: Listed date/Developmental toxin

US - New Jersey Community RTK (EHS Survey): Reportable threshold
CHLOROFORM (CAS 67-66-3) 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance
CHLOROFORM (CAS 67-66-3) Listed.

US - Pennsylvania RTK - Hazardous Substances: Special hazard
CHLOROFORM (CAS 67-66-3) Special hazard.

Sal-T-Data
Health: 2 - Moderate (Poison)
Flammability: 1 - Slight
Reactivity: 1 - Slight
Contact: 3 - Severe
Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: B - Blue (Health)

16. Labeling Info

Label Hazard Warning
DANGER

Possible cancer hazard - may cause cancer based on animal data. Harmful if inhaled or swallowed. Causes skin and eye irritation. Vapors may cause drowsiness and dizziness. Causes central nervous system effects. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility based on animal data. May cause damage to the liver and kidneys.

Label Precautions
Do not breathe mist or vapor. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

Label First Aid
Immediately flush eyes with plenty of water for at least 15 minutes. Immediately flush skin with plenty of water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

17. Other Information

NFPA ratings
Health: 2
Flammability: 0
Instability: 0
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