

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 05/11/2009

Reviewed on 05/11/2009

**1 Identification of substance:****Product details:****Product name:** Chloroform**Stock number:** 32614**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company  
 Johnson Matthey Catalog Company, Inc.  
 30 Bond Street  
 Ward Hill, MA 01835-8099  
 Emergency Phone: (978) 521-6300  
 CHEMTREC: (800) 424-9300  
 Web Site: www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

**2 Composition/Data on components:****Chemical characterization:****Description: (CAS#)**

Chloroform (CAS# 67-66-3); 100%

**Identification number(s):****EINECS Number:** 200-663-8**Index number:** 602-006-00-4**3 Hazards identification****Hazard description:**

Xn Harmful

**Information pertaining to particular dangers for man and environment**

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.

**Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	1	Health (acute effects) = 1
FIRE	1	Flammability = 1
REACTIVITY	1	Reactivity = 1

**GHS label elements****Warning**

3.6/2 - Suspected of causing cancer.  
 3.9/2 - May cause damage to organs through prolonged or repeated exposure.

**Warning**

3.1/4 - Harmful if swallowed.  
 3.2/2 - Causes skin irritation.

**Prevention:**

Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Do not breathe dust/fume/gas/mist/vapours/spray.  
 Wash thoroughly after handling.  
 Do not eat, drink or smoke when using this product.  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 Use personal protective equipment as required.

**Response:**

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

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IF ON SKIN: Wash with plenty of soap and water.  
 IF exposed or concerned: Get medical advice/attention.  
 Get medical advice/attention if you feel unwell.  
 Specific treatment (see label).  
 Rinse mouth.  
 If skin irritation occurs: Get medical advice/attention.  
 Take off contaminated clothing and wash before reuse.

**Storage:**

Store locked up.

**Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**4 First aid measures****After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
 Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.  
 Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek immediate medical advice.**5 Fire fighting measures****Suitable extinguishing agents**

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

**Protective equipment:**

Wear self-contained respirator.  
 Wear fully protective impervious suit.

**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Measures for environmental protection:**

Do not allow material to be released to the environment without proper governmental permits.

**Measures for cleaning/collecting:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**Additional information:**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

**7 Handling and storage****Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

**Information about protection against explosions and fires:** No special measures required.**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:** Store away from oxidizing agents.**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**8 Exposure controls and personal protection****Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

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**Components with limit values that require monitoring at the workplace:**

Chloroform

	ppm
ACGIH TLV	10
Belgium TWA	10
France TWA	5, 50-STEL
Germany TWA	10
Netherlands TWA	10
Switzerland TWA	10, 20-STEL
United Kingdom TWA	2
Russia TWA	50
Denmark TWA	2
Finland TWA	10, 20-STEL
Hungary TWA	10 mg/m <sup>3</sup>
Poland TWA	50 mg/m <sup>3</sup>
Sweden TWA	2, 5-STEL
USA	50-STEL

**Additional information:** No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the skin.

Avoid contact with the eyes and skin.

**Breathing equipment:** Use suitable respirator when high concentrations are present.**Protection of hands:** Impervious gloves**Eye protection:** Safety glasses**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information**

<b>Form:</b>	Fluid
<b>Color:</b>	Colorless
<b>Odor:</b>	Characteristic

**Change in condition**

<b>Melting point/Melting range:</b>	-63.5°C (-82°F)
<b>Boiling point/Boiling range:</b>	61.26°C (142°F)
<b>Sublimation temperature / start:</b>	Not determined

**Flash point:** Not determined**Ignition temperature:** 982°C (1800°F)**Decomposition temperature:** Not determined**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:**

<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined

**Vapor pressure at 20°C (68°F):** 210 hPa (158 mm Hg)**Density at 20°C (68°F):** 1.492 g/cm<sup>3</sup>**Solubility in / Miscibility with Water:** Not miscible or difficult to mix**Viscosity: dynamic at 20°C (68°F):** 0.56 mPas**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Oxidizing agents

Bases

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Alkali metals

**Dangerous reactions** Reacts with certain metals.**Dangerous products of decomposition:**

Phosgene

Hydrogen chloride (HCl)

Carbon monoxide and carbon dioxide

Chlorine

**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	820 mg/kg (guinea pig)
		36 mg/kg (mouse)
		908 mg/kg (rat)
Dermal	LD50	>20000 mg/kg (rabbit)
Inhalative	LC50/4H	47702 mg/m <sup>3</sup> /4H (rat)

**Primary irritant effect:****on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Chloroform is a well known anesthetic, that use now having been abandoned due to its toxic effects. It's vapor and mist is irritating to the eyes, mucous membranes and upper respiratory tract. The liquid causes skin irritation and may be absorbed through the skin. Exposure may cause dizziness, nausea, headache, vomiting, gastrointestinal disturbances, nervous system disturbances, and damage to the liver, kidneys, cardiovascular system, central nervous system or blood.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

EPA-B2: Probable human carcinogen, sufficient evidence from animal studies; inadequate evidence or no data from epidemiologic studies.

IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

**12 Ecological information:****General notes:**

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:****Recommendation** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.

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**14 Transport information****DOT regulations:**

**Hazard class:** 6.1  
**Identification number:** UN1888  
**Packing group:** III  
**Hazardous substance:** 10 lbs, 4.54 kg  
**Proper shipping name (technical name):** CHLOROFORM  
**Label:** 6.1

**Land transport ADR/RID (cross-border)**

**ADR/RID class:** 6.1 (T1) Toxic substances  
**Danger code (Kemler):** 60  
**UN-Number:** 1888  
**Packaging group:** III  
**Description of goods:** 1888 CHLOROFORM

**Maritime transport IMDG:**

**IMDG Class:** 6.1  
**UN Number:** 1888  
**Label:** 6.1  
**Packaging group:** III  
**EMS Number:** F-A, S-A  
**Proper shipping name:** CHLOROFORM

**Air transport ICAO-TI and IATA-DGR:**

**ICAO/IATA Class:** 6.1  
**UN/ID Number:** 1888  
**Label:** 6.1  
**Packaging group:** III  
**Proper shipping name:** CHLOROFORM

UN "Model Regulation": UN1888, CHLOROFORM, 6.1, III

**15 Regulations****Product related hazard informations:****Hazard symbols:**

Xn Harmful

**Risk phrases:**

22 Harmful if swallowed.  
 38 Irritating to skin.  
 40 Limited evidence of a carcinogenic effect.  
 48/20/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

**Safety phrases:**

36/37 Wear suitable protective clothing and gloves.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

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This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.  
All components of this product are listed on the Canadian Domestic Substances List (DSL).

**Information about limitation of use:**

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.

**Contact:** Zachariah Holt

**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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