

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

## 1 Identification of substance:

### Product details:

**Product name:** Benzotrichloride

**Stock number:** A15652

### 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#)

Benzotrichloride (CAS# 98-07-7): 100%

#### Identification number(s):

**EINECS Number:** 202-634-5

**Index number:** 602-038-00-9

## 3 Hazards identification

### Hazard description:



T Toxic

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

R 45 May cause cancer.  
 R 22 Also harmful if swallowed.  
 R 23 Also toxic by inhalation.  
 R 37/38 Irritating to respiratory system and skin.  
 R 41 Risk of serious damage to eyes.

### Classification system

#### HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	2	Health (acute effects) = 2
FIRE	1	Flammability = 1
REACTIVITY	1	Reactivity = 1

## 4 First aid measures

### General information

Immediately remove any clothing soiled by the product.  
 Remove breathing apparatus only after contaminated clothing has been completely removed.

(Contd. on page 2)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

**Product name: Benzotrichloride**

(Contd. of page 1)

In case of irregular breathing or respiratory arrest provide artificial respiration.

**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**

Use carbon dioxide, extinguishing powder or foam. Water may be ineffective but may be used for cooling exposed containers.

**Special hazards caused by the material, its products of combustion or resulting gases:**

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Hydrogen chloride (HCl)

**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.

Open and handle container with care.

(Contd. on page 3)

**Material Safety Data Sheet**  
acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

**Product name: Benzotrichloride**

(Contd. of page 2)

**Information about protection against explosions and fires:**

Keep ignition sources away.

**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.

Store away from water/moisture.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

This product is moisture sensitive.

**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.

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

Benzotrichloride

ACGIH TLV	CL 0.1 ppm; Suspected human carcinogen
Austria MAK	Carcinogen
Finland TWA	Carcinogen
Germany MAK	Carcinogen
Korea TLV	CL 0.1 ppm; Suspected human carcinogen
Russia TWA	0.2 mg/m <sup>3</sup> -STEL
Sweden NGV	Carcinogen
Switzerland MAK-W	Carcinogen
United Kingdom TWA	Carcinogen

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

Check protective gloves prior to each use for their proper condition.

Impervious gloves

**Material of gloves**

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

(Contd. on page 4)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

**Product name: Benzotrichloride**

(Contd. of page 3)

**Eye protection:** Safety glasses**Body protection:** Protective work clothing.

## 9 Physical and chemical properties:

### General Information

<b>Form:</b>	Liquid
<b>Color:</b>	Pale yellow Colorless
<b>Odor:</b>	Not determined

### Change in condition

<b>Melting point/Melting range:</b>	Not determined
<b>Boiling point/Boiling range:</b>	221-223°C (430-433°F)
<b>Sublimation temperature / start:</b>	Not determined

<b>Flash point:</b>	97°C (207°F)
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<b>Ignition temperature:</b>	Not determined
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<b>Decomposition temperature:</b>	Not determined
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<b>Danger of explosion:</b>	Product does not present an explosion hazard.
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### Explosion limits:

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

<b>Vapor pressure:</b>	Not determined
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<b>Density at 20°C (68°F):</b>	1.38 g/cm <sup>3</sup>
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## 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

Water/moisture

**Dangerous reactions** No dangerous reactions known

### Dangerous products of decomposition:

Carbon monoxide and carbon dioxide

Hydrogen chloride (HCl)

## 11 Toxicological information

### Acute toxicity:

#### LD/LC50 values that are relevant for classification:

Oral	LD50	1300 mg/kg (mam)
		702 mg/kg (mouse)
		1300 mg/kg (rat)
Dermal	LD50	4000 mg/kg (rabbit)
Inhalative	LC50	60 mg/m <sup>3</sup> (mam)

(Contd. on page 5)

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

**Product name: Benzotrichloride**

(Contd. of page 4)

	LC50/2H	60 mg/m <sup>3</sup> /2H (mouse) 8 ppm/2H (mouse) 150 mg/m <sup>3</sup> /2H (rat) 19 ppm/2H (rat)
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**Primary irritant effect:****on the skin:** Irritant to skin and mucous membranes.**on the eye:**

Irritating effect.

Lachrymatory effect.

**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Tumorigenic effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with bacteria.

Mutagenic effects have been observed on tests with human and/or animal DNA cells.

Mutagenic effects have been observed on tests with laboratory animals.

**Subacute to chronic toxicity:****Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - muscle contraction or spasticity.

Behavioral - changes in motor activity (specific assay).

Behavioral - excitement.

Liver - other changes.

Liver - changes in liver weight.

Lungs, Thorax, or Respiration - respiratory depression

Lungs, Thorax, or Respiration - other changes.

Lungs, Thorax, or Respiration - tumors.

Gastrointestinal - tumors.

Kidney, Ureter, Bladder - other changes.

Kidney, Ureter, Bladder - other changes in urine composition.

Kidney, Ureter, Bladder - Kidney tumors.

Nutritional and Gross Metabolic - weight loss or decreased weight gain.

Brain and Coverings - recordings from specific areas of CNS.

Brain and Coverings - other degenerative changes.

Vascular - BP lowering not characterized in autonomic section.

Blood - leukopenia.

Blood - changes in leukocyte (WBC) count.

Blood - lymphoma, including Hodgkin's disease.

Related to Chronic Data - death.

Skin and Appendages - dermatitis, other (after systemic exposure).

Skin and Appendages - corrosive (after topical exposure).

Skin and Appendages - hair.

Skin and Appendages - tumors.

Autonomic Nervous System - other (direct) parasympathomimetic.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - hepatic microsomal mixed oxidase.

Tumorigenic - carcinogenic by RTECS criteria.

Tumorigenic - equivocal tumorigenic agent by RTECS criteria.

Tumorigenic - neoplastic by RTECS criteria.

**Additional toxicological information:**

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

(Contd. on page 6)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

**Product name: Benzotrichloride**

(Contd. of page 5)

EPA-B2: Probable human carcinogen, sufficient evidence from animal studies; inadequate evidence or no data from epidemiologic studies.  
 IARC-2A: Probably carcinogenic to humans: limited human evidence; 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 A2: Suspected human carcinogen: Agent is carcinogenic in experimental animals at dose levels, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. Available epidemiologic studies are conflicting or insufficient to confirm an increased risk of cancer in exposed humans.

## 12 Ecological information:

### General notes:

Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
 Danger to drinking water if even extremely 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.

## 14 Transport information

### DOT regulations:



<b>Hazard class:</b>	8
<b>Identification number:</b>	UN2226
<b>Packing group:</b>	II
<b>Proper shipping name (technical name):</b>	BENZOTRICHLORIDE
<b>Label</b>	8

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



<b>ADR/RID class:</b>	8 (C9) Corrosive substances
<b>Danger code (Kemler):</b>	80

(Contd. on page 7)

**Material Safety Data Sheet**  
acc. to OSHA and ANSI

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**Product name: Benzotrichloride**

(Contd. of page 6)

**UN-Number:** 2226  
**Packaging group:** II  
**Description of goods:** 2226 BENZOTRICHLORIDE

**Maritime transport IMDG:**

**IMDG Class:** 8  
**UN Number:** 2226  
**Label** 8  
**Packaging group:** II  
**Proper shipping name:** BENZOTRICHLORIDE

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

**ICAO/IATA Class:** 8  
**UN/ID Number:** 2226  
**Label** 8  
**Packaging group:** II  
**Proper shipping name:** BENZOTRICHLORIDE

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

T Toxic

**Risk phrases:**

45 May cause cancer.  
 22 Also harmful if swallowed.  
 23 Also toxic by inhalation.  
 37/38 Irritating to respiratory system and skin.  
 41 Risk of serious damage to eyes.

**Safety phrases:**

53 Avoid exposure - obtain special instructions before use.  
 45 In case of accident or if you feel unwell, seek medical advice immediately.

**National regulations**

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

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 Non-Domestic Substances List (NDSL).

(Contd. on page 8)

**Material Safety Data Sheet**

acc. to OSHA and ANSI

Printing date 11/10/2008

Reviewed on 11/10/2008

**Product name: Benzotrichloride**

(Contd. of page 7)

**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:** Paul V. Connolly

USA