

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:** Benzene**Stock number:** 33291**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#)**

Benzene (CAS# 71-43-2); 100%

Identification number(s):**EINECS Number:** 200-753-7**Index number:** 601-020-00-8**3 Hazards identification****Hazard description:**

T Toxic
 F Highly flammable

Information pertaining to particular dangers for man and environment

R 45 May cause cancer.
 R 46 May cause heritable genetic damage.
 R 11 Highly flammable.
 R 36/38 Irritating to eyes and skin.
 R 48/23/24/25 Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
 R 65 Harmful: may cause lung damage if swallowed.

GHS label elements**Danger**

2.6/2 - Highly flammable liquid and vapour.

**Danger**

3.5/1A - May cause genetic defects.
 3.6/1A - May cause cancer.
 3.9/1 - Causes damage to organs through prolonged or repeated exposure.
 3.10/1 - May be fatal if swallowed and enters airways.

**Warning**

3.2/2 - Causes skin irritation.
 3.3/2A - Causes serious eye irritation.

Prevention:

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 Keep container tightly closed.
 Ground/bond container and receiving equipment.
 Use explosion-proof electrical/ventilating/lighting/ equipment.
 Use only non-sparking tools.
 Take precautionary measures against static discharge.
 Do not breathe dust/fume/gas/mist/vapours/spray.

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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: Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
Specific treatment (see label).
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use for extinction: CO₂, powder or water spray.

Storage:

Store in a well-ventilated place. Keep cool.
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**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

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

Keep away from ignition sources

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.

Keep away from ignition sources.

Additional information: See Section 8 for information on personal protection equipment.

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:

Keep ignition sources away.

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Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.

Storage

Requirements to be met by storerooms and receptacles: Store in a cool location.
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.

Components with limit values that require monitoring at the workplace:

Benzene

		mg/m3	ml/m3
ACGIH	TLV short term	1,6	0,5
ACGIH	TLV long term	8	2,5
B	VME	1,6	0,5
CH	MAK	3,2	1
D	TRGS 900	3,2	1
DK	GV	16	5
F	VME	16	5
GB	MEL	16	5
I	VME	1,6	0,5
N	TLV	3	1
NL	MAC-TGG	30	10
P	VME	1,6	0,5
S	NGV	1,5	0,5
SF	HTP	16	
USA	PEL short term	3	1 ppm
USA	PEL long term	15	5 ppm

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.

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**

Form:	Liquid
Color:	Colorless
Odor:	Aromatic

Change in condition

Melting point/Melting range:	5.51°C (42°F)
Boiling point/Boiling range:	80.1°C (176°F)
Sublimation temperature / start:	Not determined

Flash point: -11°C (12°F)

Ignition temperature: 555°C (1031°F)

Decomposition temperature: Not determined

Explosion limits:

Lower:	1.2 Vol %
Upper:	8 Vol %

Vapor pressure at 20°C (68°F): 101 hPa (76 mm Hg)

Density at 20°C (68°F): 0.8794 g/cm³

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Solubility in / Miscibility with
Water at 20°C (68°F): 0.7 g/l

Viscosity:
dynamic at 20°C (68°F): 0.66 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**Dangerous reactions** No dangerous reactions known**Dangerous products of decomposition:** Carbon monoxide and carbon dioxide**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	3306 mg/kg (rat)
Dermal	LD50	48 mg/kg (mouse)
Inhalative	LC50/7H	10.000 ppm/7H (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:**

Benzene has a strong irritating effect, producing erythema and burning. Edema and blistering is possible in more severe cases. Absorption through the skin may cause the same symptoms as inhalation or ingestion. These include gastrointestinal irritation, low blood pressure, headache, blurred vision, nausea, vomiting, dizziness, loss of balance and coordination, confusion, unconsciousness, coma, respiratory failure and death. Blood, liver and kidney damage is possible. Benzene is a recognized leukemogen and an experimental mutagen and teratogen.

Additional toxicological information:

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

EPA-A: human carcinogen: sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer.

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.

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14 Transport information**DOT regulations:**

Hazard class: 3
Identification number: UN1114
Packing group: II
Hazardous substance: 10 lbs, 4.54 kg
Poison inhalation hazard: No
Proper shipping name (technical name): BENZENE
Label flammable liquid

Land transport ADR/RID (cross-border)

ADR/RID class: 3 (F1) Flammable liquids
Danger code (Kemler): 33
UN-Number: 1114
Packaging group: II
Description of goods: 1114 BENZENE

Maritime transport IMDG:

IMDG Class: 3
UN Number: 1114
Label flammable
Packaging group: II
Proper shipping name: BENZENE

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 3
UN/ID Number: 1114
Label flammable
Packaging group: II
Proper shipping name: BENZENE

UN "Model Regulation": UN1114, BENZENE, 3, II

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

T Toxic
 F Highly flammable

Risk phrases:

45 May cause cancer.
 46 May cause heritable genetic damage.
 11 Highly flammable.
 36/38 Irritating to eyes and skin.
 48/23/24/25 Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
 65 Harmful: may cause lung damage if swallowed.

Safety phrases:

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

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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 Domestic Substances List (DSL).

Information about limitation of use:

For use only by technically qualified individuals.

This product contains benzene and 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)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

*** Data compared to the previous version altered.**

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