



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Benzene**

Chemical formula : C₆H₆

Synonyms : Benzol, Cyclohexatriene, Benzole, Phene, Pyrobenzol, Pyrobenzole, Carbon Oil, Coal Tar Naphtha, Phenyl Hydride, Benzolene, Bicarburet of Hydrogen, Coal Naphtha, Motor Benzol, Annulene, (6) Annulene

Company : Specialty Gases of America, Inc
6055 Brent Dr.
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Benzene	71-43-2	99+%

3. Hazards Identification

Emergency Overview

Flammable liquid and vapor. Vapor may cause flash fire.
May cause respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, cancer hazard (in humans).

Potential Health Effects

Inhalation : Irritation, ringing in the ears, nausea, vomiting, chest pain, difficulty breathing, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, disorientation, blurred vision, lung congestion, blood disorders, paralysis, convulsion, coma. May cause hearing loss, visual disturbances, reproductive effects, brain damage, cancer in long term exposure.

Eye contact : Irritation.

Skin contact : Irritation, blisters. May cause tingling sensation in long term exposure.

Ingestion : Nausea, vomiting, chest pain, headache, drowsiness, symptoms of drunkenness, disorientation, visual disturbances, lung congestion, paralysis, convulsion, coma. May cause impotence, cancer in long term exposure.

Chronic Health Hazard : Not applicable.

4. First Aid Measures

General advice : None.

Eye contact : Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact : Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly

- clean and dry contaminated clothing and shoes before reuse.
- Ingestion : Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.
- Inhalation : If adverse effects occur, remove to contaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

5. Fire-Fighting Measures

- Suitable extinguishing media : Carbon dioxide, regular dry chemical, water, regular foam.
Large fires: Use regular foam or flood with fine water spray.
- Specific hazards : Severe fire hazard. Moderate explosion hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.
- Fire fighting : Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles well after fire is out. If this is impossible, take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Water may be ineffective.

6. Accidental Release Measures

- Air release : Reduce vapors with water spray. Stay upwind and keep out of low areas.
- Soil release : Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.
- Water release : Cover with absorbent sheets, spill-control pads or pillows. Apply detergents, soaps, alcohols or another surface active agent. Collect with absorbent into suitable container. Absorb with activated carbon. Remove trapped material with suction hoses. Collect spilled material using mechanical equipment. Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.
- Occupational release : Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Committee for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800) 424-8802 (USA) or (202) 426-2675 (USA).

7. Handling and Storage

Handling

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

Storage

Store in accordance with all current regulations and standards. Subject to storage regulation: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Protect from physical damage. Store outside or in a

detached building. Store with flammable liquids. Keep separated from incompatible substances. Keep separated from incompatible substances.

8. Exposure Controls / Personal Protection

Exposure limits

- 1 ppm OSHA TWA
- 5 ppm OSHA STEL 15 minute(s)
- 0.5 ppm OSHA action level
- 10 ppm OSHA TWA (applies to industry exempt from benzene standard 1910.1028)
- 25 ppm OSHA ceiling (applies to industry exempt from benzene standard 1910.1028)
- 50 ppm OSHA peak 10 minute(s) (applies to industry exempt from benzene standard 1910.1028)
- 0.5 ppm ACGIH TWA (skin)
- 2.5 ppm ACGIH STEL (skin)
- 0.1 ppm NIOSH recommended TWA 10 hour(s)
- 1 ppm NIOSH recommended STEL

Engineering measures

Not available.

Personal protective equipment

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| Respiratory protection | : | The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
10 ppm – Any air-purifying respirator with a full facepiece and an organic vapor canister.
50 ppm – Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s). Any air-purifying respirator with a full facepiece and a canister providing protection against this substance.
100 ppm – Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s).
1000 ppm – Any supplied-air respirator with a full facepiece that is pressure-demand or other positive-pressure mode.
For unknown concentrations or immediately dangerous to life or health – Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with full facepiece and operated in pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Escape – Any air-purifying respirator with a full facepiece and an organic vapor canister. Any self-contained breathing apparatus with a full facepiece. |
| Hand protection | : | Wear appropriate chemical resistant gloves. OSHA REGULATED SUBSTANCES: U.S. OSHA 29 CFR 1910.1028. |
| Eye protection | : | Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. |
| Skin and body protection | : | Wear appropriate chemical resistant clothing. |
| Ventilation | : | Provide local exhaust or process enclosure ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits. |

9. Physical and Chemical Properties

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| Form | : | Liquid. |
| Color | : | Colorless to yellow. |
| Odor | : | Distinct odor. |
| Molecular weight | : | 78.11 |
| Vapor pressure | : | 75 mmHg @ 20 C |

Vapor density	: 2.8 (air = 1)
Specific gravity	: 0.8765 @ 20 C (water = 1)
Boiling point	: 176 F (80 C)
Freezing point	: 43 F (6 C)
Water solubility	: 0.18% @ 25 C
Solvent solubility	: Soluble: acetone, alcohol, carbon disulfide, acetic acid, carbon tetrachloride, chloroform, ether, oils.
Evaporation rate	: 5.1 (butyl acetate = 1)

10. Stability and Reactivity

Stability	: Stable under normal conditions.
Conditions to avoid	: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.
Materials to avoid	: Acids, bases, halogens, oxidizing materials, metal salts.
Hazardous decomposition products	: Thermal decomposition products: oxides of carbon.

11. Toxicological Information

Irritation data	: 15 mg/24 hour(s) open skin-rabbit mild; 20 mg/24 hour(s) skin-rabbit moderate; 88 mg eyes-rabbit moderate; 2 mg/24 hour(s) eyes-rabbit severe.
Toxicity data	: 10000 ppm/7 hour(s) inhalation-rat LC50; > 9400 ul/kg skin-rabbit LD50; 1 ml/kg oral-rat LD50.
Carcinogen status	: OSHA: Carcinogen; NTP: Known Human Carcinogen; IARC: Human Sufficient Evidence, Animal Sufficient Evidence, Group 1; ACGIH: A1-Confirmed Human Carcinogen; EC: Category 1.

Acute Health Hazard

Ingestion	: Moderately toxic.
Inhalation	: Slightly toxic.
Skin	: Highly toxic.

12. Ecological Information

Ecotoxicity Data

Fish Toxicity	: 9200 ug/L 96 hour(s) LC50 (Mortality) Rainbow trout, Donaldson trout (Oncorhynchus mykiss).
Invertebrate Toxicity	: 10000 ug/L 48 hour(s) EC50 (Immortalization) Water flea (Daphnia magna).
Algal Toxicity	: 41000 ug/L 8 hour(s) EC50 (Growth) Green algae (Selenastrum capricornutum).
Other Toxicity	: 25 ug/L 24 day(s) (Residue) Wood frog (Rana sylvatica).

Fate and Transport

Bioconcentration	: 4360 ug/L 24 day(s) BCF (Residue) Northern anchovy (Engraulis mordax) 97 ug/L.
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13. Disposal Considerations

Waste from residues / unused products	: Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U019. Hazardous Waste Number(s): D018. Dispose of in accordance with U.S. EPA 40 CFR 262 for concentrations at or above the Regulatory level. Regulatory level – 0.5 mg/L. Dispose in accordance with all applicable regulations.
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Contaminated packaging : Return cylinder to supplier.

14. Transport Information

DOT (US only)

Proper shipping name : Benzene
Class : 3, Packing Group II
UN/ID No. : UN1114
Labeling : Flammable Liquid

Further information

Cylinders should be transported in a secure upright position in a well ventilated truck.

15. Regulatory Information

OSHA Process Safety (29 CFR 1910.119) Hazard Class(es)

Not regulated.

TCSA

Material is listed in TSCA inventory.

SARA Title III Section 302 Extremely Hazardous Substances (40 CFR 355.30)

Not regulated.

SARA Title III Section 304 Extremely Hazardous Substances (40 CFR 355.40)

Not regulated.

SARA Title III SARA Sections 311/312 Hazardous Categories (40 CFR 370.21)

Acute: Yes
Chronic: Yes
Fire: Yes
Reactive: No
Sudden Release: No

SARA Title III Section 313 (40 CFR 372.65)

Benzene

16. Other Information

Prepared by : Specialty Gases of America, Inc.
For additional information, please visit our website at www.americangasgroup.com.