

## MATERIAL SAFETY DATA SHEET

SABIC Americas, Inc.  
2500 City West Blvd., Suite 650  
Houston, Texas 77042

Date of Issue: January 31, 2006  
Revised Date: N/A

Telephone: 713-532-4999  
Fax: 713-532-4994

**Emergency Number (CHEMTREC): 1-800-424-9300**

### SECTION 1 – CHEMICAL IDENTIFICATION

**Chemical Name: Benzene**

Synonyms: Benzol, Benzole, Carbon Oil, Coal Naphtha, Cyclohexatriene, Mineral Naphtha, Phenyl Hydride, Pyrobenzol, Pyrobenzole

Formula: C<sub>6</sub>H<sub>6</sub>

Chemical Family: Aromatic Hydrocarbon

### SECTION 2 – COMPOSITION

<u>Components</u>	<u>Percentage</u>	<u>PEL</u>	<u>CAS Number</u>	<u>EINECS Number</u>
Benzene	100	1 ppm	71-43-2	200-753-7

Note: N.E. = Not Established    N/A = Not Applicable

### SECTION 3 – HAZARDS IDENTIFICATION

**Emergency Overview:** Danger! Extremely flammable liquid. Flash point 12°F. Harmful or fatal if swallowed or inhaled. Aspiration hazard when swallowed. Can enter lungs and cause damage. May cause central nervous system effects. Causes eye and skin irritation. Causes digestive and respiratory tract irritation. May cause reproductive and fetal effects. Cancer hazard. May cause blood abnormalities. Target organs: blood, central nervous system, eyes, bone marrow, immune system.

<b>NFPA Ratings</b>	
2	Health
3	Flammability
0	Reactivity
Specific Hazards: N/A	

**Inhalation:** May cause irritation of mucous membranes and respiratory tract. May cause central nervous system depression with symptoms of dizziness, headache, nausea, drowsiness, lethargy, convulsions, vertigo, disorientation, ringing in the ears. High levels of exposure may result in collapse, unconsciousness, coma, and death due to respiratory failure. May also result in irreversible bone marrow injury.

**Skin Contact:** May cause redness and blistering. Prolonged and repeated contact may result in defatting and drying of the skin which may lead to dermatitis and increased chance of secondary infection.

**Skin Absorption:** May be absorbed through the skin in harmful amounts.

**Eye Contact:** Causes severe eye irritation. May cause light transient injury.

**Ingestion:** May cause central nervous system depression with symptoms of dizziness,

headache, nausea, and drowsiness. High levels of exposure may result in collapse, unconsciousness, coma, and death due to respiratory failure. May also result in irreversible bone marrow injury. Aspiration hazard. Breathing in of vomit containing benzene may result in chemical pneumonia, which may be fatal.

**Effects of Chronic Exposure:** Suspect carcinogen. Chronic exposure has been associated with an increased incidence of leukemia and multiple myelomas. May cause bone marrow abnormalities with damage to blood forming tissues. May cause anemia and other blood cell abnormalities. Suspect reproductive hazard. Animal studies have reported fetotoxicity and teratogenicity.

#### **SECTION 4 – FIRST AID MEASURES**

**Eye Contact:** Immediately flush eyes with water for at least 15 minutes. Hold eyes open while flushing out with water. Seek medical attention immediately.

**Skin Contact:** Immediately remove contaminated clothing and shoes. Flush skin with water for at least 15 minutes. Use soap if available or follow by washing with soap and water. Do not reuse contaminated clothing without laundering. If irritation persists, seek medical attention.

**Inhalation:** Remove victim to fresh air. If breathing is difficult, give oxygen. If not breathing, administer artificial respiration. Seek medical attention immediately.

**Ingestion:** **DO NOT** induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Seek medical attention immediately.

#### **SECTION 5 – FIREFIGHTING MEASURES**

**Flash Point Temperature:** 12.2°F, -11°C (TCC)

**Autoignition Temperature:** 1041.8°F, 561°C

**Flammable Limits:** Lower: 1.3% Upper: 7.1%

**Extinguishing Media:** Water, Dry Chemical, “Alcohol” Foam, Carbon Dioxide

**Firefighting Procedures:** Firefighters should wear NIOSH approved self-contained breathing apparatus and appropriate protective clothing to prevent contact. Cool exposed containers with water.

**Unusual Fire and Explosion Information:** Do not use direct stream of water to fight fire. Benzene will float and can be re-ignited on the surface. Containers can build up pressure if subjected to heat of the fire and may explode. Flashback hazard – vapors are heavier than air and can collect in low areas forming an explosive benzene and air mixture.

**Environmental Note:** Prevent product from getting into sewers or surface waters.

#### **SECTION 6 – ACCIDENTAL RELEASE MEASURES**

Isolate the hazard area and deny entry to nonessential personnel. Emergency responders and/or clean-up personnel should wear appropriate protective clothing and equipment when responding. Remove all ignition sources. A vapor suppressing foam may be used to reduce vapors. Prevent from entering sewers or surface waters. Collect liquid in containers and seal shut. Absorb

remaining material with a noncombustible absorbent such as earth, sand, or vermiculite and collect for disposal.

## SECTION 7 – HANDLING AND STORAGE

**DANGER!** Extremely Flammable:

Keep away from heat, sparks, and open flames. Keep containers tightly closed. Store away from strong oxidizing agents in a cool, dry place. Use adequate explosion-proof ventilation to prevent accumulation of static charge. When pouring or transferring materials, containers must be bonded and grounded.

**DO NOT** weld, heat, or drill on or near full or empty containers. Empty containers can contain explosive vapors.

Do not breath vapors or mist. Minimize skin contact. Wash with soap and water before eating, drinking, smoking, or using toilet facilities. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles, including shoes that cannot be decontaminated.

## SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Respiratory Protection:** Utilize NIOSH approved half face or full face respirator with organic vapor cartridges, supplied air, or self-contained breathing apparatus. Consult with an Industrial Hygienist before determining which respirators to use. Respirators must be utilized in compliance with OSHA regulations 29CFR1910.134 and 29CFR1910.1028.

**Ventilation:** Use explosion-proof ventilation equipment. Utilize local exhaust to control vapors. Do not rely on general exhaust.

**Protective Gloves:** Polyvinyl alcohol, North Silver Shield, Ansell Edmont 4H, or viton gloves are recommended.

**Eye Protection:** Chemical goggles and face shield.

**Other Protective Equipment:** Wear additional protective clothing as required to prevent skin contact. This may include chemical aprons, chemical resistant boots, and chemical resistant suits. Safety shower and eyewash are necessary in work area.

**Work Practices:** Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and laundry before reuse. Shower after work using plenty of soap and water.

**Electrical Equipment:** Class I Division 2 or higher.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	clear, colorless liquid	<b>Threshold Odor Conc:</b>	5 ppm
<b>Odor:</b>	aromatic hydrocarbon	<b>Boiling Point:</b>	176 °F, 80°C
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.88	<b>Freezing Point:</b>	43°F, 6°C
<b>Decomposition Temperature:</b>	N.E.	<b>Vapor Density (Air=1):</b>	2.7
<b>Evaporation Rate (ether = 1):</b>	2.8	<b>Vapor Pressure:</b>	74.3 mm Hg @ 20°C
<b>Soluble in:</b>		<b>% Volatiles by Volume:</b>	100
<b>Electrical Conductivity:</b>	N.E.	<b>Solubility in Water:</b>	Negligible
<b>Viscosity:</b>	0.647 mPa @ 20°C	<b>Molecular Weight:</b>	78.1

## SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal temperatures and pressures.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	Incompatible materials, ignition sources, excess heat.
Incompatible Materials:	<b>Explodes on contact with:</b> diborane, bromine pentafluoride, permanganic acid, peroxomonosulfuric acid, and peroxodisulfuric acid.
	<b>Forms sensitive explosive mixtures with:</b> iodine pentafluoride, silver perchlorate, nitryl perchlorate, nitric acid, liquid oxygen, ozone, and arsenic pentafluoride + potassium methoxide (explodes above 30°C).
	<b>Ignites on contact with:</b> sodium peroxide + water, dioxygenyl tetrafluoroborate, iodine heptafluoride, and dioxygen difluoride.
	Chlorine, oxygen, permanganates, sulfuric acid, peroxides, perchlorates, nitrating agents, chromic acid anhydride, chromium trioxide, uranium hexafluoride, chlorine trifluoride, metal perchlorates, strong oxidizing agents
Decomposition Products:	Carbon monoxide, carbon dioxide, irritating and toxic fumes and gases.

## SECTION 11 – TOXICOLOGICAL INFORMATION

### Occupational Exposure Limits

OSHA	PEL:	1 ppm	STEL:	5 ppm
ACGIH	TLV:	0.5 ppm	STEL:	2.5 ppm
NIOSH	IDLH:	500 ppm		

Eye:	88 mg MODERATE (rabbit)	AMIHAB 14, 387, 56 (3)
	2 mg/24H SEVERE (rabbit)	28ZPAK -, 23, 72 (4)
Skin:	15 mg/24 H open MILD (rabbit)	AIHAAP 23, 95. 62 (1)
	20 mg/24 H MODERATE (rabbit)	85JCAE -, 25, 86 (2)
Inhalation:	LCLo: 20,000 ppm/5 M (human)	29ZUA8 -, -, 53 (31)
	LCLo: 65 mg/m <sup>3</sup> /5 Y (human)	ARGEAR 44, 145, 74 (34)
	LC50: 10,000 ppm/7 H (rat)	28ZRAQ -, 113, 60 (36)
Oral:	LDLo: 50 mg/kg (human)	YAKUD5 22, 883, 80 (30)
	LD50: 3306 mg/kg (rat)	TXAPA9 19, 699, 71 (35)

Benzene is a confirmed human carcinogen. It can cause myeloid leukemia, Hodgkins disease, and lymphomas via the inhalation route. Benzene is also a suspected reproductive hazard and teratogen.

Carcinogenicity listed by: NTP: Yes IARC: Yes OSHA: Yes

## SECTION 12 – ECOLOGICAL INFORMATION

Environmental Fate and Effects

Ecotoxicity: Not established.

Mobility: Not established. Expected to be highly mobile in soil and may leach into groundwater.

Persistence and Degradability: Not established.

Bioaccumulative Potential: Not established. Not expected to bioaccumulate.

### **SECTION 13 – DISPOSAL INFORMATION**

Place in a city, state, or federally permitted disposal facility. Handle in accordance with all applicable regulations.

### **SECTION 14 – TRANSPORTATION INFORMATION**

DOT Shipping Description: Benzene, 3, UN1114, II

Note: the EPA RQ is 10 pounds (4.54 kilograms)

### **SECTION 15 – REGULATORY INFORMATION**

TSCA: All components are listed on the TSCA Inventory.

SARA Title III

Acute: Yes

Chronic: Yes

Fire: Yes

Reactivity: No

Pressure: No

The following statements are made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains benzene, a chemical known to the state of California to cause cancer.

WARNING: This product contains benzene, a chemical known to the state of California to cause birth defects or other reproductive harm.

California No Significant Risk Level:

CAS# 71-43-2: no significant risk level = 7 ug/day

Benzene is on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, and Massachusetts.

### **SECTION 16 – OTHER INFORMATION**

#### **DISCLAIMER**

The information contained in this Material Safety Data Sheet is offered in good faith as accurate but does not purport to be all-inclusive. Health and safety precautions in this Material Safety Data Sheet may not be adequate for all individuals and/or situations. It is the user's responsibility to determine the suitability of any material for a specific purpose, adopt such safety precautions as may be necessary and comply with all applicable laws and regulations. Nothing herein is to be construed as recommending any practice or the use of any product in violation of any patent or of any law or regulation. SABIC makes no representations or warranties, either express or implied, including without limitation any warranties of merchantability or of fitness for a particular purpose with respect to the information set forth in this Material Safety Data Sheet or to the product to which the information refers. Accordingly, SABIC will assume no liabilities in connection with any use of or reliance on this information.