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## Material Safety Data Sheet Benzene-Isobutanol Solution MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Benzene-Isobutanol Solution

**Catalog Codes:** SLB2044

**CAS#:** Mixture.

**RTECS:** Not applicable.

**TSCA:** TSCA 8(b) inventory: Benzene; Isobutyl alcohol

**CI#:** Not applicable.

**Synonym:** Benzene-Isobutanol Solution

**Chemical Name:** Not applicable.

**Chemical Formula:** Not applicable.

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Benzene	71-43-2	50
Isobutyl alcohol	78-83-1	50

**Toxicological Data on Ingredients:** Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat]. Isobutyl alcohol: ORAL (LD50): Acute: 2460 mg/kg [Rat]. DERMAL (LD50): Acute: 3400 mg/kg [Rabbit].

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC [Benzene].

**MUTAGENIC EFFECTS:** Classified POSSIBLE for human [Benzene]. Mutagenic for mammalian somatic cells. [Benzene]. Mutagenic for bacteria and/or yeast. [Benzene]. Mutagenic for bacteria and/or yeast. [Isobutyl alcohol].

**TERATOGENIC EFFECTS:** Not available.

**DEVELOPMENTAL TOXICITY:** Classified Reproductive system/toxin/female [POSSIBLE] [Benzene].

The substance is toxic to blood, bone marrow, central nervous system (CNS).  
The substance may be toxic to liver, .  
Repeated or prolonged exposure to the substance can produce target organs damage.

#### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

#### Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** The lowest known value is 415.56°C (780°F) (Isobutyl alcohol).

**Flash Points:** CLOSED CUP: Between -18°C (0°F) and 23°C (73°F).

**Flammable Limits:** The greatest known range is LOWER: 1.2% UPPER: 10.9% (Isobutyl alcohol)

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:**

Highly flammable in presence of open flames and sparks, of heat.  
Slightly flammable to flammable in presence of oxidizing materials.  
Non-flammable in presence of shocks.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available.  
Risks of explosion of the product in presence of static discharge: Not available.  
Slightly explosive in presence of oxidizing materials, of acids.

**Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water.

SMALL FIRE: Use DRY chemical powder.  
LARGE FIRE: Use alcohol foam, water spray or fog.

**Special Remarks on Fire Hazards:**

Extremely flammable liquid and vapor. Vapor may cause flash fire.  
Reacts on contact with iodine heptafluoride gas.  
Dioxygenyl tetrafluoroborate is as very powerful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition.  
Contact with sodium peroxide with benzene causes ignition.  
Benzene ignites in contact with powdered chromic anhydride.  
Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.  
(Benzene)  
Vapor may travel considerable distance to source of ignition and flash back.  
Contact with strong oxidizers may cause fires.  
Ignites on contact with chromium oxide.(Isobutyl Alcohol)

**Special Remarks on Explosion Hazards:**

Benzene vapors + chlorine and light causes explosion.  
Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate.  
Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion.  
Interaction of nitryl perchlorate with benzene gave a slight explosion and flash.  
The solution of permanganic acid ( or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene.  
Peroxodisulfuric acid is a very powerful oxidant. Uncontrolled contact with benzene may cause explosion.  
Mixtures of peroxomonsulfuric acid with benzene explodes.  
(Benzene)  
Contact with strong oxidizers may cause explosions. (Isobutyl Alcohol)

**Section 6: Accidental Release Measures**

**Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

**Large Spill:**

Flammable liquid.  
Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**Section 7: Handling and Storage**

**Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

**Storage:**

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

**Section 8: Exposure Controls/Personal Protection**

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

Benzene

TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States]

TWA: 1.6 STEL: 8 (mg/m<sup>3</sup>) from ACGIH (TLV) [United States]

TWA: 0.1 STEL: 1 from NIOSH

TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States]

TWA: 10 (ppm) from OSHA (PEL) [United States]

TWA: 3 (ppm) [United Kingdom (UK)]

TWA: 1.6 (mg/m<sup>3</sup>) [United Kingdom (UK)]

TWA: 1 (ppm) [Canada]

TWA: 3.2 (mg/m<sup>3</sup>) [Canada]

TWA: 0.5 (ppm) [Canada]

**Section 9: Physical and Chemical Properties**

**Physical state and appearance:** Liquid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not applicable.

**Color:** Colorless. Clear

**pH (1% soln/water):** Not available.

**Boiling Point:** The lowest known value is 80.1 (176.2°F) (Benzene). Weighted average: 94.05°C (201.3°F)

**Melting Point:** May start to solidify at 5.5°C (41.9°F) based on data for: Benzene. Weighted average: -51.25°C (-60.2°F)

**Critical Temperature:** The lowest known value is 274.6°C (526.3°F) (Isobutyl alcohol).

**Specific Gravity:** Weighted average: 0.84 (Water = 1)

**Vapor Pressure:** The highest known value is 10 kPa (@ 20°C) (Benzene). Weighted average: 5.6 kPa (@ 20°C)

**Vapor Density:** The highest known value is 2.8 (Air = 1) (Benzene). Weighted average: 2.68 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** The highest known value is 40 ppm (Isobutyl alcohol) Weighted average: 22.34 ppm

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, diethyl ether, acetone.

**Solubility:**

Miscible in diethyl ether, acetone, alcohol.  
Partially soluble in cold water, hot water.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Heat, ignition sources, incompatibles.

**Incompatibility with various substances:** Highly reactive with oxidizing agents.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Reacts violently with Iodine pentafluoride.

(Benzene)

Reacts with aluminum at 100 C to form explosive hydrogen gas.(Isopropyl Alcohol)

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

### Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation.

**Toxicity to Animals:**

Acute oral toxicity (LD50): 930 mg/kg [Rat]. (Benzene).

Acute dermal toxicity (LD50): 3400 mg/kg [Rabbit.]. (Isobutyl alcohol).

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC [Benzene].

MUTAGENIC EFFECTS: Classified POSSIBLE for human [Benzene]. Mutagenic for mammalian somatic cells. [Benzene]. Mutagenic for bacteria and/or yeast. [Benzene]. Mutagenic for bacteria and/or yeast. [Isobutyl alcohol].

DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE] [Benzene].

Contains material which may cause damage to the following organs: liver, .

**Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects.

May affect genetic material (mutagenic).

May cause cancer (tumorigenic, leukemia)

Human: passes the placental barrier, detected in maternal milk. (Benzene)

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects:

Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism, and urinary system.

Eyes: Causes eye irritation.

Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system.

Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood. (Benzene)

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification :** Benzene-Isobutanol Solution (Benzene) UNNA: 1993 PG: II

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene

California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value)

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Benzene

Connecticut carcinogen reporting list.: Benzene

Connecticut hazardous material survey.: Benzene; Isobutyl alcohol

Illinois toxic substances disclosure to employee act: Benzene; Isobutyl alcohol

Illinois chemical safety act: Benzene; Isobutyl alcohol

New York release reporting list: Benzene; Isobutyl alcohol

Rhode Island RTK hazardous substances: Benzene; Isobutyl alcohol

Pennsylvania RTK: Benzene; Isobutyl alcohol

Minnesota: Benzene; Isobutyl alcohol

Michigan critical material: Benzene

Massachusetts RTK: Benzene; Isobutyl alcohol

Massachusetts spill list: Benzene; Isobutyl alcohol

New Jersey: Benzene; Isobutyl alcohol

New Jersey spill list: Benzene; Isobutyl alcohol  
Louisiana spill reporting: Benzene; Isobutyl alcohol  
California Director's List of Hazardous Substances: Benzene; Isobutyl Alcohol  
TSCA 8(b) inventory: Benzene; Isobutyl alcohol  
TSCA 4(a) proposed test rules: Isobutyl alcohol  
TSCA 4(a) final test rules: Isobutyl alcohol  
TSCA 8(a) IUR: Isobutyl alcohol  
TSCA 8(d) H and S data reporting: Isobutyl alcohol  
TSCA 12(b) one time export: Isobutyl alcohol  
SARA 313 toxic chemical notification and release reporting: Benzene 50%  
CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg); Isobutyl alcohol: 5000 lbs. (2268 kg);

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).  
CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R11- Highly flammable.  
R22- Harmful if swallowed.  
R38- Irritating to skin.  
R41- Risk of serious damage to eyes.  
R45- May cause cancer.  
R62- Possible risk of impaired fertility.  
S2- Keep out of the reach of children.  
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S39- Wear eye/face protection.  
S46- If swallowed, seek medical advice immediately and show this container or label.  
S53- Avoid exposure - obtain special instructions before use.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 3

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 3

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.  
Lab coat.  
Vapor respirator. Be sure to use an approved/certified respirator or

equivalent. Wear appropriate respirator when ventilation is inadequate.  
Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

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