

SAFETY DATA SHEET – SDS

In accordance with ABNT NBR 14725:2023

1. Identification of the product and the company

Product: Benzene 99+% – Reagent for Spectrophotometry
Manufacturer: Sigma-Aldrich Brasil Ltda.
Importer/Distributor: Eurosul – Ship Supplier Ltda
Address: Rua Jaguariva, 596 – Room 01 – Alphaville Graciosa – Pinhais – PR – CEP: 83327-076
Emergency phone: +55 (41) 3668-1319

2. Hazards identification

GHS Classification:

Flammable liquids – Category 2
Carcinogenicity – Category 1A
Germ cell mutagenicity – Category 1B
Specific target organ toxicity (repeated exposure) – Category 1
Aspiration hazard – Category 1
Eye irritation – Category 2
Skin irritation – Category 2
Signal word: Danger

Hazard statements (H):

H225 – Highly flammable liquid and vapor.
H304 – May be fatal if swallowed and enters airways.
H315 – Causes skin irritation.
H319 – Causes serious eye irritation.
H340 – May cause genetic defects.
H350 – May cause cancer.
H372 – Causes damage to organs through prolonged or repeated exposure.

Precautionary statements (P):

P201 – Obtain special instructions before use.
P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 – IF exposed or concerned: Get medical advice/attention.
P331 – Do NOT induce vomiting.

3. Composition/information on ingredients

Composition	CAS	%
Benzene	71-43-2	≥ 99%

4. First-aid measures

Inhalation: Remove the victim to a ventilated area with fresh air. If not breathing, give artificial respiration. Consult a physician.

Skin contact: Wash with soap and plenty of water. Immediately refer the patient to a hospital. Consult a physician.

Eye contact: Rinse carefully with plenty of water for at least fifteen minutes and consult a physician.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. Firefighting measures

Suitable extinguishing media: For incipient or small fires, use alcohol foam, dry chemical powder, or carbon dioxide. For large fires, apply water from the greatest possible distance, in large quantities and as a fog or spray; solid water streams may not be effective.

Specific hazards: Possibility of flashback over a considerable distance. Container explosion may occur in fire situations.

Protective equipment for firefighting: Use self-contained breathing apparatus. Use water jets to cool closed containers exposed to fire.

6. Accidental release measures

Personal precautions: Use personal protective equipment. Avoid breathing vapors, mists, or gases. Ensure adequate ventilation. Eliminate all ignition sources. Evacuate personnel to safe areas. Be aware of vapor accumulation, which may form explosive concentrations and accumulate in low-lying areas.

Environmental precautions: Prevent further spreading or leakage if it is safe to do so. Do not allow the product to enter sewage systems.

Containment and cleanup: Contain and collect the spilled liquid with non-combustible absorbent material (sand, earth, diatomaceous earth, vermiculite) and place it in containers for disposal according to Section 13.

7. Handling and storage

Handling: Avoid inhalation of vapors or mists. Avoid exposure – obtain special instructions before use. Keep away from flames or ignition sources. Do not smoke. Take measures to prevent the buildup of static electricity.

Storage: Store in a cool, well-ventilated place. Keep container tightly closed. Opened containers must be carefully re-sealed and kept upright to prevent leakage.

8. Exposure controls/personal protection

Control parameters: Data not available (occupational exposure limits not provided by the supplier in this sheet).

Respiratory protection: When risk assessment indicates, use an air-purifying respirator with a multi-purpose combination cartridge (type ABEK, per EN 14387) as a supplement to engineering controls. If the respirator is the only means of protection, use a full-facepiece supplied-air respirator. Use equipment tested and approved by applicable standards.

Hand protection: Use protective gloves that meet applicable technical standards for chemical resistance.

Eye protection: Use a full face shield and safety goggles.

Body and skin protection: Select protective clothing according to the quantity and concentration of the product in the workplace.

Hygiene measures: Avoid contact with skin, eyes, and clothing. Wash hands before work breaks and immediately after handling the product.

9. Physical and chemical properties

Physical state: Liquid

Color: Colorless

Odor: Data not available

pH: Data not available

Melting point: 5.5 °C

Boiling point: 80 °C

Flash point: -11.0 °C (closed cup)

Auto-ignition temperature: 562 °C

Lower flammability limit: 1.3 %(V)

Upper flammability limit: 8 %(V)

Vapor pressure: 221.3 hPa at 37.7 °C / 99.5 hPa at 20.0 °C

Water solubility: Data not available

Molecular formula: C₆H₆

Molar mass: 78.11 g/mol

10. Stability and reactivity

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions: Do not occur under normal conditions of use.

Conditions to avoid: Heat, flames, and sparks.

Incompatible materials: Acids, bases, halogens, strong oxidizing agents, and metal salts.

Hazardous decomposition products: Carbon oxides, formed during combustion.

11. Toxicological information

Likely routes of exposure: Inhalation, skin contact, eye contact, and ingestion.

Acute toxicity: Oral LD50 (rat) – 2,990 mg/kg. Inhalation LC50 (rat, female, 4h) – 44,700 mg/m³. Dermal LD50 (rabbit) – 8,263 mg/kg.

Skin corrosion/irritation: Dermal irritation observed in rabbits.

Serious eye damage/eye irritation: Eye irritation observed in rabbits.

Respiratory or skin sensitization: Data not available.

Germ cell mutagenicity: Laboratory tests demonstrated mutagenic effects in vitro (human and rat lymphocytes) and in vivo (sister chromatid exchange).

Carcinogenicity: Product classified as carcinogenic to humans by IARC (Group 1). There are reports linking inhalation exposure to leukemia.

Reproductive toxicity: Animal studies have shown effects on fertility (pre-implantation mortality) and toxic effects on embryonic/fetal development.

Specific target organ toxicity (single exposure): Data not available.

Specific target organ toxicity (repeated exposure): Classified as Category 1 (see Section 2); detailed numerical data not available in this sheet.

Aspiration hazard: May be fatal if swallowed and enters airways.

Potential health effects – Inhalation: Toxic if inhaled; may cause irritation of the respiratory tract.

Potential health effects – Ingestion: Toxic if swallowed; aspiration hazard, may cause damage to the lungs.

Potential health effects – Skin: Toxic if absorbed through skin; causes irritation.

Potential health effects – Eyes: Causes eye irritation.

Signs and symptoms of exposure: Inhalation of high concentrations of benzene can cause an initially stimulating effect on the central nervous system, followed by nervous excitation, depression, drowsiness, or fatigue. The victim may feel chest tightness, shortness of breath, and loss of consciousness. Tremors, convulsions, and death from respiratory arrest or circulatory collapse may occur within minutes to hours after severe exposures. Aspiration of small amounts of liquid may cause pulmonary edema and lung tissue hemorrhage. Direct skin contact may cause erythema; repeated or prolonged contact may cause drying, exfoliative dermatitis, or secondary skin infections. The main target organ is the hematopoietic system; prolonged exposure may cause nosebleeds, gum and mucosal bleeding, purpuric spots, pancytopenia, leukopenia, thrombocytopenia, aplastic anemia, and leukemia. Effects of prolonged exposure may take months or years to manifest after exposure ends.

12. Ecological information

Toxicity to fish: LC50 – *Oncorhynchus mykiss* (rainbow trout) – 5.90 mg/L – 96h. LC50 – *Pimephales promelas* (fathead minnow) – 15.00 to 32.00 mg/L – 96h. LC50 – *Lepomis macrochirus* – 230.00 mg/L – 96h. NOEC – *Pimephales promelas* – 10.2 mg/L – 7 days. LOEC – *Pimephales promelas* – 17.2 mg/L – 7 days.

Toxicity to aquatic invertebrates: EC50 – *Daphnia magna* – 22.00 mg/L – 48h. EC50 – *Daphnia magna* – 9.20 mg/L – 48h.

Toxicity to algae: EC50 – *Pseudokirchneriella subcapitata* (green algae) – 29.00 mg/L – 72h.

Persistence and degradability: Readily biodegradable.

Bioaccumulation potential: *Leuciscus idus* (golden orfe) – 3 days – Bioconcentration factor (BCF): 10.

Mobility in soil: Data not available.

PBT and vPvB assessment: Data not available.

Other adverse effects: Data not available.

13. Disposal considerations

Product: Incinerate in a chemical incinerator equipped with an afterburner and gas scrubber, taking additional precautions during ignition, since the product is highly flammable. Observe federal, state, and municipal environmental regulations. Hire a licensed professional company for final waste disposal.

Contaminated packaging: Dispose of as if it were the unused product, through a licensed company.

Waste classification per ABNT NBR 10004: Class I Hazardous Waste, due to flammability (flash point below 60 °C) and the toxicity/carcinogenicity of benzene.

14. Transport information

UN Number: 1114

Proper shipping name: Benzene

Transport hazard class: 3 – Flammable liquids

Hazard identification number: 33

Packing group: II

Environmental hazard (marine pollutant): No

ANTT: UN Number 1114, Class 3, Packing Group II.

IMDG: UN Number 1114, Class 3, Packing Group II, EMS-No F-E, S-D.

IATA: UN Number 1114, Class 3, Packing Group II.

15. Regulatory information

ABNT NBR 14725:2023 – Chemical products – Safety, health, and environmental information.

ABNT NBR 10004 – Classification of solid waste.

ANTT – Regulation for the Overland Transport of Dangerous Goods.

IMDG Code – International Maritime Dangerous Goods Code.

IATA Dangerous Goods Regulations – Air Transport of Dangerous Goods.

SOLAS – International Convention for the Safety of Life at Sea.

16. Other information

Revision date: 06/08/2026

This SDS was prepared based on the Safety Data Sheet from the supplier Sigma-Aldrich Brasil Ltda. for the product Benzene 99+%.

It is the user's responsibility to use and dispose of the product correctly, strictly following current environmental legislation.

Let us know if you need an emergency data sheet.