Safety Data Sheet

Benzene-1,3-d_2

Section 1. Chemical product and company identifications

Product code: D-0422
Chemical formula: $C_6H_4D_2$
CAS: 14941-51-6
CAS (unlabelled): 71-43-2
Synonyms: Benzol

Supplier / Manufacturer:

C/D/N Isotopes Inc.
88 Leacock Street
Pointe-Claire (Québec) H9R 1H1
Phone: 514-697-6254
Toll-Free (Canada & USA): 1-800-565-4696
Fax: 514-697-6148
Website: www.cdnisotopes.com

In case of emergency:

TOXYSCAN HOTLINE: 1-855-780-0599

Section 2. Hazards identifications

Physical state: Liquid
Warning: Highly flammable liquid and vapour. Harmful if swallowed. Causes skin irritation. Causes serious eye irritation.
Routes of entry: Inhalation, ingestion, skin and eyes

GHS (Globally Harmonized System of Classification and Labelling of Chemicals):

GHS Classification:
- Flammable liquids (Category 2)
- Acute toxicity, Oral (Category 4)
- Skin irritation (Category 2)
- Eye irritation (Category 2A)
- Germ cell mutagenicity (Category 1B)
- Carcinogenicity (Category 1A)
- Specific target organ toxicity - repeated exposure (Category 1)
- Aspiration hazard (Category 1)

GHS Label elements:
- Pictograms: 
- Signal word: Danger

Hazards statement:
- H225 Highly flammable liquid and vapour.
- H302 Harmful if swallowed.
- 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 statement:
- P210 Keep away from heat/ hot surfaces/ sparks/ open flames/ ignition sources. No smoking.
- P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P316 Get emergency medical help immediately.

Section 3. Composition and information on ingredients

Name	CAS	Concentration %
Benzene-1,3-d_2	14941-51-6	> 98

Section 4. First aid measures

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin contact: Wash off with soap and plenty of water. Consult a physician.
Inhalation: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
Ingestion: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Section 5. Firefighting measures

Flammability of the product: Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.
Lower explosion limit: 1.2 Vol%
Upper explosion limit: 8 Vol%
Auto-ignition temperature: 498 °C (928 °F)
Flash point: -11°C (12 °F)
Products of combustion: Hazardous decomposition products formed under fire conditions: Carbon oxides.
Firefighting media and instructions: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Section 6. Accidental release measures

Personal precautions: Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition.
Environmental precautions: Do not let product enter drains. Discharge into the environment must be avoided.
Methods for cleaning up: Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

Section 7. Handling and storage

Handling: Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking.
Storage: Store at room temperature. Adequate ventilation. Protect from heat and ignition sources.

Section 8. Exposure Controls, Personal Protections

Engineering controls: Use mechanical exhaust or laboratory fumehood to avoid exposure.
Eyes: Safety glasses with side-shields conforming to NIOSH (US) or EN 166 (EU).
Respiratory: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US).
Hands: Handle with gloves. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Skin/body: Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Section 9. Physical and chemical properties (unlabelled)

Molecular weight: 78.11 g/mol
Physical status: Liquid
Color: Characteristic
Odour: No data available
Density: 0.874 g/mL
Melting point: 5 °C (41 °F)
Boiling point: 80 °C (176 °F)
Vapour pressure: 100 hPa (75 mmHg) at 20 °C (68 °F)
Vapour density: 2.7 (Air = 1)
Partition coefficient (octanol/water): log Pow: 2.13
Water solubility: 1.8 g/L

Section 10. Stability and reactivity

Stability and reactivity: Stable under recommended storage conditions.
Incompatibility: Strong oxidizing agents.
Products of combustion: Hazardous decomposition products formed under fire conditions: Carbon oxides.
Reactivity conditions: Heat, flames and sparks.

Section 11. Toxicological information (unlabelled)

Toxicological data: Benzene

Information on ingredients:

Name	CAS	LD_{50}	LC_{50}
Benzene	71-43-2	Oral - Rat - 930 mg/kg	Inhalation - Rat - 7 h - 10,000 ppm

Potential acute effects

- **Eyes:** Causes serious eye irritation.
- **Skin:** May be harmful if absorbed through skin. Causes skin irritation.
- **Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.
- **Ingestion:** Harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

Potential chronic effects

- **Carcinogenic effects:** Carcinogenicity - Human - male - Inhalation. Tumorigenic: Carcinogenic by RTECS criteria. Leukaemia Blood: Thrombocytopenia. Carcinogenicity - Rat - Oral. Tumorigenic: Carcinogenic by RTECS criteria. Endocrine: Tumors. Leukaemia. This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification. Human carcinogen. IARC: 1 - Group 1: Carcinogenic to humans (Benzene).
- **Mutagenic effects:** Laboratory experiments have shown mutagenic effects. In vivo tests showed mutagenic effects. Genotoxicity in vitro - Human - lymphocyte. Sister chromatid exchange. Genotoxicity in vitro - Mouse - lymphocyte. Mutation in mammalian somatic cells. Genotoxicity in vivo - Mouse - Inhalation. Sister chromatid exchange.
- **Teratogenic effects:** Developmental Toxicity - Rat - Inhalation. Effects on Embryo or Foetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Foetus: Foetotoxicity (except death, e.g., stunted foetus). Developmental Toxicity - Mouse - Inhalation. Effects on Embryo or Foetus: Cytological changes (including somatic cell genetic material). Specific Developmental. Abnormalities: Blood and lymphatic system (including spleen and marrow).
- **Medical conditions aggravated by overexposure:** Cause damage to organs through prolonged or repeated exposure.

Section 12. Ecological information

Ecological data:

Name	Results	Species	Period
Benzene	5.3 mg/l LC50	Oncorhynchus mykiss	96 h
	54 mg/l LC50	Oryzias latipes	48 h
	10 mg/l EC50	Daphnia magna	48 h
	29 mg/l EC50	Selenastrum capricomutum	72 h

Effects on environment: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Mobility: No data available.
Environmental precautions: No data available
Persistence and degradability: Aerobic. Result: 96 % - Readily biodegradable. Method: OECD Test guideline 301F.
Bioaccumulative potential: Leuciscus idus - 3 d - 0.05 mg/l. Bioconcentration factor (BCF): 10.

Section 13. Disposal considerations

Waste disposal: Contact a licensed professional waste disposal service to dispose of this material.

Section 14. Transportation information

Classification DOT/IMDG/IATA label:

Shipping name: Benzene
UN number: UN1114
Class: 3
Packaging group: II

Additional information: None

Section 15. Regulatory information

UNITED STATES:
NFPA classification

Health: 2
Flammable: 3
Reactivity: 0
Special conditions: None

Legend: 4: Severe, 3: High, 2: Moderate, 1: Slightly, 0: Not hazardous

U.S. Federal regulations:

TSCA 8(b) inventory: Benzene
SARA 302/304/311/312 extremely hazardous substances: Not Listed
SARA 302/304 emergency planning and notification: Not Listed
SARA 302/304/311/312 hazardous chemicals: Not Listed
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard: Not Listed
CWA (Clean Water Act) 307: Not Listed
CWA (Clean Water Act) 311: Not Listed
CAA (Clean Air Act) 112 accidental release prevention: Not Listed
CAA (Clean Air Act) 112 regulated flammable substances: Not Listed
CAA (Clean Air Act) 112 regulated toxic substances: Not Listed

State regulations:

DEA List I Chemicals (Precursor Chemicals): Not Listed
DEA List II Chemicals (Essential Chemicals): Not Listed
Substances in Massachusetts: Listed
Dangerous substances in New Jersey: Listed
New York – Dangerous substances with acute effects: Listed
Dangerous substances in Pennsylvania – right to know: Listed

WHMIS (Canada):

B2 - Flammable liquid

D2A - Very toxic material causing other toxic effects
D2B - Toxic material causing other toxic effects

Section 16. Additional information

References:

- ANSI Z400.1, MSDS Standard, 2001.
- Manufacturer's Material Safety Data Sheet.
- 29CFR Part1910.1200 OSHA MSDS Requirements.
- 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. -Canada
- Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List".
- Federal act on the controlled products
- Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2002.
- Toxicological repertory, HSC.
- Material safety data sheet from the components.

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Elaborated by: **Toxyscan Inc., 1-866-780-0599**
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