SAFETY DATA SHEET

Preparation Date: 6/10/2019 **Revision date** 6/10/2019 **Revision Number:** G1

1. IDENTIFICATION

Product identifier

Product code: B1150
Product Name: BROMOBENZENE

Other means of identification
Synonyms: Monobromobenzene
Phenyl bromide
CAS #: 108-86-1
RTECS # CY9000000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: In organic synthesis.
Uses advised against No information available

Supplier:
Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Tom Tyner (USA - West Coast)
Contact Person: Ibad Tirmiz (USA - East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Flammable liquids	Category 3

Label elements

Warning

Hazard statements
Causes skin irritation
Causes eye irritation
Flammable liquid and vapor

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
May be harmful if swallowed
Toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves
Wear eye/face protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response

In case of fire: Use CO2, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
If skin irritation occurs: Get medical attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water
Wash contaminated clothing before reuse

Precautionary Statements - Storage
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents and container to an approved waste disposal plant in accordance with local, regional, national and international regulations as applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight-%
Bromobenzene	108-86-1	100

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms

Causes skin irritation
Moderate skin irritation
May cause slight eye irritation
Headache
Dizziness
Drowsiness
Lightheadedness
Fainting
May cause hypermotility, diarrhea
May affect the liver
May cause vomiting

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Alcohol-resistant foam. Water spray.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous combustion products Carbon Monoxide, Carbon Dioxide. Hydrogen bromide gas.

Specific hazards Flammable. May be ignited by heat, sparks or flames. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Container explosion may occur under fire conditions or when heated. Fire may produce irritating, corrosive and/or toxic gases.

Special Protective Actions for Firefighters

Specific Methods: Water mist may be used to cool closed containers For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent)

and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not ingest. Do not breathe vapors or spray mist. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials. Keep away from heat and sources of ignition.

Incompatible Materials:
Oxidizing agents
Alkaline Earth metals
Beryllium
Magnesium
Calcium
Metallic salts
Sodium

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Component	CAS No	OSHA	NIOSH	ACGIH	AIHA WEEL
Bromobenzene	108-86-1	None	None	None	None

Canada

Component	CAS No	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Bromobenzene	108-86-1	None	None	None	None

Australia and Mexico

Component	CAS No	Australia	Mexico
Bromobenzene	108-86-1	None	None

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Chemical resistant apron
Gloves
Long sleeved clothing

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Liquid

Appearance:
No information available.

Color:
Colorless.

Odor:
Aromatic.

Taste
No information available.

Formula
C6H5Br

Molecular/Formula weight (g/mole):
157.02

Flammability (solid, gas)
Flammable

Flashpoint (°C/°F):
51°C/123.8°F

Flash Point Tested according to:
Closed cup

Autoignition Temperature (°C/°F):
565°C/1049°F

Lower Explosion Limit (%):
6

Upper Explosion Limit (%):
36.5

Melting point/range(°C/°F):
-31°C/-23.8°F

Decomposition temperature(°C/°F):
No information available

Boiling point/range(°C/°F):

154-155-118°C/309-311°F

Bulk density:
No information available

Density (g/cm3):
No information available

Specific gravity:
1.49

pH
No information available

Vapor pressure @ 20°C (kPa):
0.557 @ 25 deg. C

Evaporation rate:
No information available

Vapor density:
5.41

VOC content (g/L):
No information available

Odor threshold (ppm):
0.64

Partition coefficient (n-octanol/water):
log Kow = 2.99

Viscosity:
No information available

Miscibility:
No information available

Solubility:
Soluble in Carbon tetrachloride
Practically insoluble in water
Very soluble in Ethanol
Very soluble in Ether
Very soluble in Benzene

10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Incompatible materials.

Incompatible Materials:
Oxidizing agents
Alkaline Earth metals
Beryllium
Magnesium
Calcium
Metallic salts
Sodium

Hazardous decomposition products: Carbon oxides. Hydrogen bromide gas.

Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Skin. Eyes. Inhalation. Ingestion.

Acute Toxicity

Component Information

Bromobenzene	
CAS No	108-86-1

LD50/oral/rat = 2383 mg/kg Oral LD50 Rat
LD50/oral/mouse = 2700 mg/kg
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50information = No information available

Product Information

LD50/oral/rat =
Value - Acute Toxicity = 2383 mg/kg

LD50/oral/mouse =
Value - Acute Tox = 2700 mg/kg

LD50/dermal/rabbit
Value - Acute Toxicity = No information available

LD50/dermal/rat
VALUE - Acute Tox = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes skin irritation. Moderate skin irritation.

Eye Contact: May cause slight or mild eye irritation.

Inhalation May cause irritation of respiratory tract. Inhalation of vapors may cause drowsiness and dizziness. May cause headache. May cause fainting (passing out).

Ingestion May cause vomiting. May cause hypermotility, diarrhea. May affect liver. It may affect behavior/central nervous system (drowsiness).

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Chronic exposure may affect the liver and kidneys.

Sensitization: No information available.

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic.

Component	CAS No	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Bromobenzene	108-86-1	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available.
STOT - repeated exposure No information available.
Target Organs: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: Potential for bioconcentration in aquatic organisms is low to moderate.

Mobility in soil It is expected to have a moderate mobility in soil based upon estimated Koc
Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

Component	CAS No	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Bromobenzene	108-86-1	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No:	UN2514
Proper Shipping Name:	Bromobenzene
Hazard Class	3
Subsidiary Class	No information available
Packing group:	III
Emergency Response Guide Number	130
Marine Pollutant	Marine Pollutant
DOT RQ (lbs):	No information available
Special Provisions	B1, IB3, T2, TP1
Symbol(s):	No information available
Description:	UN2514, Bromobenzene, 3, III

TDG (Canada)

UN-No:	UN2514
Proper Shipping Name:	Bromobenzene
Hazard Class	3
Subsidiary Risk:	No information available
Packing Group:	III
Marine Pollutant	Marine Pollutant
Description:	UN2514, Bromobenzene, 3, III

ADR

UN Number	UN2514
Proper Shipping Name:	Bromobenzene
Transport hazard class(es)	3
Packing group	III
Subsidiary Risk:	No information available
Description:	UN2514, Bromobenzene, 3, III, ENVIRONMENTALLY HAZARDOUS

IMDG

UN-No:	UN2514
Proper Shipping Name:	Bromobenzene
Hazard Class:	3
Subsidiary Risk:	No information available
Packing Group:	III
Marine Pollutant	Marine Pollutant
EMS:	F-E
Description	UN2514, Bromobenzene, 3, III, Marine pollutant

RID

UN Number	UN2514
Proper Shipping Name:	Bromobenzene
Transport hazard class(es)	3
Subsidiary Risk:	No information available
Packing group	III
Description:	UN2514, Bromobenzene, 3, III, ENVIRONMENTALLY HAZARDOUS

ICAO (air)

UN-No:	UN2514
Proper Shipping Name:	Bromobenzene
Hazard Class	3
Subsidiary Risk:	No information available
Packing Group:	III
Description:	UN2514, Bromobenzene, 3, III

IATA

UN Number	UN2514
Proper Shipping Name:	Bromobenzene
Transport hazard class(es)	3
Subsidiary Risk:	No information available
Packing group	III
Precautionary Statements - Response	3L
Special Provisions	No information available
Description:	UN2514, Bromobenzene, 3, III

15. REGULATORY INFORMATION

International Inventories

Component	CAS No	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	China IECSC	Australia (AICS)	EINECS-No.
Bromobenzene	108-86-1	PresentACTIVE	Present KE-03624	Present	Present (3)-32	Present	Present	Present 203-623-8

U.S. Regulations

Bromobenzene

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0258
Pennsylvania RTK: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Component	CAS No	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Bromobenzene	108-86-1	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Component	CAS No	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Bromobenzene	108-86-1	None	None	None	None	None

U.S. TSCA

Component	CAS No	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Bromobenzene	108-86-1	Not Applicable	Not Applicable

Canada

WHIMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification .

Information:

Component	WHMIS 2015 Hazard Classification
Bromobenzene 108-86-1 (100)	Flammable liquids - Category 3: H226 Flammable liquid and vapour.; Specific target organ toxicity - Single exposure - Category 2: H371 May cause damage to organs.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

DSL/NDSL

Component	CAS No	Canada (DSL)	Canada (NDSL)
Bromobenzene	108-86-1	Present	Not Listed

Component	CAS No	CEPA Schedule I - Toxic Substances
Bromobenzene	108-86-1	Not listed
Component	CAS No	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Bromobenzene	108-86-1	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Component	CAS No	EU GHS - SV - CLP (1272/2008)
Bromobenzene	108-86-1	Flammable liquids - Flam. Liq. 3: H226 Flammable liquid and vapour.; Skin corrosion/irritation - Skin Irrit. 2: H315 Causes skin irritation.; Hazardous to aquatic environment - chronic hazard - Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects.602-060-00-9

EU - CLP (1272/2008)

R-phrase(s)
R10 - Flammable
R38 - Irritating to skin
R51 - Toxic to aquatic organisms
R53 - May cause long-term adverse effects in the aquatic environment

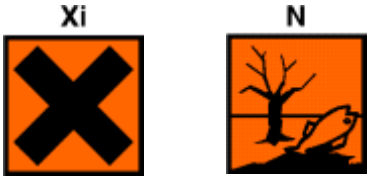
S -phrase(s)
S 2 - Keep out of the reach of children.
S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.

Component	CAS No	**Classification**	**Concentration Limits:**	**Safety Phrases**
Bromobenzene	108-86-1	R10 Xi; R38 N; R51-53	No information	S: (2)-61

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Flammable

Xi - Irritant
N - Dangerous for the environment



16. OTHER INFORMATION

Preparation Date: 6/10/2019
Revision date 6/10/2019
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet