

SAFETY DATA SHEET

1. Identification

Product identifier: Chlorobenzene

Other means of identification

Product No.: 4426, 4419, 9179, 5163, 5153

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Name: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway, Suite 200
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867

Fax:
Contact Person: Environmental Health & Safety
e-mail: info@avantormaterials.com

Emergency telephone number:

24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard classification

Physical hazards

Flammable liquids Category 3

Health hazards

Acute toxicity (Oral) Category 4

Acute toxicity (Inhalation - vapor) Category 4

Skin corrosion/irritation Category 2A

Label elements

Hazard symbol:



Signal word: Warning

Hazard statement: Flammable liquid and vapor.
Causes skin irritation.
Harmful if inhaled.
Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention:	Keep away from heat/sparks/open flames/hot surfaces. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/eye protection/face protection. Wash hands thoroughly after handling. Keep container tightly closed. Avoid breathing dust/fume/mist/vapors.
Response:	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. In case of fire: Use water spray, foam, dry powder or carbon dioxide for extinction.
Storage:	Store in a well-ventilated place. Keep cool.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Other hazards which do not result in GHS classification:	Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

3. Composition/information on ingredients

Substances

Chemical identity	Common name and synonyms	CAS number	Content in percent (%)*
CHLOROBENZENE		108-90-7	99 - 100%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
Ingestion:	Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.
Inhalation:	Move to fresh air. Get medical attention if symptoms persist.
Skin contact:	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.
Eye contact:	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

Most important symptoms/effects, acute and delayed

Symptoms:	May cause skin and eye irritation.
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Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General fire hazards: Flammable liquid and vapor.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Heat may cause the containers to explode.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the MSDS for Personal Protective Equipment.

Methods and material for containment and cleaning up: Eliminate all ignition sources if safe to do so. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use only non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling: DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities:

Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure controls/personal protection
Control parameters
Occupational exposure limits

Chemical identity	Type	Exposure Limit values	Source
CHLOROBENZENE	TWA	10 ppm	US. ACGIH Threshold Limit Values (2011)
	PEL	75 ppm 350 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	75 ppm 350 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

Biological limit values

Chemical identity	Exposure Limit values	Source
CHLOROBENZENE (4-Chlorocatechol, with hydrolysis: Sampling time: End of shift at end of work week.)	100 mg/g (Creatinine in urine)	ACGIH BEL (2011)
CHLOROBENZENE (p-Chlorophenol, with hydrolysis: Sampling time: End of shift at end of work week.)	20 mg/g (Creatinine in urine)	ACGIH BEL (2011)

Appropriate engineering controls

No data available.

Individual protection measures, such as personal protective equipment
General information:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/face protection:

Wear safety glasses with side shields (or goggles).

Skin protection
Hand protection:

Chemical resistant gloves

Other:

Wear suitable protective clothing.

Respiratory protection:

In case of inadequate ventilation use suitable respirator.

Hygiene measures:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

9. Physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	Almond-like odor
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	-45.2 °C
Initial boiling point and boiling range:	132 °C
Flash Point:	28 °C (Closed Cup)
Evaporation rate:	1 (butyl acetate=1)
Flammability (solid, gas):	Class IC Flammable Liquid
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	7.1 %(V)
Flammability limit - lower (%):	1.3 %(V)
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	1.57 kPa (25 °C)
Vapor density:	3.88 AIR=1
Relative density:	1.11 (20 °C)
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	ethanol: Soluble water: 0.5 g/l
Partition coefficient (n-octanol/water):	2.89
Auto-ignition temperature:	638 °C
Decomposition temperature:	No data available.
Viscosity:	No data available.
Other information	
Molecular weight:	112.56 g/mol (C ₆ H ₅ Cl)

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Heat, sparks, flames. Contact with incompatible materials.
Incompatible materials:	Strong oxidizers
Hazardous decomposition products:	Fire or excessive heat may produce hazardous decomposition products.

11. Toxicological information

Information on likely routes of exposure

Ingestion:	May be harmful if swallowed.
Inhalation:	Harmful if inhaled.

Skin contact: Causes skin irritation.

Eye contact: May irritate eyes.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: LD 50 (Rat): 2,290 mg/kg
LD 50 (Mouse): 1,440 mg/kg
LD 50 (Rabbit): 2,250 mg/kg

Dermal

Product: No data available.

Inhalation

Product: LC 50 (Rat, 6 h): 13.9 mg/l

Repeated dose toxicity

Product: No data available.

Skin corrosion/irritation

Product: Causes skin irritation.

Serious eye damage/eye irritation

Product: May irritate eyes.

Respiratory or skin sensitization

Product: Not a skin sensitizer.

Carcinogenicity

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ cell mutagenicity

In vitro

Product: No mutagenic components identified

In vivo

Product: No mutagenic components identified

Reproductive toxicity

Product: No data available.

Specific target organ toxicity - single exposure

Product: No data available.

Specific target organ toxicity - repeated exposure

Product: No data available.

Aspiration hazard

Product: No data available.

Other effects: No data available.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

CHLOROBENZENE
LC 50 (Bluegill (*Lepomis macrochirus*), 96 h): 4.1 - 4.9 mg/l Mortality
LC 50 (Rainbow trout, donaldson trout (*Oncorhynchus mykiss*), 96 h): 4.1 - 5.3 mg/l Mortality
LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 7 - 8.5 mg/l Mortality

Aquatic invertebrates

Product: No data available.

Specified substance(s):

CHLOROBENZENE
EC 50 (Water flea (*Daphnia magna*), 24 h): 3.25 - 5.7 mg/l Intoxication
LC 50 (Water flea (*Ceriodaphnia dubia*), 24 h): 7.6 mg/l Mortality
LC 50 (Water flea (*Daphnia magna*), 48 h): 9.4 - 12.4 mg/l Mortality
LC 50 (Water flea (*Ceriodaphnia dubia*), 48 h): 6.5 - 9.4 mg/l Mortality
LC 50 (Fleshy prawn (*Penaeus chinensis*), 96 h): 1.72 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration factor (BCF)

Product: No data available on bioaccumulation.

Partition coefficient n-octanol / water (log Kow)

Product: Log Kow: 2.89

Mobility in soil: No data available.

Other adverse effects: Toxic to aquatic life with long lasting effects.

13. Disposal considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated packaging:

Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information
DOT

UN number:	UN 1134
UN proper shipping name:	Chlorobenzene
Transport hazard class(es)	
Class(es):	3
Label(s):	3
Packing group:	III
Marine Pollutant:	No

IMDG

UN number:	UN 1134
UN proper shipping name:	CHLOROBENZENE
Transport hazard class(es)	
Class(es):	3
Label(s):	3
EmS No.:	F-E, S-D
Packing group:	III
Marine Pollutant:	No

IATA

UN number:	UN 1134
Proper Shipping Name:	Chlorobenzene
Transport hazard class(es):	
Class(es):	3
Label(s):	3
Marine Pollutant:	No
Packing group:	III

15. Regulatory information
US federal regulations
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

CHLOROBENZENE Reportable quantity: 100 lbs.

Superfund amendments and reauthorization act of 1986 (SARA)
Hazard categories

☒ Acute (Immediate)
 ☒ Chronic (Delayed)
 ☒ Fire
 ☐ Reactive
 ☐ Pressure Generating

SARA 302 Extremely hazardous substance

None present or none present in regulated quantities.

SARA 304 Emergency release notification

Chemical identity	RQ
CHLOROBENZENE	100 lbs.

SARA 311/312 Hazardous chemical

Chemical identity	Threshold Planning Quantity
CHLOROBENZENE	500 lbs

SARA 313 (TRI reporting)

Chemical identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
CHLOROBENZENE	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

CHLOROBENZENE Reportable quantity: 100 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US state regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

CHLOROBENZENE Listed

US. Massachusetts RTK - Substance List

CHLOROBENZENE Listed

US. Pennsylvania RTK - Hazardous Substances

CHLOROBENZENE Listed

US. Rhode Island RTK

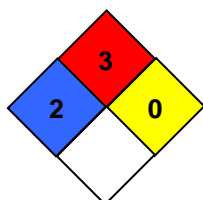
CHLOROBENZENE Listed

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EU EINECS List:	On or in compliance with the inventory
EU ELINCS List:	Not in compliance with the inventory.
Japan (ENCS) List:	Not in compliance with the inventory.
EU No Longer Polymers List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Red	Flammability
Blue	Health
Yellow	Reactivity
White	Special hazard.

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue date: 04-30-2014

Revision date: No data available.

Version #: 1.0

Further information: No data available.

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