HEXACHLOROBUTADIENE

HCB

CAUTIONARY RESPONSE INFORMATION

Common Synonyms			
1,3-Butadiene, 1,1,2,3,4,4-hexachloro- HCBD Hexachloro-1,3-butadiene Perchlorobutadiene	Liquid	Colorless	Mild, faint turpentine-like
	Sinks in water.		

AVOID CONTACT WITH LIQUID AND VAPOR. KEEP PEOPLE AWAY.
Wear positive pressure breathing apparatus and special protective clothing.
Shut off ignition sources. Call fire department.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

May burn but does not ignite readily.
POISONOUS GASES MAY BE PRODUCED IN FIRE.
Containers may explode in fire.
Wear positive pressure breathing apparatus and special protective clothing.
Extinguish small fires: dry chemical, CO_2, water apray or foam; large fires: water spray, fog or foam.
Combat fire from safe distance or protected location (behind barriers) with unmanned monitor nozzle.

Exposure

CALL FOR MEDICAL AID.

VAPOR
POISONOUS; may be fatal if inhaled.
May cause respiratory difficulty and irritation of eyes, skin and mucous membranes.
Remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
POISONOUS; MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN.
May cause burns to skin and eyes.
IF IN EYES OR ON SKIN, flush with running water for at least 15 min., hold eyelids open if necessary.
Speed in removing material from skin is of extreme importance.
Remove and isolate contaminated clothing and shoes at the site.
Keep victim quiet and maintain normal body temperature.
Effects may be delayed; keep victim under observation.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Collection Systems: Pump
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: CCl_2=CCl-CCl=CCl_2
2.3 IMO/UN Designation: 6.1/2279
2.4 DOT ID No.: 2279
2.5 CAS Registry No.: 87-68-3
2.6 NAERG Guide No.: 151
2.7 Standard Industrial Trade Classification: 51138

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Wear positive pressure breathing apparatus and special protective clothing.
3.2 Symptoms Following Exposure: Poisonous; may be fatal if inhaled, swallowed or absorbed through the skin. Inhalation causes repiratory difficulty and irritation of mucous membranes. Skin and eye irritant; may cause burns.
3.3 Treatment of Exposure: INHALATION: Move victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES OR SKIN: Flush with running water for at least 15 min.; hold eyelids open if necessary. Speed in removing material fron skin is extremely important. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation. INGESTION: If victim is unconscious or having convulsions, do nothing except keep victim warm.
3.4 TLV-TWA: 0.02 ppm
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 3; LD_{50} = 90 mg/kg (rat)
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Can cause mutagenic, teratogenic and tumorigenic effects. It is a suspect human carcinogen, and it may cause kidney damage.
3.10 Vapor (Gas) Irritant Characteristics: Currently not available
3.11 Liquid or Solid Characteristics: Currently not available
3.12 Odor Threshold: .006 ppm
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: Not listed.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: Currently not available
4.2 Flammable Limits in Air: Currently not available
4.3 Fire Extinguishing Agents: Small fires: dry chemical, CO_2, water spray or foam; large fires: water spray, fog or foam.
4.4 Fire Extinguishing Agents Not to Be Used: Not pertinent
4.5 Special Hazards of Combustion Products: They contain highly toxic and irritating chloride fumes.
4.6 Behavior in Fire: May burn to produce highly toxic and irritating gases.
4.7 Auto Ignition Temperature: 1,130°F.
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 0.0 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): Currently not available (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: Currently not available
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Currently not available
5.6 Inhibitor of Polymerization: Currently not available

6. WATER POLLUTION

6.1 Aquatic Toxicity: .09 mg/l/96 hr/goldfish/TL_m/freshwater
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: It does not bioaccumulate in aquatic organisms via the food chain.
6.5 GESAMP Hazard Profile:
Bioaccumulation: +
Damage to living resources: 4
Human Oral hazard: 2
Human Contact hazard: I
Reduction of amenities: X

7. SHIPPING INFORMATION

7.1 Grades of Purity: 98%
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: Currently not available
7.4 Venting: Currently not available
7.5 IMO Pollution Category: Currently not available
7.6 Ship Type: Currently not available
7.7 Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Keep Away From Food
8.2 49 CFR Class: 6.1
8.3 49 CFR Package Group: III
8.4 Marine Pollutant: Yes
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	2
Flammability (Red).....	1
Instability (Yellow).....	1

8.6 EPA Reportable Quantity: 1 pound
8.7 EPA Pollution Category: X
8.8 RCRA Waste Number: U128/D033
8.9 EPA FWPCA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 260.76
9.3 Boiling Point at 1 atm: 410-428°F. = 210-220°C. = 283-293°K.
9.4 Freezing Point: -2.2°F. = -19°C. = 254°K.
9.5 Critical Temperature: (est.) 315-342°F. = 157-172°C. = 430-445°K.
9.6 Critical Pressure: 41 psia = 28 atm = 2.8 MN/m^2 (est.)
9.7 Specific Gravity: 1.675 at 15.5°C.
9.8 Liquid Surface Tension: Currently not available
9.9 Liquid Water Interfacial Tension: Currently not available
9.10 Vapor (Gas) Specific Gravity: 9.0 (est.)
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: Currently not available
9.13 Heat of Combustion: Currently not available
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: Currently not available
9.17 Heat of Fusion: Currently not available
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
59	104.600		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE	100 110 120 130 140 150 160 170 180 190 200	2.446 2.326 2.207 2.087 1.968 1.848 1.729 1.609 1.490 1.370 1.251

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	INSOLUBLE	225 250 275 300 325 350	0.470 0.544 0.619 0.693 0.767 0.842	225 250 275 300 325 350	0.03700 0.07300 0.10800 0.14400 0.18000 0.21600		CURRENTLY NOT AVAILABLE