



MATERIAL SAFETY DATA SHEET

PRODUCT NAME: HEXANE

1. Product and Company Identification

BOC Gases,
Division of
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

BOC Gases
Division of
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (908) 464-8100
24-HOUR EMERGENCY TELEPHONE NUMBER:
CHEMTREC (800) 424-9300

TELEPHONE NUMBER: (905) 501-1700
24-HOUR EMERGENCY TELEPHONE NUMBER:
(905) 501-0802
EMERGENCY RESPONSE PLAN NO: 2-0101

PRODUCT NAME: HEXANE
CHEMICAL NAME: Hexane
COMMON NAMES/SYNONYMS: Hexane/mixed isomers, Hexanes, n-Hexane
TDG (Canada) CLASSIFICATION: 3
WHMIS CLASSIFICATION: B2, D2B

PREPARED BY: Loss Control (908)464-8100/(905)501-1700
PREPARATION DATE: 6/1/95
REVIEW DATES: 06/18/04

2. Composition, Information on Ingredients

EXPOSURE LIMITS¹:

INGREDIENT	% VOLUME	PEL-OSHA ²	TLV-ACGIH ³	LD ₅₀ or LC ₅₀ Route/Species
Hexane FORMULA: C ₆ H ₁₄ CAS: 110-54-3 RTECS #: MN9275000	100.0	500 ppm TWA (n-Hexane)	50 ppm TWA (n-Hexane) (skin)	LD ₅₀ : 2870 mg/kg Ingestion/rat

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 2004 Threshold Limit Values for Chemical Substances and Physical Agents.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

3. Hazards Identification

EMERGENCY OVERVIEW

Clear flammable liquid with gasoline type odor. Dangerous fire and explosion hazard. Avoid heat, sparks, and flames. Vapors irritating to the eyes and respiratory system. Skin contact may cause irritation, dermatitis, and toxic symptoms. Inhalation of vapors may depress the central nervous system causing dizziness, headache and nausea and eventual loss of consciousness and respiratory paralysis at very high concentrations.

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ROUTE OF ENTRY:

Skin Contact Yes	Skin Absorption Yes	Eye Contact Yes	Inhalation Yes	Ingestion Yes
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HEALTH EFFECTS:

Exposure Limits Yes	Irritant Yes	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen Yes
Synergistic Effects None reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

EYE EFFECTS: Contact with liquid will cause irritation, redness and a burning sensation. Persons with potential exposure to hexane should not wear contact lenses.

SKIN EFFECTS: Hexane is an irritant to the skin and can be absorbed through the skin in harmful amounts.

INGESTION EFFECTS: Ingestion may cause gastrointestinal irritation, nausea, vomiting and headache.

INHALATION EFFECTS: Inhalation of the vapors may depress the central nervous system causing dizziness, difficulty in walking, respiratory tract irritation, numbness of the extremities and may result in eventual respiratory paralysis at very high concentrations. Symptoms may include headaches, weakness in the fingers and toes, blurred vision, appetite and weight loss, nausea, and throat irritation.

CHRONIC: Repeated exposure to n-hexane may damage the nervous system causing peripheral neuropathy often characterized by weakness and numbness in the arms and legs. Symptoms generally disappear within a few months after exposure stops.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Any type of paresthesia may be aggravated by hexane exposure.

POTENTIAL ENVIRONMENTAL EFFECTS: Administration of hexane up to 100 ppm for 96 H in artificial seawater (@ 8 °C) caused no mortalities in young Coho salmon (*Oncorhynchus kitsutch*).

4. First Aid Measures

EYES:

Flush contaminated eye(s) with copious quantities of water. Part eyelids with fingers to assure complete flushing. Continue for minimum of 15 minutes. Seek medical attention.

SKIN:

Flush affected area with large quantities of water. Remove contaminated clothing as rapidly as possible. If irritation persists or systemic poisoning is suspect, seek immediate medical attention.

INGESTION:

Do not induce vomiting as aspiration into the lung may cause pulmonary edema and complications. Do not administer milk, alcohol or fatty foods. Lay victim down in a cool, quiet, well ventilated area and keep warm with a blanket. Consult a poison control center for instructions as soon as possible.

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INHALATION:

Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing is difficult, administer oxygen. Unconscious persons should be moved to an uncontaminated area and given artificial resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO HEXANE. Rescue personnel should be equipped with self-contained breathing apparatus and be aware of extreme fire and explosion hazard.

5. Fire Fighting Measures

Conditions of Flammability: Liquid and vapor flammable		
Flash point: -7 °F (-22 °C)	Method: Not Available	Autoignition Temperature: Not Available
LEL(%): 1.2	UEL(%): 7.4	
Hazardous combustion products: Typical for burning hydrocarbon		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: Not Available		

FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapors are heavier than air and may travel along the ground to an ignition source and flash back. Vapors may accumulate in areas with inadequate ventilation possibly forming an explosive atmosphere. Use adequate ventilation to prevent vapor buildup. Drum may rupture violently from pressure when involved in a fire situation.

EXTINGUISHING MEDIA: Foam, dry chemical, carbon dioxide. Water may be ineffective.

FIRE FIGHTING INSTRUCTIONS: If possible, stop flow of hexane. Use water spray to cool surrounding containers. Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Use water spray to knock down vapors and cool and protect exposed materials. Continue to cool fire-exposed containers until well after flames are extinguished.

6. Accidental Release Measures

Immediately extinguish all ignition sources and evacuate all personnel from affected area. No smoking, flames, sparks, or flares in hazard area. Ventilate hazard area. Use water spray to knock down vapors. Use appropriate protective equipment (See Section 8). Absorb small spills with suitable inert sorbent material (i.e.: sand or vermiculite) and place in clean dry tightly closed container for later disposal. Dike with inert sorbent well ahead of larger spills for later disposal or recycle. Prevent entryway into waterways and sewers. Hexane may cause a fire or explosion in sewers not specifically designed to prevent vapor buildup. If large amounts are spilled, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Electrical Classifications: Class 1, Group not specified.

Eliminate all sources of ignition. Use only non-sparking tools and equipment, especially when opening and closing containers of n-Hexane. Ground and bond metal containers used in the transfer of 5 gallons or more of n-hexane.

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Use only in well-ventilated areas. Protect containers from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas, emergency exits, and oxidizers. Drums should be tightly closed and stored upright and firmly secured to prevent falling or being knocked over. Segregate full and empty drums. Use a "first in-first out" inventory system to prevent full drums being stored for excessive periods of time. Post "NO SMOKING OR OPEN FLAMES" signs in the storage area or use area. There should be no sources of ignition in the storage or use area.

Empty containers may contain product residue and flammable vapors. Do not compact, heat, or weld empty containers. Do not re-use containers. Wash hands thoroughly after handling and before meals and breaks. If skin contact is anticipated, wear appropriate protective gloves, apron, etc. as necessary to prevent contact. Change contaminated clothing promptly due to fire and skin absorption hazard. Use only with adequate ventilation.

8. Exposure Controls, Personal Protection

ENGINEERING CONTROLS: Use enclosures and local exhaust ventilation as necessary to limit exposure below the acceptable exposure limits. Exhaust gas should be vented to a gas treatment system. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code for details.

EYE/FACE PROTECTION: Chemical safety goggles or glasses and face shield. Do not wear contact lenses.

SKIN PROTECTION: Appropriate protective and chemical-resistant gloves, clothing and splash protection, or fully encapsulating vapor protective clothing to prevent exposure. For materials of construction, consult protective clothing manufacture's specific data. (Nitrile rubber or polyvinyl alcohol are generally effective.)

RESPIRATORY PROTECTION: For emergency release use a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using a full-face mask and at a minimum Grade D air.

OTHER: Emergency eyewash station, safety shoes and shower facilities

9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Liquid	
Vapor pressure at STP	: 2.5	Psia
Vapor density at STP (Air = 1)	: 3.0	
Evaporation point	: Not Available	
Boiling point	: 156	°F
	: 69	°C
Freezing point	: -140	°F
	: -95.6	°C
PH	: Not Available	
Specific gravity	: 0.664	
Oil/water partition coefficient	: Not Available	
Solubility (H ₂ O)	: Negligible	
Odor threshold	: Not Available	
Odor and appearance	: Clear liquid with mild solvent odor	

10. Stability and Reactivity

STABILITY: Stable

INCOMPATIBLE MATERIALS/CONDITIONS: May react violently with strong oxidizers. Avoid heat, sparks, and flames.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce hydrocarbons and oxides of carbon.

HAZARDOUS POLYMERIZATION: Will not occur.

11. Toxicological Information

INHALATION: In humans, 10 minute inhalation of 5000 ppm n-hexane produced dizziness and giddiness while a 10 minute inhalation of 2000 ppm caused no effects.

SKIN AND EYE: No evidence of eye or mucous membrane was reported following exposure of unacclimated human subjects to 5000 ppm n-hexane.

OTHER: Repeated exposure to n-hexane can cause slow-developing bilateral, symmetrical, peripheral and sensorimotor neuropathy. The minimum levels of n-hexane which are neurotoxic to humans have not been established.

Studies indicate that n-hexane can adversely affect the fetus at maternally toxic levels. Toxicity was observed in newborn following experimental 10,000 ppm, 7 hour exposure in female rats. Toxic effects were observed in embryo and fetus following 5000 ppm, 20 hour exposure in female rats. Although progressive testicular toxicity has been induced in rats at subneurotoxic doses of the main toxic metabolite of n-hexane (2,5-hexanedione), no reports of human reproductive toxicity or sterility have been associated with n-hexane exposure. Genetic effects have been observed in mammalian cell analysis system.

Toxic effects observed to respiratory system, nervous systems in experimental exposures mammalian species. Effects include changes in brain weight, body weight and peripheral nervous system changes.

12. Ecological Information

Product does not contain Class I or Class II ozone depleting substances. Although hexane may biodegrade in soil and water, volatilization and adsorption are expected to be more important fate processes. See Section 3 for ecotoxicity information.

Hexane is classified as a Hazardous Air Pollutant (HAP) under the Clean Air Act (Section 112 (b)). The CERCLA Reportable Quantity (RQ) for hexane is 5,000 pounds.

13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

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14. Transport Information

PARAMETER	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Hexanes	Hexanes
HAZARD CLASS:	3	3
IDENTIFICATION NUMBER:	UN 1208	UN 1208
SHIPPING LABEL:	FLAMMABLE LIQUID	FLAMMABLE LIQUID

Additional Marking Requirement: If net weight of product $\geq$ 5,000 pounds, the container must be also marked with the letters "RQ".

Packing Group: II

15. Regulatory Information

SARA TITLE III NOTIFICATION AND INFORMATION:

SARA TITLE II-HAZARD CLASSES:

Acute Health Hazard
Chronic Health Hazard
Fire Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY VOLUME
110-54-3	Hexane	100.0

This information must be included on all MSDSs that are copied and distributed for this material.

U.S. TSCA/Canadian DSL: All ingredients are listed on the U.S. Toxic Substances Control Act (TSCA) inventory or exempt from listing and on the Canadian Domestic Substance List (DSL).

California Proposition 65: This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

Canadian Controlled Products Regulations (CPR): This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other Information

NFPA HAZARD CODES

Health: 1
Flammability: 3
Instability: 0

HMIS HAZARD CODES

Health: 1
Flammability: 3
Physical Hazard: 0

RATINGS SYSTEM

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

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ACGIH	American Conference of Governmental Industrial Hygienists
DOT	Department of Transportation
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
STEL	Short Term Exposure Limit
TDG	Transportation of Dangerous Goods
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

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