

Krypton
Material Safety
Data Sheet

BOGGS GASES

620 Main Street
 Titusville, FL 32796
 Phone: (321) 267-4110
 FAX: (321) 267-7171

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EMERGENCY PHONE #: Chemtrec: 1-800-424-9300		Created: January 01, 2003 Revised: January 01, 2007	
MANUFACTURER'S NAME: BOGGS GASES 620 Main Street Titusville, FL 32796-3488 Ph: (321) 267-4110 FAX: (321) 267-7171		TRADE NAME AND SYNONYMS: Krypton	CHEMICAL NAME AND SYNONYMS: Krypton
		FORMULA He MW: 4.003	CHEMICAL FAMILY: Inert Gas CAS #7440-59-7

HEALTH HAZARD DATA

EXPOSURE LIMITS:

Krypton is a simple asphyxiant and has no threshold limit value (TLV). Krypton is not listed as carcinogen by NTP, IARC, or OSHA.

SYMPTOMS IF INGESTED, CONTACTED WITH SKIN, OR VAPOR INHALED:

Krypton is odorless and nontoxic, but may produce suffocation by diluting the concentration of oxygen in air below levels necessary to support life. PERSONNEL, INCLUDING RESCUE WORKERS, SHOULD NOT ENTER AREAS WHERE THE OXYGEN CONCENTRATION IS BELOW 19.5% UNLESS PROVIDED WITH A SELF-CONTAINED BREATHING APPARATUS OR AIRLINE RESPIRATOR. Exposure to oxygen-deficient atmospheres may produce dizziness, nausea, vomiting, loss of consciousness, and death. Death may result from errors in judgement, confusion, or loss of consciousness which prevents self-rescue. At low oxygen concentrations unconsciousness and death may occur in seconds without warning. Extensive tissue damage or burns can result for exposure to liquid nitrogen or could nitrogen vapors.

TOXICOLOGICAL PROPERTIES:

Krypton is nontoxic but can act as a simple asphyxiant by displacing the amount of oxygen in the air necessary to support life.

RECOMMENDED FIRST AID TREATMENT

Persons suffering from lack of oxygen should be moved to areas with normal atmospheres. SELF-CONTAINED BREATHING APPARATUS MAY BE REQUIRED TO PREVENT ASPHYXIATION OF RESCUE WORKERS. Assisted respiration and supplemental oxygen should be given if the victim is not breathing. If cryogenic liquid or cold boil-off gas contacts a worker's skin or eyes, frozen tissues should be flooded or soaked with tepid water (105-115F; 41-46C). DO NOT USE HOT WATER. Cryogenic burns which result in blistering or deeper tissue freezing should be seen promptly by a physician.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method Used) N/A	AUTO IGNITION TEMP N/A	FLAMMABLE LIMITS Non-flammable	LEL N/A	UEL N/A
EXTINGUISHING MEDIA N/A			ELECTRICAL CLASSIFICATION GROUP N/A	
SPECIAL FIRE FIGHTING PROCEDURES N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS Cylinders exposed to high heat or flame may vent rapidly.				

PHYSICAL DATA

BOILING POINT (F) 1 atm -452.1F (-268.9C)		FREEZING POINT (F) @ 1 atm -458.0F (-272.0C)	
VAPOR PRESSURE (psia) N/A	SOLUBILITY IN WATER @ 68F (20C), 1 ATM 0.861% by volume		VAPOR DENSITY (lb/cu ft) @ 32F (0 C), 1 atm 0.01114
SPECIFIC GRAVITY (AIR=1) @ 32F (0 C), 1 atm 0.138	LIQUID DENSITY (lb/cu ft) @ boiling point, 1 atm 7.798		SPECIFIC GRAVITY (H2O=1) @ boiling point, 1 atm 0.125

APPEARANCE AND ODOR

Both liquid and gaseous Krypton are colorless and odorless.

REACTIVITY DATA

STABILITY Inert	UNSTABLE		CONDITIONS TO AVOID None
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) None			
HAZARDOUS DECOMPOSITION PRODUCTS None			
HAZARDOUS POLYMERIZATION	MAY OCCUR WILL NOT OCCUR		CONDITIONS TO AVOID None
		X	

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SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Avoid contact of skin with liquid Krypton or its cold boil-off gas. Flush liquid Krypton spill with water to disperse. Ventilate closed areas to prevent formation of oxygen deficient atmospheres caused by the evaporation of liquid Krypton or the release of gaseous Krypton. Krypton is heavier than air and may tend to collect in low areas if ventilation is not adequate.

WASTE DISPOSAL METHOD

Allow liquid Krypton to evaporate in a well ventilated outdoor location remote from work areas. Vent Krypton gas slowly to a well ventilated outdoor location remote from work areas. Do not attempt to dispose of residual Krypton in compressed gas cylinders. Return cylinders to Boggs Gases with residual pressure, the cylinder valve tightly closed and valve caps in place.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Use self-contained breathing apparatus in oxygen deficient atmospheres. Caution! Respirators will not function. Use may result in asphyxiation.

VENTILATION	LOCAL EXHAUST	As Necessary	SPECIAL	Only As Necessary
Natural or mechanical where gas is present	MECHANICAL (General)	As Necessary	OTHER	Vents should be situated to avoid higher than normal concentration of Krypton in work areas.

PROTECTIVE GLOVES

(LAR) Loose-fitting gloves of impermeable materials such as leather. Leather work gloves are recommended when handling compressed gas cylinders.

EYE PROTECTION

(LAR) Chemical goggles or safety glasses. Safety glasses are recommended when handling high-pressure cylinders.

OTHER PROTECTIVE EQUIPMENT

None

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION

DOT Shipping Name: Krypton or Krypton, Compressed; Krypton, refrigerated liquid.
DOT Hazard Class: Nonflammable Gas
DOT Shipping Label: Nonflammable Gas
I.D. Number: UN 1046 (Krypton or Krypton Compressed)

SPECIAL HANDLING RECOMMENDATIONS

Prevent contact of liquid Krypton or cold boil-off gas with exposed skin. Prevent entrapment of liquid in closed systems. Use only in well ventilated areas. Compressed gas cylinders contain Krypton at extremely high pressure and should be handled with care. Use a pressure-reducing regulator and pressure relief devices when connecting to lower pressure piping systems. Secure cylinders when in use. Never use a direct flame to heat a compressed gas cylinder. Use a check valve to prevent back flow into a storage container. Avoid dragging, rolling or sliding cylinders, even for a short distance. Use a suitable hand truck. For additional handling recommendations on compressed gas cylinders, consult Compressed Gas Association Pamphlet P-1.

SPECIAL STORAGE RECOMMENDATIONS

It is recommended that liquid cylinders be stored outside and the gas or liquid piped to the use point. However, if liquid cylinders are to be stored or transported in an enclosed area, it is essential that the area be well ventilated. In case of poor ventilation, forced ventilation should be installed. Keep cylinders away from sources of heat. Storage should not be in heavy traffic areas to prevent accidental knocking over or damage from passing or falling objects. Valve caps should remain on cylinders not connected for use. Segregate full and empty cylinders. Storage areas should be free of combustible material. Replace the cylinder cap when the cylinder is not in use. Avoid exposure to areas where salt or other corrosive chemicals are present. See Compressed Gas Association Pamphlet P-1 for additional storage recommendations.

SPECIAL PACKAGING RECOMMENDATIONS

Gaseous Krypton containers meet DOT specifications or American Society of Mechanical Engineers (ASME) codes. Liquid Krypton is stored in vacuum-insulated containers meeting DOT specifications or ASME codes.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Liquid Krypton is a cryogenic liquid. Materials of construction must be selected for compatibility with extremely low temperatures. Avoid use of carbon steel and other materials which become brittle at low temperatures. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder filled without the written permission of the owner is a violation of Federal Law. If oxygen-deficient atmospheres are suspected or can occur, use oxygen monitoring equipment to test for oxygen deficient atmospheres.

* Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that s/he is in full compliance.