1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**Xenon (Inert Gas), Enriched Xenon**
Chemical Formula	Xe
Molecular Weight	131.293
Form	Gas
CAS No.	7440-63-3
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac / +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview CAUTION! High-pressure gas. May explode if heated. Can cause rapid suffocation. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.
Odor: None

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 1 **Flammability = 0** **Reactivity = 0**

HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 1 **Flammability = 0** **Physical Hazard = 0**

HEALTH HAZARD	1
FLAMMABILITY	0
PHYSICAL HAZARD	0

GHS Label elements, including precautionary statements

Hazard pictograms: 

Signal word: Warning

Hazard statements: H280 – Contains gas under pressure; may explode if heated

Precautionary statements: P410+P403 – Protect from sunlight. Store in a well-ventilated place.

Other hazards which do not result in classification:

Asphyxiant in high concentrations.

Contact with liquid may cause cold burns/frostbite.

Potential Health Effects

Skin No harm expected from vapor; liquid may cause frostbite

Eyes No harm expected from vapor; liquid may cause frostbite

Inhalation Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting and unconsciousness. Lack of oxygen can kill. Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

Ingestion This product is a gas at normal temperature and pressure.

Chronic No evidence of adverse effects from available information

Medical Condition Aggravated by Exposure The toxicology and the physical and chemical properties of this product suggest that overexposure is unlikely to aggravate any existing medical condition.

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3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name: Xenon

CAS No.: 7440-63-3

Chemical Formula: Xe

Molecular Weight: 131.293

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4. FIRST AID MEASURES

General Exposure Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Dermal Exposure If exposed to liquid, avoid breathing vapor. Immediately warm frostbite area with warm water (not to exceed 40 °C). In case of massive exposure, remove clothing and shoes and shower with warm water. Get medical attention immediately. Wash with soap, then rinse thoroughly.

Eye Exposure For contact with the liquid, immediately flush eyes thoroughly with warm water for at least 15 minutes. Remove contact lenses, if present and easy to do. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.

Inhalation Exposure If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Notes to Physician There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

Most important symptoms and effects (acute and delayed):

Contact with the liquid may cause cold burns/frostbite. In high concentrations, substance may cause asphyxiation.

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5. FIREFIGHTING MEASURES

Flash Point	Not applicable
Autoignition Temperature	Not applicable
Suitable Extinguishing Media	Xenon cannot catch fire. Use media appropriate for any surrounding fire.
Special Firefighting Procedures	CAUTION! Evacuate all personnel to a safe distance. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk. See Unusual Fire and Explosion Hazards.
Unusual Fire and Explosion Hazards	Xenon cannot catch fire. Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to a temperature higher than 125 °F (52 °C).
Hazardous Combustion Products	None
Sensitivity to Impact	Avoid impact against container
Sensitivity to Static Discharge	Not applicable

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6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	CAUTION! High-pressure gas. Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.
Environmental Precautions	Prevent waste from contaminating the surrounding environment. Keep personnel away.
Methods for Cleaning Up	Shut off flow, if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area.

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7. HANDLING AND STORAGE

Handling

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide or drop. Electrical equipment must be non-sparking or explosion-proof. Leak-check system with soapy water; never use a flame. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

High-pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. Gas can cause rapid suffocation due to oxygen deficiency. Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. Prevent reverse flow. Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. When returning cylinder to supplier, be sure valve is closed, then install valve outlet plug tightly. Never work on pressurized system. If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, state/provincial and local laws; then repair the leak. Never place a compressed gas cylinder where it may become part of an electrical circuit.

Hygiene	Do not eat, drink or smoke when using this product.
Storage	Store and use with adequate ventilation. Firmly secure cylinder upright to keep them from falling or being knocked over. Do not drag, roll, slide or drop cylinder. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 °C. Keep away from heat and direct sunlight. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods of time.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Threshold Limit Value	Asphyxiant. TLV-TWA Data from 2007 *Guide to Occupational Exposure Values* (ACGIH). TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

Routes of Exposure

Inhalation
Skin contact
Eye contact

Engineering Controls	Local exhaust is preferable, if necessary, to prevent oxygen deficiency. Mechanical (general) – General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

Personal Protective Equipment

Respiratory Protection	None required under normal use. However, air-supplied respirators are required while working in confined spaces with this product. Respiratory protection must conform to OSHA rules as specified in *29 CFR 1910.134.* Select per OSHA *29 CFR 1910.134* and ANSI Z88.2.
Hand Protection	Wear work gloves when handling cylinders.
Eye Protection	Safety glasses are recommended. Select in accordance with OSHA *29 CFR 1910.133.*
Other Protective Equipment	Metatarsal shoes for container handling. Select in accordance with OSHA *29 CFR 1910.132* and *1910.133*. Regardless of protective equipment, never touch live electrical parts.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State	Gas
Color	Colorless
Odor	Odorless

Safety Data

Freezing Point:	-111 °C (-167.8 °F)
pH:	Not applicable
Vapor Pressure:	Not applicable
Boiling Point:	-108.11 °C (-162.6 °F)
Molecular Weight:	131.293
Specific Gravity (Water = 1):	3.52 @ -109 °C
Specific Gravity (Air = 1):	4.56 @ 21.1 °C
Vapor Density:	0.00547 g/ml @ 21.1 °C
Vapor Pressure:	59600 mbar (15 °C)
Relative Density:	1.5
Relative Gas Density:	4.5
Critical Temperature:	16.6 °C

Solubility in Water:	Negligible

10. STABILITY AND REACTIVITY

Stability	This product is stable.
Conditions to Avoid	Heat and direct sunlight
Materials to Avoid	This material is chemically unreactive but not completely inert.
Hazardous Decomposition Products	None
Hazardous Polymerization	None

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Inhalation	In high concentrations may cause asphyxiation.
Dermal	No data available
Skin Corrosion/Irritation	Contact with the liquid may cause cold burns/frostbite.
Serious Eye Damage/Eye Irritation	No data available
Respiratory or Skin Sensitization	No data available
Germ Cell Mutagenicity	No data available

Carcinogenicity

IARC	No
NTP	No
OSHA	No
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
Reproductive Toxicity	No data available
Specific Target Organ Toxicity / Single Exposure	No data available
Specific Target Organ Toxicity / Repeated Exposure	No data available
Aspiration Hazard	No data available
Additional Information	RTECS: Not available

12. ECOLOGICAL INFORMATION

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. DISPOSAL CONSIDERATIONS

Product	Do not attempt to dispose of residual or unused quantities. Discard and product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state/provincial, and local regulations. If necessary, call your supplier for assistance.
Contaminated Packaging	Dispose of as unused product.

14. TRANSPORT INFORMATION

UN No. (DOT)	UN2036
UN No. (TDG)	UN2036
UN No. (IMDG)	2036
UN No. (IATA)	2036
Proper Shipping Name (DOT)	XENON, COMPRESSED
Proper Shipping Name (TDG)	XENON
Proper Shipping Name (IMDG)	XENON
Proper Shipping Name (IATA)	Xenon
Transport Hazard Class(es) (DOT)	2.2 (Non-flammable, non-corrosive and non-poisonous gas)
Hazard Labels (DOT)	2.2

Transport Hazard Class(es) (TDG)	2.2
Hazard Labels (TDG)	2.2

Transport Hazard Class(es) (IMDG)	2.2
Hazard Labels (IMDG)	2.2

Transport Hazard Class(es) (IATA)	2.2
Hazard Labels (IATA)	2.2

Shipping Label	Non-flammable, non-poisonous gas
Packing Group (DOT)	Not applicable
Packing Group (TDG)	Not applicable
Packing Group (IMDG)	Not applicable
Packing Group (IATA)	Not applicable
Special Shipping Information	Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

Special Precautions for User

DOT

UN No.	UN2036
Packaging Exceptions	306 *(49 CFR 173.xxx)*
Packaging (Non-Bulk)	302 *(49 CFR 173.xxx)*

Packaging (Bulk)	None *(49 CFR 173.xxx)*
Quantity Limitations –	
Passenger Aircraft/Rail	75 kg *(49 CFR 173.27)*
Quantity Limitations –	
Cargo Aircraft Only	150 kg *(49 CFR 175.75)*
Vessel Stowage Location	A – The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.

TDG

UN No.	UN2036
Special Provisions	38 – A person must not handle, offer for transport or transport these dangerous goods in a large means of containment if they are in direct contact with the large means of containment, 148 – (1) Part 5 (Means of Containment) does not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles if (a) the working pressure in each receptacle is less than 5 000 KPa; (b) the capacity of each receptacle is less than 12 L; (c) each receptacle has a minimum burst pressure of (i) at least 3 times the working pressure, when the receptacle is fitted with a relief device; or (ii) at least 4 times the working pressure, when the receptacle is not fitted with a relief device; (d) each receptacle is manufactured from material that will not fragment upon rupture; (e) each detector is manufactured under a quality assurance program; (f) the detectors are transported in strong outer means of containment; and (g) a detector in its outer means of containment is capable of withstanding a 1.2-m drop test without breakage of the detector or rupture of the outer means of containment. (2) Part 5 (Means of Containment) does not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles and that are included in equipment, if (a) the conditions set out in paragraphs (1)(a) to (e) are met; and (b) the equipment is contained in a strong outer means of containment, or the equipment affords the detectors with protection that is equivalent to that provided by a strong outer means of containment. (3) These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles, including detectors in radiation detection systems, if the detectors meet the requirements of subsections (1) or (2), as applicable, and the capacity of the receptacles that contain the detectors is less than 50 mL.

Explosive Limit and Limited Quantity Index	0.125 L
Excepted Quantities	E1
Passenger-Carrying Road Vehicle or Passenger-Carrying Railway Vehicle Index	75 L
Emergency Response Guide (ERG) Number	121

IMDG

Limited Quantities	120 ml
Excepted Quantities	E1
Packing Instructions	P200
EmS No. (Fire)	F-C – FIRE SCHEDULE Charlie – NON-FLAMMABLE GASES
EmS No. (Spillage)	S-V – SPILLAGE SCHEDULE Victor – GASES (NON-FLAMMABLE, NON-TOXIC)
Stowage Category	A
Properties and Observations	Liquefied, inert gas. Much heavier than air (4.5).
MFAG No.	121

IATA

PCA Excepted Quantities	E1
PCA Limited Quantities	Forbidden
PCA Limited Quantity Max Net Quantity	Forbidden
PCA Packing Instructions	200
PCA Max Net Quantity	75 kg
CAO Packing Instructions	200
CAO Max Net Quantity	150 kg
Special Provision	A69, A202
ERG Code	2L

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

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15. REGULATORY INFORMATION

REACH Number	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Sudden Release of Pressure Hazard
Massachusetts Right to Know Components	No components are subject to the Massachusetts Right to Know Act.
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

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16. OTHER INFORMATION

Prepared by	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Issuing Date	December 29, 2014
Revision Date	October 18, 2024
Revision Number	6
Revision Note	Update supplier address

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal Concentration, 50 percent
LD50	Lethal Dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail

RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

General Disclaimer

For terms and conditions, including limitation of liability, please refer to the purchase agreement in effect between ISOFLEX USA (or any of its affiliates and subsidiaries) and the purchaser.

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