

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:

Xenon Difluoride

CHEMICAL FORMULA:

XeF₂

COMPANY NAME:

PELCHEM: The Chemical Division of NECSA

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2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME OF SUBSTANCE:

Xenon Difluoride

SYNONYMS:

Xenon fluoride (XeF₂);

Xenon difluoride (XeF₂);

Xenon (II) fluoride (F₂Xe)

UN No:

UN1479

CAS-No:

13709-36-9

3. HAZARD IDENTIFICATION

NFPA Ratings (scale 0-4):

Health = 1 Fire = 0

Reactivity = 1 Oxidizing; R 8-64

EU CLASSIFICATION: O.

◆ **EMERGENCY OVERVIEW:**

COLOR: Colourless to white

PHYSICAL FORM: Crystals

MAJOR HEALTH HAZARDS: No significant target effects reported.

PHYSICAL HAZARDS: Strong oxidizer. May ignite or explode on contact with combustible materials. Contact with water or moist air may generate toxic gases.

◆ **POTENTIAL HEALTH EFFECTS**

• **INHALATION:**

SHORT TERM EXPOSURE: Same as effects reported in short term ingestion, irritation (possibly severe), nausea, difficulty breathing, asthma and lung congestion.

LONG TERM EXPOSURE: Same as effects reported in short term exposure.

• **SKIN CONTACT:**

SHORT TERM EXPOSURE: Same as effects reported in short term ingestion, irritation (possible severe).

LONG TERM EXPOSURE: Same as effects reported in short term exposure.

- **EYE CONTACT:**
SHORT TERM EXPOSURE: irritation (possible severe).
LONG TERM EXPOSURE: same as effects reported in short term exposure.
- **INGESTION:**
SHORT TERM EXPOSURE: burns, rash, nausea, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, headache, tingling sensation, visual disturbances, dilated pupils, bluish skin color, paralysis, convulsions, coma.
LONG TERM EXPOSURE: no information on significant adverse effects.
- **CARCINOGEN STATUS:**
OSHA: N NTP: N IARC: N

4. FIRST AID MEASURES

- ◆ **INHALATION:**
Remove from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.
- ◆ **SKIN CONTACT:**
Remove contaminated clothing, jewelry, and shoes immediately. Wash with soap or mild detergent and large amount of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention, if needed.
- ◆ **EYE CONTACT:**
Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. Get medical attention immediately.
- ◆ **INGESTION:**
If vomiting occurs, keep head lower than hips to help prevent aspiration. Get medical attention, if needed.

5. FIRE-FIGHTING MEASURES

- ◆ **FIRE AND EXPLOSION HAZARD:**
Negligible fire hazard. May ignite or explode on contact with combustible materials.
- ◆ **EXTINGUISHING MEDIA**
Water.
Do not use dry chemical, carbon dioxide or halogenated extinguishing agents. Large fires, flood with water. Apply water from a protected location or from a safe distance.
- ◆ **FIREFIGHTING**
Move container from fire area if it can be done without risk. Cool containers with water

spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions:

Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Flood with water. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 800 meters (1/2 mile).

6. ACCIDENTAL RELEASE MEASURES

◆ OCCUPATIONAL SPILL:

Avoid contact with combustible materials. Do not touch spilled material. Small dry spills: Move containers away from spill to a safe area. Small liquid spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards. NFPA 430 Code for the Storage of Liquid and Solid Oxidizing Materials. Store under an inert atmosphere. Store in a tightly closed container. Avoid contact with water or moisture. Keep separated from incompatible substances.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE LIMITS:

◆ XENON DIFLUORIDE:

INORGANIC FLUORIDES (as F): 2.5 mg/m³ OSHA TWA 2.5 mg/m³ ACGIH TWA 2.5 mg/m³ NIOSH recommended TWA 10 hour(s) 2.5 mg(F)/m³ UK OES TWA
MEASUREMENT METHOD: Treated pad with pre-filter (with special coating); Reagent; Ion-specific electrode; NIOSH III # 7902, Fluorides.

◆ VENTILATION:

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

◆ EYE PROTECTION:

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

◆ CLOTHING:

Wear appropriate chemical resistant clothing.

◆ **GLOVES:**

Wear appropriate chemical resistant gloves.

◆ **RESPIRATOR:**

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. Measurement Element: E

12.5 mg/m³ Any dust and mist respirator.

25 mg/m³ Any dust and mist respirator. Any supplied-air respirator.

62.5 mg/m³ Any supplied air respirator. Any powered, air-purifying respirator with a dust and mist filter. May need acid gas sorbent.

125 mg/m³ Any air-purifying respirator with full-face piece and a high-efficiency particulate filter. May need acid gas sorbent. Any self-contained breathing apparatus with a full-face piece.

250 mg/m³ Any supplied-air respirator with a full face piece that is operator in a pressure-demand or other positive-pressure mode.

Escape – Any air-purifying respirator with a full-face piece and a high-efficiency particulate filter. May need acid gas sorbent. Any appropriate escape-type, self-contained breathing apparatus.

For unknown concentrations or Immediately Dangerous to Life or Health – Any supplied-air respirator with full face piece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full-face piece.

9. PHYSICAL AND CHEMICAL PROPERTIES

- ◆ Description:
- ◆ Physical state: Solid
- ◆ Color: Colorless to white
- ◆ Physical form: Crystals
- ◆ Odor: Ozone like
- ◆ Molecular weight: 169.29
- ◆ Molecular formula: Xe-F₂
- ◆ Boiling point: Not applicable
- ◆ Melting point: 264-284 F (129-140 C)
- ◆ Specific gravity: 4.32
- ◆ pH: Not applicable
- ◆ Vapor pressure: 3.8 mmHg
- ◆ Vapor density: >1
- ◆ Water solubility: Reacts
- ◆ Sublimation PT: 237 F (114 C)

10. STABILITY AND REACTIVITY

◆ **REACTIVITY:**

Contact with water or moist air may form toxic gases or vapors.

◆ **CONDITIONS TO AVOID:**

Avoid contact with combustible materials. May ignite or explode on contact with combustible materials. Keep out of water supplies and sewers.

◆ **INCOMPATIBILITIES:**

Combustible materials, reducing agents.

XENON DIFLUORIDE:

ACETONE: May cause an explosion on contact.

DIMETHYLAMINOTRIMETHYLSILANE: In presence or absence of solvent may be explosive at sub-zero temperature.

DIMETHYL-SULFIDE: Interaction in absence of solvent is explosive at ambient temperature.

ETHANOL: May cause vigorous reactions.

LUBRICANTS: May cause an explosion on contact.

OTHER COMBUSTIBLES: May cause an explosion on contact.

PAPER: May burn or cause an explosion on contact.

PENTACARBONYLIRON: May cause an explosion on contact.

POLYETHYLENE: May burn on contact.

POTASSIUM IODATE: May cause vigorous reactions.

POTASSIUMPERMANGANATE: May cause vigorous reactions.

SAWDUST: May burn or cause an explosion on contact.

SILICON + NITROGEN COMPOUNDS: In presence or absence of solvent may be explosive at sub-zero temperatures.

STYRENE: May cause an explosion on contact.

WOOL: May cause an explosion on contact.

OXIDIZERS:

COMBUSTIBLE MATERIALS: May increase the burning rate or cause ignition on contact; finely divided materials may result in an explosion.

ORGANIC MATERIALS: May increase the burning rate or cause ignition on contact; finely divided materials may result in an explosion.

REDUCING MATERIALS: Fire and explosion hazard.

◆ **HAZARDOUS DECOMPOSITION:**

Thermal decomposition products: halogens.

◆ **POLYMERIZATION:**

Will not polymerize.

11. TOXICOLOGICAL INFORMATION:

- ◆ **MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:**
Central nervous system disorder, bone, joint or tooth disorders, eye disorders, kidney disorder, respiratory disorders, skin disorders and allergies.
- ◆ **ADDITIONAL DATA:**
May cross the placenta. May be excreted in breast milk.

12. ECOLOGICAL INFORMATION:

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13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D003.

14. TRANSPORT INFORMATION

Oxidizing solid, n.o.s. (xenon difluoride) UN1479

HAZARD CLASS OR DIVISION: 5.1

PACKING GROUP: II

PASSENGER AIRCRAFT OR RAILCAR:

5 kg

CARGO AIRCRAFT ONLY:

25 kg

LAND TRANSPORT ADR/RID:

- ◆ **SUBSTANCE NAME:**
Oxidizing solid, n.o.s.
ADR/RID CLASS: 5.1
ITEM NUMBER: 27(b)
WARNING SIGN/LABEL: 5.1
HAZARD ID NUMBER: 50
- ◆ **AIR TRANSPORT IATA/ICAO:**
CORRECT TECHNICAL NAME:
Oxidizing solid,
IATA/ICAO CLASS: 5.1
PACKAGING GROUP: II
LABEL: Oxidizer

◆ **MARITIME TRANSPORT IMDG:**

CORRECT TECHNICAL NAME: Oxidizing substances, solid, n.o.s. UN/ID NUMBER:
UN1479 IMDG CLASS: 5.1 PACKAGING GROUP: II EmS No.: 5.1-11 MFAG Table No.:
760 MARINE POLLUTANT: Y

15. REGULATORY INFORMATION

- ◆ TSCA Status : Y
- ◆ TSCA 12(b) export notification : Not listed.
- ◆ CERCLA Section 103 (40 CFR 302.4) : N
- ◆ SARA Section 302 (40 CFR 355.30) : N TPQ
- ◆ SARA Section 304 (40 CFR 355.40) : N RQ
- ◆ SARA Section 313 (40 CFR 372.65) : N
- ◆ California Prop 65 Status : N
- ◆ SARA ACUTE Hazard : N
- ◆ SARA CHRONIC Hazard : N
- ◆ SARA FIRE Hazard : N
- ◆ SARA REACTIVITY Hazard : Y
- ◆ SARA SUDDEN RELEASE Hazard : N
- ◆ WHMIS Classification : N
- ◆ INTERNATIONAL REGULATIONS:
EU RISK AND SAFETY PHRASES:
R: 8-64 Contact with combustible material may cause fire. May cause harm to breastfed babies.

16. OTHER INFORMATION

No other information is currently available for this record.

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