



FLUORINE

UN 1045 (Compressed gas)

NA 9192 (Cryogenic liquid)

Shipping Name: UN 1045 Fluorine, compressed

UN 9192 Fluorine, refrigerated liquid
(cryogenic liquid)

Other Names: Difluorine



- WARNING!**
- **POISON! BREATHING THE GAS CAN KILL YOU! SKIN AND EYE CONTACT CAUSES SEVERE BURNS AND BLINDNESS!**
 - Fire fighting gear (including SCBA) provides **NO** protection. If exposure occurs, remove and isolate gear immediately and thoroughly decontaminate personnel
 - **STRONG OXIDIZER! FORMS EXPLOSIVE OR COMBUSTIBLE MIXTURES WITH MOST MATERIALS INCLUDING ALL FUELS AND MOST METALS!**
 - **DO NOT USE WATER! REACTS VIOLENTLY WITH WATER TO FORM TOXIC HYDROFLUORIC ACID!**

Hazards:

- Gas is heavier than air and will collect and stay in low areas
- Container may BLEVE or explode when exposed to fire
- Gas may explode in closed spaces (e.g., tanks, sewers, buildings) without an ignition source
- Contact with liquid may cause frostbite
- Corrosive to most metals

Awareness and Operational Level Training

Response:

- **DO NOT ATTEMPT RESCUE!**
- Stay upwind and uphill
- Determine the extent of the problem
- **BACK OFF!** - Isolate a wide area around the release or fire, deny entry and call for expert help
- Evacuate or shelter in place the immediate area and downwind for a large release
- Notify local health and fire officials and pollution control agencies
- If material or contaminated runoff enters waterways, notify downstream users of potentially contaminated water

Description:

- Pale yellow or greenish yellow gas
- Pungent, irritating choking odor
- Stored and shipped as a compressed gas or cryogenic liquid in special cylinders without relief valves
- Reacts violently with water forming toxic hydrofluoric acid
- Nonflammable but may cause combustible materials to ignite
- Gas is heavier than air and will collect and stay in low areas

Operational Level Training Response:

RELEASE, NO FIRE:

- Stop the release if it can be done safely from a distance
- Use large amounts of water well away from the material to disperse vapors - contain runoff
- Ventilate confined area if it can be done without placing personnel at risk

FIRE:

- Approach fire with extreme caution; consider letting it burn.
- Material does not burn; fight surrounding fire with an agent appropriate for burning material; avoid water, if water must be used, use it in flooding quantities
- Cool exposed noncryogenic containers with large quantities of water from unattended equipment or remove containers if it can be done safely
- If cylinders are exposed to excessive heat from fire or flame contact, withdraw immediately to a secure location
- **DO NOT APPLY WATER TO CRYOGENIC LIQUID CONTAINERS;** if cryogenic liquid containers are exposed to direct flame or elevated temperatures for prolonged times, withdraw immediately to a secure location

First Aid:

- **DO NOT ATTEMPT RESCUE!**
- Provide Basic Life Support/CPR as needed
- Decontaminate the victim as follows:
 - ◆ Inhalation - remove the victim to fresh air and give oxygen if available
 - ◆ Skin - remove and isolate contaminated clothing (including shoes) and wash skin with soap and large volumes of water for 15 minutes
 - ◆ Eye - rinse eyes with large volumes of water or saline for 15 minutes
- Seek medical attention
- Toxic effects may be delayed
- Frostbite - warm injured area in very warm water
- For skin burns decontaminate with water and apply a clean dry dressing
- Note to physician: burns can be treated with calcium gluconate gel