

The National Institute for Occupational Safety and Health (NIOSH)



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Promoting productive workplaces
through safety and health research



Hydrogen fluoride

SYNONYMS & TRADE NAMES

Anhydrous hydrogen fluoride, Aqueous hydrogen fluoride, HF-A, Hydrofluoric acid

CAS NO.

7664-39-3

RTECS NO.

MW7875000

DOT ID & GUIDE

1052 **125**(anhydrous)
1790 **157**(solution)

FORMULA

HF

CONVERSION

1 ppm = 0.82 mg/m³

IDLH

30 ppm
See: [7664393](#)

EXPOSURE LIMITS

NIOSH REL
TWA 3 ppm (2.5 mg/m³) C 6 ppm (5 mg/m³) [15-minute]
OSHA PEL
TWA 3 ppm [See Appendix G](#)

MEASUREMENT METHODS

[NIOSH 3800](#) , [7902](#) , [7903](#) , [7906](#);
[OSHA ID110](#)
See: [NMAM](#) or [OSHA Methods](#)

PHYSICAL DESCRIPTION

Colorless gas or fuming liquid (below 67°F) with a strong, irritating odor. [Note: Shipped in cylinders.]

MOLECULAR WEIGHT

20.0

BOILING POINT

67°F

FREEZING POINT

-118°F

SOLUBILITY

Miscible

VAPOR PRESSURE

783 mmHg

IONIZATION POTENTIAL

15.98 eV

SPECIFIC GRAVITY

1.00 (Liquid
at 67°F)

FLASH POINT

NA

UPPER EXPLOSIVE LIMIT

NA

LOWER EXPLOSIVE LIMIT

NA

RELATIVE GAS DENSITY

0.69

Nonflammable Gas

INCOMPATIBILITIES & REACTIVITIES

Metals, water or steam [Note: Corrosive to metals. Will attack glass and concrete.]

EXPOSURE ROUTES

inhalation, skin absorption (liquid), ingestion (solution), skin and/or eye contact

SYMPTOMS

irritation eyes, skin, nose, throat; pulmonary edema; eye, skin burns; rhinitis; bronchitis; bone changes

TARGET ORGANS

Eyes, skin, respiratory system, bones

PERSONAL PROTECTION/SANITATION

(See protection codes)

Skin:Prevent skin contact (liquid)

Eyes:Prevent eye contact (liquid)

Wash skin:When contaminated (liquid)

Remove:When wet or contaminated (liquid)

Change:No recommendation

Provide:Eyewash (liquid), Quick drench (liquid)

FIRST AID

(See procedures)

Eye:Irrigate immediately (solution/liquid)

Skin:Water flush immediately (solution/liquid)

Breathing:Respiratory support

Swallow:Medical attention immediately (solution)

RESPIRATOR RECOMMENDATIONS**NIOSH/OSHA****Up to 30 ppm:**

(APF = 10) Any chemical cartridge respirator with cartridge(s) providing protection against the compound of concern*

(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern*

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern

(APF = 10) Any supplied-air respirator*

(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern

Any appropriate escape-type, self-contained breathing apparatus

[Important additional information about respirator selection](#)

SEE ALSO

[INTRODUCTION](#) ICSC CARD: [0283](#) MEDICAL TESTS: [0118](#)

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