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1.

: (Hydrogen Fluoride)
 • : (Hydrogen Fluoride)
 • / : Anhydrous Hydrofluoric Acid, Anhydrous Hydrogen Fluoride
 • : HF
 • : 20.1

 : (AL Japan)
 : Izumi Garden Tower 10F, 1-6-1 Roppongi Minato-ku, Tokyo 106-6010, Japan
 :
 :
 : 538 J-Tower, A 6
 : (02) 3019-2500 FAX : (02) 525-9770
 : ALK HSE


2.

/CAS No./UN No.	(%)		OSHA PEL	ACGIH TLV	IDLH
/ 7664-39-3 / UN1052	> 99%	as F 3.0ppm (Ceiling)	3ppm	3ppm(Ceiling)	30ppm

3.

(Emergency overview) :

, , 가 가 ,
 14.1psia(21.1) . 가 ,
 ,
 (Hydrofluoric acid)
 , ,
 가 , ,
 가 .
 (SCBA) (Level A)

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suit)

- : 가 / 가 080-222-8880

(24 /365)

-

1) : ,

2) : ,

3) : 가 ,

(chemical pneumonitis), (pulmonary hemorrhage),
(pulmonary edema),

4) : ,

-

1) : , ,

2) :

(Fluorosis:)

-

-

가 : ,

-

: (OSHA), (NTP),

(IARC)

4.

: (note)

(SCBA)


-

(Calcium gluconate)

1%

-

: 1-3 ,

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(, ,Mylanta) , 10%

- : , 가 , 2.5%

(nebulizer)

- : , 가 가 , 2.5% () 0.13% Zephiran(Benzalkonium Chloride Solution)

가

2

2

가 50cm²

가

()

- _____ (note)

, 5%

가

가

가

가

가

가

(Hypocalcemia)


가

. EKGs

5.

(Flash point):

- (Autoignition) :
- (Flammable Limits in air%) :
- (Extinguishing Media) :

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- 가 .
- : , 가 가 .
- : (iron fluoride) .
가 가 .
가 , 4-74% 가 가 .
가 가 .
- pH .
- :

6.

가 , . (, (SCBA)).

7.

- (Storage) : 가 , 52 (first-in first-out)
- 가 가
 - (8)
 - (Handling) : 가 가 가

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가

가


가 (Strap-wrench)

- 가 ()
- 가 (Brass)
- 가 (Calcium-filled Teflon)
- 가 (Teflon),
- 가 (HastelloyR,
- 가 (MonelR
- 가 Air Liquide
- 가 2
- 가 2

8.

(Engineering Control)

- 가 가
- 가

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- : (SCBA) SCBA가
- : (Safety glasses)
- : 가 (, Butyl rubber, Neoprene, Polyethylene) (Splash suit) (Level A suit)
- : , , .

9.


- : 가 , 가
- (1) : 19.5
- (vapor , =1) : 1.3-1.9
- (=1) : 0.97
- / : -83.6
- (Vapor Pressure, 21.1) : 14.1 psia
- 가 (1 , 21.1) : 2.8465 kg/m³
- (20) : 8.12 lb/g
- (0 , 1) : ()

10.

- (Chemical stability) : (stable)
- : 52
- (Incompatibility) : , , (Si) , 가
- (Reactivity)
 - 1) : 가
 - 2) : 가

11.

- LC50 () : 1276ppm(, 1)
- LD50() :

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- LD50() :
- 가 :
- 가 :

12.


- (Aquatic toxicity): 가 .
- (Mobility) :
- : Class1 Class2 .

13.

- : 가 (Caustic) 가 .

14.

- (DOT Shipping Name) : (poison) – ,
Zone C
- (Hazard Class) : 8
- (Identification Number) : UN1052
- (Packing Group) : I
- (Shipping Label): , ()
- 가 : (EPA) . DOT
45.36kg(100lb) , "RQ" "RQ"
- : 가
- : 가 가 가 ,
(49 CFR 173.301)

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- 가 (North American Emergency Response Guide;NAERG): #125

15.

- :
 - 1) : 2 , (as F : 3.0 ppm Ceiling)
 - 2) :
 - 3) :
 - 4) 가 : , , ,
- :
 - 1) EPA() RMP() : Threshold Quantity(TQ) : 1,000lb(453.6kg)
 - 2) Reportable Quantity(RQ) SARA : 100lb (45.36kg)
 - 3) Reportable Quantity(RQ) CERCLA : 100lb (45.36kg)
 - 4) SARA 302/304 : (Extremely Hazardous Substance)
Threshold Planning Quantity(TPQ) : 100 lb (45.36kg)
 - 5) SARA 311/312 (40 CFR 370):
: , : , : , : , :
 - 6) SARA 313 (40 CFR 372) , TPQ
" Form R" . :
 - 7) TSCA(Toxic Substance Control Act) : TSCA . 8) OSHA
(29CFR1910.119): Threshold Quantity(TQ) : 1000lb (453.6kg).

16.

- NFPA (HF)
 - 1) (Health) : 4
 - 2) 가 (Flammability) : 0
 - 3) (Reactivity) : 1 NFPA (The National Fire Protection Association(NFPA) System of Hazard Identification)
 - HMIS (HF)
 - 1) (Health) : 3
 - 2) 가 (Flammability) : 0
 - 3) (Reactivity) : 2
- HMIS NPCA
Hazardous Material Identification System (National Paint and Coating Association-NPCA)

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- "Medical Management Guidelines for Acute Chemical Exposures": U.S. Dept. of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry - "First Aid and Medical Treatment". Matheson Gas Products, Inc. Secaucus, New Jersey.

가

(Compatibility)

MSDS (European Directives) , 가

AIR LIQUIDE S.A. MSDS ALK