

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 11/09/2007

## 1 Identification of substance:

### Product details:

**Product name:** Hydrofluoric acid, 40%

**Stock number:** 10989

### Manufacturer/Supplier:

Alfa Aesar, A Johnson Matthey Company  
Johnson Matthey Catalog Company, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Emergency Phone: (978) 521-6300  
CHEMTREC: (800) 424-9300  
Web Site: [www.alfa.com](http://www.alfa.com)

**Information Department:** Health, Safety and Environmental Department

### Emergency information:

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

## 2 Composition/Data on components:

### Chemical characterization:

#### Description: (CAS#)

Hydrogen fluoride (CAS# 7664-39-3), 40%

Water (CAS# 7732-18-5), 60%

#### Identification number(s):

**EINECS Number:** 231-634-8

**Index number:** 009-003-00-1

## 3 Hazards identification

### Hazard description:



T+ Very toxic

### Information pertaining to particular dangers for man and environment

R 26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.

R 35 Causes severe burns.

### Classification system

#### HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH	4
FIRE	0
REACTIVITY	1

Health (acute effects) = 4

Flammability = 0

Reactivity = 1

### GHS label elements



**Danger**

3.1/2 - Fatal if swallowed.

3.1/2 - Fatal in contact with skin.

3.1/2 - Fatal if inhaled.



**Danger**

3.2/1A - Causes severe skin burns and eye damage.

### Prevention:

Do not breathe dust/fume/gas/mist/vapours/spray.

Do not get in eyes, on skin, or on clothing.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Wear respiratory protection.

### Response:

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

(Contd. on page 2)

USA

# Material Safety Data Sheet

## acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 11/09/2007

**Product name:** Hydrofluoric acid, 40%

(Contd. of page 1)

IF ON SKIN: Gently wash with plenty of soap and water.  
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 Immediately call a POISON CENTER or doctor/physician.  
 Specific treatment is urgent (see label).  
 Specific treatment (see label).  
 Specific measures (see label).  
 Rinse mouth.  
 Remove/Take off immediately all contaminated clothing.  
 Wash contaminated clothing before reuse.  
**Storage:**  
 Store in a well-ventilated place. Keep container tightly closed.  
 Store locked up.  
**Disposal:**  
 Dispose of contents/container in accordance with local/regional/national/international regulations.

### 4 First aid measures

**General information**  
 Special First Aid training required.  
 Immediately remove any clothing soiled by the product.  
 Remove breathing apparatus only after contaminated clothing has been completely removed.  
 In case of irregular breathing or respiratory arrest provide artificial respiration.  
**After inhalation**  
 Supply fresh air. If required, provide artificial respiration. Keep patient warm.  
 Seek immediate medical advice.  
**After skin contact**  
 Immediately wash with water and soap and rinse thoroughly.  
 Rub in calcium gluconate solution or calcium gluconate gel immediately.  
 Seek immediate medical advice.  
**After eye contact**  
 Rinse opened eye for several minutes under running water. Then consult a doctor.  
**After swallowing**  
 Do not induce vomiting; immediately call for medical help.  
 Seek immediate medical advice.

### 5 Fire fighting measures

**Suitable extinguishing agents**  
 Product is not flammable. Use fire fighting measures that suit the surrounding fire.  
**Special hazards caused by the material, its products of combustion or resulting gases:**  
 In case of fire, the following can be released:  
 Hydrogen fluoride (HF)  
**Protective equipment:**  
 Wear self-contained respirator.  
 Wear fully protective impervious suit.

### 6 Accidental release measures

**Person-related safety precautions:**  
 Wear protective equipment. Keep unprotected persons away.  
 Ensure adequate ventilation  
**Measures for environmental protection:**  
 Do not allow material to be released to the environment without proper governmental permits.  
**Measures for cleaning/collecting:**  
 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
 Use neutralizing agent.  
 Dispose contaminated material as waste according to item 13.  
 Ensure adequate ventilation.  
**Additional information:**  
 See Section 7 for information on safe handling  
 See Section 8 for information on personal protection equipment.  
 See Section 13 for disposal information.

- USA -

(Contd. on page 3)

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 11/09/2007

Product name: Hydrofluoric acid, 40%

(Contd. of page 2)

## 7 Handling and storage

### Handling

#### Information for safe handling:

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

Information about protection against explosions and fires: No special measures required.

### Storage

#### Requirements to be met by storerooms and receptacles:

Unsuitable material for container: ceramic, glass

Provide acid-resistant floor.

#### Information about storage in one common storage facility:

Store away from metals.

Do not store together with alkalies (caustic solutions).

#### Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

## 8 Exposure controls and personal protection

### Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

### Components with limit values that require monitoring at the workplace:

Hydrogen fluoride (as F)

ppm

ACGIH TLV	3-Ceiling
Austria MAK	3
Belgium	3-STEL
Denmark TWA	2
Finland	3-Ceiling (skin)
France	3-VLE
Germany MAK	3
Hungary TWA	0.5 mg/m3; 1 mg/m3-STEL
Japan OEL	3
Korea TLV	3-Ceiling
Netherlands	3.3-MAC-K
Norway TWA	0.8
Poland TWA	0.5 mg/m3; 4 mg/m3-STEL
Russia TWA	3; 0.5 mg/m3-STEL
Sweden	2-Ceiling
Switzerland MAK-W	1.8; 3.6-KZG-W
United Kingdom	3-STEL
USA PEL	3

Hydrogen chloride

ppm

ACGIH TLV	5-Ceiling
Austria MAK	5
Belgium	5-STEL
Denmark TWA	5
Finland	5-STEL (skin)
France VLE	5
Germany MAK	5
Hungary	5-STEL
Japan	5-STEL
Korea TLV	5-Ceiling
Norway TWA	5
Poland TWA	5 mg/m3; 7 mg/m3-Ceiling
Russia	5-STEL
Sweden	5-STEL
Switzerland MAK-W	5; 10-KZG-W
United Kingdom TWA	1; 5-STEL
USA PEL	5-Ceiling

Additional information: No data

### Personal protective equipment

#### General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

(Contd. on page 4)

- USA -

# Material Safety Data Sheet

## acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 11/09/2007

**Product name:** Hydrofluoric acid, 40%

(Contd. of page 3)

Remove all soiled and contaminated clothing immediately.  
 Wash hands before breaks and at the end of work.  
 Store protective clothing separately.  
 Avoid contact with the eyes and skin.  
**Breathing equipment:** Use suitable respirator when high concentrations are present.  
**Protection of hands:** Impervious gloves  
**Eye protection:**  
 Safety glasses  
 Tightly sealed goggles  
 Full face protection  
**Body protection:** Protective work clothing.

### 9 Physical and chemical properties:

#### General Information

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Acrid

**Change in condition**  
**Melting point/Melting range:** -36°C (-33°F)  
**Boiling point/Boiling range:** 108°C (226°F)  
**Sublimation temperature / start:** Not determined

**Flash point:** Not determined

**Flammability (solid, gaseous)** Product is not flammable.

**Ignition temperature:** Not determined

**Decomposition temperature:** Not determined

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**  
**Lower:** Not determined  
**Upper:** Not determined

**Vapor pressure at 20°C (68°F):** 33.25 hPa (25 mm Hg)

**Density at 20°C (68°F):** 1.15-1.18 g/cm³

### 10 Stability and reactivity

**Thermal decomposition / conditions to be avoided:**  
 Decomposition will not occur if used and stored according to specifications.

**Materials to be avoided:**

Alkali metals

Bases

**Dangerous reactions**

Reacts with metals forming hydrogen

Attacks materials containing glass and silicate

Reacts with strong alkali

**Dangerous products of decomposition:** Hydrogen fluoride

### 11 Toxicological information

**Acute toxicity:**

**LD/LC50 values that are relevant for classification:**

INH-HMN LCLo: 50 ppm/30M (HF)

IHL-RAT LC50: 1276 ppm/1H (HF)

IHL-MUS LC50: 342 ppm/1H (HF)

INH-MKY LC50: 1774 ppm/1H (HF)

INH-GPG LC50: 4327 ppm/15M (HF)

**Primary irritant effect:**

**on the skin:**

Strong corrosive effect on skin and mucous membranes.

Irritant to skin and mucous membranes.

**on the eye:**

Strong corrosive effect.

Irritating effect.

**Sensitization:** No sensitizing effects known.

**Subacute to chronic toxicity:**

Hydrofluoric acid is extremely irritating and corrosive. It is destructive of tissues it comes in contact with, either as a vapor or as a liquid. Skin burns caused by hydrofluoric

(Contd. on page 5)

- USA -

# Material Safety Data Sheet

## acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 11/09/2007

**Product name:** Hydrofluoric acid, 40%

(Contd. of page 4)

acid may appear to be stable only to get much worse several hours after exposure. Skin contact with hydrofluoric acid has led to industrial fatalities. Dilute solutions have a reduced effect.

**Additional toxicological information:**

Danger through skin absorption.

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

**12 Ecological information:****General notes:**

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations****Product:**

**Recommendation** Consult state, local or national regulations to ensure proper disposal.

**Uncleaned packagings:**

**Recommendation:** Disposal must be made according to official regulations.

**14 Transport information****DOT regulations:**

**Hazard class:** 8  
**Identification number:** UN1790  
**Packing group:** II  
**Proper shipping name (technical name):** HYDROFLUORIC ACID  
**Label:** 8+6.1

**Land transport ADR/RID (cross-border)**

**ADR/RID class:** 8 (CT1) Corrosive substances  
**Danger code (Kemler):** 86  
**UN-Number:** 1790  
**Packaging group:** II  
**Description of goods:** 1790 HYDROFLUORIC ACID

**Maritime transport IMDG:**

**IMDG Class:** 8  
**UN Number:** 1790  
**Label:** 8+6.1  
**Packaging group:** II  
**EMS Number:** F-A, S-B

(Contd. on page 6)

USA

# Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 05/01/2009

Reviewed on 11/09/2007

Product name: Hydrofluoric acid, 40%

(Contd. of page 5)

Proper shipping name: HYDROFLUORIC ACID

Air transport ICAO-TI and IATA-DGR:



ICAO/IATA Class: 8  
 UN/ID Number: 1790  
 Label: 8+6.1  
 Packaging group: II  
 Proper shipping name: HYDROFLUORIC ACID

UN "Model Regulation": UN1790, HYDROFLUORIC ACID, 8 (6.1), II

## 15 Regulations

### Product related hazard informations:

#### Hazard symbols:

T+ Very toxic

#### Risk phrases:

26/27/28 Very toxic by inhalation, in contact with skin and if swallowed.

35 Causes severe burns.

#### Safety phrases:

7/9 Keep container tightly closed and in a well-ventilated place.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

36/37 Wear suitable protective clothing and gloves.

45 In case of accident or if you feel unwell, seek medical advice immediately.

#### National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

#### Information about limitation of use:

For use only by technically qualified individuals.

This substance is subject to a Significant New Use Rule (SNUR) promulgated under Section 5(a) (2) of the Toxic Substances Control Act (TSCA). See 40 CFR 721. This product is being sold for research and development use only for the significant new use listed.

## 16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.

Contact: Zachariah Holt

#### Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

- USA -