



Anhydrous Hydrogen Fluoride (AHF) and Hydrofluoric Acid (HF)

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Hydrofluoric Acid

Production and Application

Anhydrous Hydrogen fluoride (AHF) and Hydrofluoric Acid (HF) are basic raw materials used in a variety of both commercial and industrial applications and is manufactured by Pelchem SOC Ltd, ideally positioned in South Africa which boasts the largest Fluorspar reserves in the world. In an endothermic reaction between a natural occurring mineral, Calcium Fluoride (Fluorspar) and Sulphuric Acid in a rotary kiln, Hydrogen Fluoride and Calcium Sulphate is produced by the following reaction:



Fluorocarbons

Foam blowing of a range of plastics (polyurethane, polystyrene) to improve their insulating properties for use in domestic appliances, construction, food processing and packaging materials.

Refrigerants uses in cooling, freezing other heat transfer processes in industrial plants, food processing, domestic and commercial refrigeration, fixed and mobile air conditioning. Fully fluorinated hydrocarbons offer excellent substitutes for ozone depleting chlorofluorocarbons, however their stability goes with some global warming potential, although much less than common greenhouse gases such as carbon dioxide.

Fluoropolymers & fluoroelastomers

A range of fluorocarbons is the basis of various fluoropolymers & fluoroelastomers with properties of fire resistance, high strength, good insulation and chemical resistance, in example PTFE & PVDF is used as cable insulation, pipes, valves, non-stick cookware, waterproof laminates on textiles, gaskets and high temperature thermoplastic automotive components.

Metallurgical Industry

The aluminium industry uses aluminium trifluoride and sodium aluminium fluoride as electrolyte in the electrolytic process to produce primary aluminium metal from bauxite ore. Other inorganic fluoride salts are used to produce various master alloys of aluminium for final products such as electric cables, alloy wheels and ultra thin aluminium foils.

Petroleum Production

Hydrogen fluoride is used as catalyst to improve the yield of petroleum fractions by reaction of low boiling propylene and butylenes fractions with isobutene to generate high octane products.

Other uses includes applications in the Pharmaceutical, Agrochemical, Electronic Industry, Consumable, Detergents and the Glass Industry.

Product Specification

Hydrogen Fluoride Anhydrous (AHF)

Element	Scientific Name	Specification	Units
Hydrogen Fluoride Anhydrous	AHF	≥ 99.95%	% m/m
Hexafluorsilicic Acid	H ₂ SiF ₆	≤ 0.01%	% m/m
Sulphuric Acid	H ₂ SO ₄	≤ 0.02%	% m/m
Water	H ₂ O	≤ 0.04%	% m/m
Sulphur Dioxide	SO ₂	≤ 0.001%	% m/m
Arsenic	As	≤ 25	ppm wt

Specifications for Anhydrous Hydrofluoric Acid and all Hydrofluoric Acid Solutions (20% -71%) are available on our website. www.pelchem.com

Packaging Options

- 20 Lt, 210 Lt, 220 Lt, 1000 Lt, ISO Tanks



Safety Information

- Hydrofluoric acid is corrosive and very toxic by inhalation and dermal exposure.
- Exposures require immediate and very specific first aid treatment in order to neutralize the fluoride ion. If the hydrofluoric acid exposure is not treated immediately it can result in serious health effects.
- Early warning detection by strong irritating odour noticeable at concentrations far below the permissible exposure limit of 3 ppm.
- At the permissible exposure limit of 3 ppm strong irritation of throat & eyes is experienced.
- An Emergency control plan must be developed for Gas & liquid escapes.
 - Anhydrous HF is a liquefied gas under pressure and will cause gas release
 - 70% HF has low vapour pressure but is a fuming liquid giving off HF fumes
- Pelchem maintains and adheres to a Safety and Health management system in accordance with OHSAS 18001 and Pelchem is ISO 9001 and ISO 140001 certified.
- Pelchem also employs a Behavioural Based Safety Program (BBS) aimed at proactively reducing at risk behaviours. Like a shell fosters its pearl, Pelchem's PEARL process protects our employees through a process of structured task observations against identified critical behaviours to entrench an attitude of Pelchem Eliminating Accidents and Risks for Life (PEARL).
- Pelchem is signatory to the international Responsible Care initiative as administered by the Chemical and Allied Industry Association (CAIA) of South Africa. Responsible Care is the global chemical industry's environmental, health and safety (EHS) initiative to drive continuous improvement in performance and sustainability throughout the product life cycle, and requires adopting cooperative and voluntary initiatives of performance beyond legislative and regulatory compliance, to build confidence and trust in the chemical industry that is essential to improving living standards and the quality of life.
- In addition Pelchem offers technical advice and safety awareness training on safe handling of our products to our customers and potential new customers.



Physical Properties

FORM	Colourless gas
ODOUR	Pungent
SOLUBILITY	Fully Miscible
MOLECULAR WEIGHT	20.01 g/mol
DENSITY	At 20°C: 0,97 g/mL At 30°C: 0,95 g/mL At 40°C: 0,93 g/mL At 50°C: 0,91 g/mL
MELTING POINT	-83 °C
BOILING POINT	19.5 °C
VAPOUR PRESSURE 20 °C	103 kPA

Transport Regulations

Product Name: Hydrogen Fluoride (Anhydrous) AHF

CAS No: 7664-39-3

UN No: 1052

Hazard Class: 8 (Corrosive), Sub Risk 6.1

Packaging Group: I

HS Code: 2811.11

Product Name: Hydrofluoric Acid

CAS No: 7664-39-3

UN No: 1790

Hazard Class: 8 (Corrosive), Sub Risk 6.1

Packaging Group: I (≥60% HF) and II (<60% HF)

HS Code: 2811.11



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