

(According to Directive 2001/58/CE &amp; 1999/45/EC)

**1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY****1.1. Identification of the substance or preparation**

Product name	NAF S 125®
Chemical name	Pentafluoroethane
Synonym[s]	HFA-125, HFC-125
Formula	CF <sub>3</sub> -CHF <sub>2</sub>
Molecular Weight	120
EC Number [EINECS]	206-557-8

**1.2. Use of the substance/preparation**

Recommended uses	Fire extinguisher
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**1.3. Company/undertaking identification**

Address	Safety Hi-Tech S.r.l. Via degli Olmetti, 14 00060 Formello (RM) – Italy
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e-mail	<a href="mailto:mail@safetyhitech.com">mail@safetyhitech.com</a>
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Web site	<a href="http://www.safetyhitech.com">www.safetyhitech.com</a>
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Phone	++39 06 90 77 51
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Fax	++39 06 90 77 555
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**1.4. Emergency telephone**

Phone	++39 06 90 77 51
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**2. COMPOSITION / INFORMATION ON INGREDIENTS****Pentafluoroethane**

CAS Number	354-33-6
EC Number [EINECS]	206-557-8
Concentration	>=99.80 % by mass

**D-Limonene**

CAS Number	5989-27-5
EC Number [EINECS]	227-813-5
Concentration	0.10 % -0.20 % by mass

**3. HAZARDS IDENTIFICATION**

- Gas (liquefied)
- Preparation not classified according to Directive 67/548/EC & Directive 1999/45/EC
- In case of decomposition, it releases hydrogen fluoride

**4. FIRST - AID MEASURES****4.1. Inhalation**

- Remove the subject from the contaminated area
- Oxygen or cardiopulmonary resuscitation if necessary
- Consult with a physician in case of respiratory and nervous symptoms

(According to Directive 2001/58/CE & 1999/45/EC)

**4.2. Eyes Contact**

- Keep eyelids open to allow evaporation of product
- Flush eyes with running water for several minutes, while keeping the eyelids wide open
- Consult with an ophthalmologists in case of persistent pain

**4.3. Skin contact**

- Allow product to evaporate
- Rinse with lukewarm running water
- Consult with a physician in case of persistent pain or redness

**4.4. Ingestion**

- Risk not possible (gas)

**5. FIRE – FIGHTING MEASURES****5.1. Suitable extinguishing media**

- In case of fire in close proximity, all means of extinguishing are acceptable

**5.2. Unsuitable extinguishing media**

- No restriction

**5.3. Special exposure hazards**

- Not – flammable (see section 9)
- Formation of dangerous gas/vapours in case of decomposition (see section 10)
- Gas/vapour combustion possible in presence of air in very particular conditions (see section 9 and/or consult the producer)

**5.4. Protective measures in case of intervention**

- Evacuate all non-essential personnel
- Wear self contained breathing apparatus when in close proximity or in confined spaces
- When intervention in close proximity wear full protective acid resistant suit
- After intervention, proceed to clean the equipment (remove clothing carefully, take a shower, clean and check)

**5.5. Other precautions**

- Approach from upwind
- Stay at safe distance in a protected location sheltered from possible projections
- Never approach containers which have been exposed to fire, without cooling them sufficiently
- After the fire, proceed rapidly to clean the surfaces exposed to the fumes in order to limit the damage to the equipment
- If safe to do so, remove the exposed containers, or cool with large quantities of water
- As for any fire, ventilate and clean the rooms before re-entry

**6. ACCIDENTAL RELEASE MEASURES****6.1. Personal precautions**

- Follow the protective measures given in section 8
- If safe to do so, without over exposing anyone, try to stop the leak
- Keep away materials and products which are incompatible with the product (see section 10)
- In case of leaking container, try to reposition it to get the leak in gaseous phase
- Gas/vapours heavier than air may accumulate in confined spaces, causing possible oxygen depletion

**6.2. Environmental precautions**

- Prevent discharges into the environment (atmosphere, ...)

(According to Directive 2001/58/CE & 1999/45/EC)

**6.3. Methods for cleaning up**

- Let the product evaporate
- Prevent the product from entering sewers or confined places

**7. HANDLING AND STORAGE****7.1. Handling**

- Carry out all operations in closed piping circuits and equipment
- Prevent product vapours decomposition from contacting hot spots
- Use only equipment and materials which are compatible with the product
- Keep away from heat sources
- Keep away from reactive products (see section 10)

**7.2. Storage**

- In a ventilated, cool area
- Keep away from heat sources
- Keep away from reactive products (see section 10)

**7.3. Specific use(s)**

- For any particular use, please contact the supplier

**7.4. Packaging**

- Ordinary steel

**7.5. Other precautions**

- Follow the protective measures given in section 8

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****8.1. Exposure limit values****Pentafluoroethane**

- SAEL (Solvay) 2002
- TWA = 1,000 ppm

**D-Limonene**

- TWA=165,6 mg/m<sup>3</sup> (AHIA,1993)

**8.2. Exposure controls**

- Provide local ventilation suitable for the product decomposition risk (see section 10)
- Follow the protective measures given in section 7
- Maintain employee exposures to levels below the applicable exposure limits

**8.2.1. Occupational exposure controls*****8.2.1.1. Respiratory protection***

- Minimum need if the local exhaust ventilation is adequate
- Self-contained breathing apparatus in medium confinement, insufficient oxygen, in case of large uncontrolled emissions in all circumstances when the mask and cartridge do not give adequate protection
- Use only respiratory protection that conforms to international/national standards

***8.2.1.2. Hand protection***

- Protective gloves - chemical resistant
- Recommended materials: Polyvinylalcohol

(According to Directive 2001/58/CE & 1999/45/EC)

**8.2.1.3. Eye protection**

- Wear protective goggles for all industrial operations
- If risk of splashing, chemical proof goggles/face shield

**8.2.1.4. Skin protection**

- Apron/boots of neoprene if risk of splashing

**8.2.1.5. Other precautions**

- Shower and eye wash stations
- Gloves, overalls and boots have to be double layered (protection against cold temperature)

**8.2.2. Environmental exposure controls**

- Respect local/federal and national regulations for aqueous emissions (see section 15)

**9. PHYSICAL AND CHEMICAL PROPERTIES****9.1. General information**

Appearance	Pressurized liquefied gas.
Color	Colorless.
Odor	Lemon.

**9.2. Important health, safety and environmental information**

pH	Neutral
Boiling point	- 48.5 °C
Flash point	Negligible
Flammability	No flammability limit in air
Explosive properties	Remark: non flammable gas
Oxidising properties	Remark: see also section 10
Vapor pressure	Non oxidizer
	12.05 bar @ 20 °C
	25.38 bar @ 50 °C
Density	1.19
Solubility Water	0,09
	Temperature: 25 °C
Another	No data
Partition coefficient	log P O/W
P (n-octanol/water)	1.48
Viscosity	Dynamic viscosity (liquid)
	0.15 mPa.s
	Temperature: 25 °C
Vapor density (air=1)	4.2

**9.3. Other information**

Freezing point	-103 °C
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**10. STABILITY AND REACTIVITY****10.1. Conditions to avoid**

- Heat/sources of heat

**10.2. Materials to avoid**

- Alkaline metals and their alloys

**10.3. Hazardous decomposition products**

- Hydrogen fluoride
- Fluorophosgene

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(According to Directive 2001/58/CE & 1999/45/EC)

#### 10.4. Other information

- Contact with alkaline and alkaline-earth metals may provoke violent reactions or explosions
- The vapor is heavier than air, disperses at ground level

### 11. TOXICOLOGICAL INFORMATION

#### 11.1. Toxicological data

##### *Acute toxicity*

- Oral route, LD 50, not applicable
- Dermal route, LD 50, not applicable
- Inhalation, LC 50, 4 h, rat, > 80 %

##### *Irritation*

- No irritation signs noted during toxicity testing

##### *Sensitization*

- No data

##### *Chronic toxicity*

- Inhalation, after a single exposure, dog,  $\geq 10$  %, cardiac sensitization following adrenergic stimulation
- Inhalation, after repeated exposure, rat, 5 %, no observed effect
- No mutagenic, teratogenic effects

##### *Comments*

- No appreciable toxic effect

#### 11.2. Health effects

##### *Inhalation*

- At high concentrations, risk of narcosis
- At high concentrations, risk of cardiac arrhythmia
- At high concentrations, risk of asphyxia by lack of oxygen

##### *Eyes contact*

- Gas
  - Moderate irritation
- Liquefied gas
  - Severe eye irritation, watering, redness and swelling of the eyelids
  - Risk of burns (frostbite)

##### *Skin contact*

- Gas
  - Negligible
- Liquefied gas
  - Cold sensation followed by redness of the skin
  - Risk of frostbite
  - In case of repeated contact : dry and chapped skin, risk of chronic dermatitis

##### *Ingestion*

- Impossible risk (gas)

### 12. ECOLOGICAL INFORMATION

#### 12.1. Ecotoxicity

##### *Acute ecotoxicity*

- Result: No data

(According to Directive 2001/58/CE & 1999/45/EC)

**Chronic ecotoxicity**

- Result: No data

**12.2. Mobility**

- Air, Henry's law constant [H] ca. 150kPa.m<sup>3</sup>/mol  
Result: considerable volatility  
Conditions: 20 °C, calculated value
- Soil/sediments, adsorption, log KOC from 1.3 – 1.7  
Conditions: calculated value

**12.3. Persistence and degradability****Abiotic degradation**

- Air, indirect photo-oxidation, t<sub>1/2</sub> = 28.2 year[s]  
Conditions: sensitizer: OH radicals  
Degradation products: carbon dioxide/fluorhydric acid/trifluoroacetic acid
- Air, photolysis, ODP = 0  
Result: no effect on stratospheric ozone  
Reference value for CFC 11: ODP = 1
- Air, greenhouse effect, GWP = 0.84  
Reference value for CFC 11: GWP = 11

**Biotic degradation**

- Aerobic, test ready biodegradability/closed bottle, degradation = 4 %, 28 day[s]  
Result: non-readily biodegradable

**12.4. Bioaccumulative potential**

- Bioconcentration: log Po/w = 1.48  
Result: non-bioaccumulable  
Conditions: measured value

**12.5. Other adverse effects**

- Study in progress

**12.6. Comments**

- Product is persistent in air (atmospheric lifetime: 29 years)
- Product is not significantly hazardous for the aquatic environment as considerable volatility and no bioaccumulation

**13. DISPOSAL CONSIDERATIONS****13.1. Waste treatment**

- Dispose in compliance with local/federal and national regulations
- It is recommended to contact the producer for recycling/recovery

**13.2. Packaging treatment**

- To avoid treatments, as far as possible, use dedicated containers

**14. TRANSPORT INFORMATION**

UN Number	3220
IATA class	2.2
Hazard label:	NON FLAMMABLE GAS
PSN	PENTAFLUOROETHANE
IMDG Class;	2.2
Hazard label:	COMPRESSED GAS NON FLAMMABLE
Placard:	3220
EmS:	2-09

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IMDG Name	PENTAFLUOROETHANE
ADR Class	2,2A
Hazard label	2.2
Placard:	20/3220
ADR/RID Name:	PENTAFLUOROETHANE
RID Class:	2
Hazard label:	2.2+13
Placard:	20/3220
ADR/RID Name	PENTAFLUOROETHANE

## 15. REGULATORY INFORMATION

### 15.1. EC Labelling

- Not classified according to Directive 67/548/EEC & Directive 1999/45/EEC

## 16. OTHER INFORMATION

### 16.1. Reason for update

- General revision
- Distribute new edition to clients

This MSDS is intended for only the selected countries to which it is applicable. The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.