

# MATERIAL SAFETY DATA SHEET

## NAF S125

### PRODUCT AND COMPANY IDENTIFICATION

Product Name NAF S 125  
Chemical Formula Pentafluoroethane  
99.85% by weight  
Isopropenyl-1-Methyl  
cyclohexene 0.15 % by weight  
Trade Names NAF 125  
Company Identification African Oxygen Limited  
23 Webber Street; Johannesburg  
Tel No: (011) 490 0400  
Fax No: (011) 490 0506

### 2. COMPOSITION /INFORMATION ON INGREDIENTS

Chemical Name Pentafluoroethane (HFC 125)  
CAS No: Pentafluoroethane (HFC 125) 354-33-6  
Isopropenyl-1-Methyl  
cyclohexene 5989-27-5  
Synonyms HFC 125  
UN No: Not classified as dangerous preparation.

### 3. HAZARDS IDENTIFICATION

**Main Hazards.** All cylinders are portable gas containers, and must be treated as pressure vessels at all times. Uncontrolled release of compressed gas may cause physical injuries. Cylinders should never be exposed to excessive temperatures as this may cause rupturing of the cylinders with escape of the gas.

**Adverse health effects.** Uncontrolled release of compressed gas may cause physical injuries.

**Swallowed:** Unlikely exposure route. If swallowed discomfort in the gastrointestinal tract would result from rapid evaporation of liquid and consequent evolution of gas. Some of the effects of inhalation would be expected. Necrosis from freezing of tissue could occur.

**Eye/Skin:** May cause irritation and cold burns.

**Inhaled:** May replace oxygen in the inhaled air and cause asphyxiation. As the amount of oxygen inhaled is reduced from 21 to 14 volume % the pulse rate will accelerate and the rate and volume of breathing will increase. The ability to maintain attention and think clearly is diminished, muscular co-ordination is somewhat disturbed. As oxygen decreases from 14 to 10 volume % judgment becomes faulty, severe injuries may cause no pain. Muscular effort leads to rapid fatigue. Prolonged exposure to high concentrations may result in sensitization to the effects of adrenalin on the heart. Further reduction to 6% may cause nausea and vomiting. Ability to move may be lost. Permanent brain damage may result even after resuscitation from exposure to this low level of oxygen. Below 6% breathing is in gasps and convulsions may occur. Inhalation of a mixture containing no oxygen may result in unconsciousness from the first breath and death will follow in a few minutes.

### 4. FIRST-AID MEASURES

Rescue personnel must use self-contained breathing apparatus when entering confined spaces and poorly ventilated areas.

**Swallowed:** Do not induce vomiting without medical advice.

**Eye:** Rinse immediately with plenty of water for at least 15 minutes. Keep eye wide open while rinsing. If symptoms persist, call a physician.

**Skin:** Liquefied gas may cause frostbite. Wash frostbitten areas with plenty of water. Do not remove clothing. Wash off with warm water. If skin irritation persists contact doctor.

**Inhalation:** Move to fresh air in case of accidental inhalation of vapours. Oxygen or artificial respiration if needed. Do not apply artificial respiration if patient is breathing. Consult a physician after significant exposure. Do not give adrenaline or similar drugs.

**General Advice:** Consult a physician after significant exposure

---

## 5. FIRE FIGHTING MEASURES

Exposure to fire may cause containers to rupture/explode. The gas is non-flammable and does not burn. Extinguish with carbon dioxide, dry chemical, foam or water spray. Use extinguishing measures that are appropriate to the environment.

**Specific hazards:** Possibility of generating hazardous reaction during a fire due to the presence of F and or Cl groups Fire or intense heat may cause violent rupture of packages.

### **Special protective equipment for fire fighters:**

In case of fire, wear a self-contained breathing Apparatus and protect suit.

**Specific methods:** Standard procedure for chemical fires. In the event of fire, cool tanks with water spray.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** NAF S 125 is a simple Asphyxia. Care should be taken when entering confined spaces where leaks have taken place. Wear self-contained breathing apparatus.

**Methods for cleaning up:** Ventilate area. Absorb excess liquid spillage on inorganic absorbent material such as fine sand, brick dust etc. Place spent absorbent in sealed packages and contact specialist waste disposal contractor. Ventilate area.

**Environmental precautions:** Shut off leaks if without risk. Prevent from entering sewers, basements and work pits, or place where its accumulation can be dangerous.

---

## 7. HANDLING AND STORAGE

Cylinders should be stored upright and prevented from Falling. Secure them away from flammable or

combustible materials, in a dry, well ventilated construction of non-combustible material with firm level floor.

Keep containers tightly closed in a cool, well ventilated place. Store in a cool and shaded area. Do not expose to temperatures above 50 deg. Keep tightly closed.

Use the "first in – first out" inventory system to Prevent full cylinders from being stored for excessive periods of time. Compliance of all relevant legislation is essential. Keep away from children.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### **Occupational exposure hazards:**

**Personal Protection:** Ensure adequate ventilation. Protect eyes, face and skin from liquid splashes.

In case of insufficient ventilation wear suitable respiratory equipment, preferably a compressed airline breathing apparatus. Wear impervious butyl rubber gloves. Wear as appropriate: safety glasses, goggles, wear face-shield and protective suit for abnormal processing problems. For skin and body protection wear chemical resistant apron, long sleeved clothing, and safety shoes.

**Exposure Limit(s):** 1000 ppm (TWA)

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight:

Appearance/Colour: Colourless gas (as liquid gas).

Odour: Citrus like

pH (at 20 deg. C): not applicable

Boiling point /range: -48.5 deg. C

Melting point/range: -103 deg. C

Flash point: Not applicable

Explosion limits: Not applicable

Vapour pressure (at 20 deg. C): 12412 kPa

Relative density (atv 25 deg. C): 1.21 g/cm<sup>3</sup>

Water solubility: 0.09 g/100ml

Partition coefficient (n-octanol/water): 1.48

Vapour density: 4.2 (air = 1)

Evaporation rate: > 1 (CCl4 = 1.0)

---

## 10. STABILITY AND REACTIVITY

**Stable under normal conditions.** No decomposition if stored and applied as directed. Decomposition starting from 250 deg. Celsius.

**Conditions to avoid:** Fire or intense heat way may cause violent rupture of packages. Do not expose to temperatures above 50 deg. Celsius.

**Materials to avoid at high temperatures:** Alkaline metals (Na, K), alkaline earth metals (Ca, Mg), finely divided aluminium and zinc.

**Hazardous decomposition products:** Halogenated compounds, hydrogen halides (HCl, HF), carbonyl halides (COCl<sub>2</sub>), carbon monoxide, carbon dioxide)

---

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:** LC50/inh./4h/rat:> 800000ppm

**Irritation:**

**Skin:** slightly irritating. May cause frostbite.

**Eyes:** slightly irritating.

**Chronic toxicity:** no-observed-effect-level (NOEL).

---

## 12. ECOLOGICAL INFORMATION

**Mobility:** Aquatic toxicity is unlikely due to low solubility.

---

## 13. DISPOSAL CONSIDERATION

**Waste from residues/ unused products:** Offer and nonrecyclable

solutions to an established disposal company. In accordance with local regulations.

**Contaminated packaging:** Do not reuse containers.

**Empty pressure vessels** should be returned to the supplier.

---

## 14. TRANSPORT INFORMATION

**UN No:** 3220

**ADR/RID Proper shipping name:** pentafluoroethane (R 125)

**HI No:** 20 Label 2

**UN No:** 3220

**IMDG Proper shipping name:** pentafluoroethane (R125)

**IMDG Page: 2170 -IUN No:** 3220 Class 2.2

Cylinders should always be transported in the upright position, with the valve uppermost, and be firmly secured.

**Other transport information:** Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

Before transporting product containers ensure that they are firmly secured and, valve outlet cap, nut or plug (where provided) is correctly fitted with valve protection device (where provided). There is adequate ventilation.

Compliance with applicable regulations.

---

## 15. REGULATORY INFORMATION

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

Do not breathe gas.

---

## 16. OTHER INFORMATION

Ensure all national regulations are observed.

Asphyxiant in high concentrations. Keep container in well ventilated place. Do not breathe the gas. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Users of breathing apparatus must be trained. Contact with liquid may cause cold burns/frostbite.

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

---

## 17. EXCLUSION OF LIABILITY

Information contained in this publication is accurate at the date of publication. The company and its agencies do not accept liability arising from the use of this information, or the use, application, adaptation or process of any products described herein.