MATERIAL SAFETY DATA SHEET (MSDS)

NAF SIII FIRE EXTINGUISHING AGENT

(Please ensure that this MSDS is received by the appropriate person)

REF: MS132 **Version: 02** **DATE: January 2018**

1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name	FIRE EXTINGUISHING AGENT NAF SIII
Chemical Constituents	i) Dichloro-1, 1, 1, - Trifluoroethane ii) Chlorodifluoromethane iii) 2 Chloro 1, 1, 1, 2- Tetrafluoroethane iv) Isopropenyl-1-1 Methylcyclohexene
Trade Name	NAFSIII
Colour Coding	Cylinders, Opaline Green (SABS 109 – 1975) body
Valve	Cylinder BS 341 No6 outlet 5/8 inch BSP right hand male. Dip tube fitted for liquid withdrawal Bulk container BSP 341 No6 outlet5/8 inch BSP right hand male. 2 Valves fitted. 1× Vapour withdrawal. 1× Fitted with dip tube for liquid withdrawal.
Company Identification	African Oxygen Malawi Limited Johnstone Road, Ginnery Corner Blantyre Tel. No: +265 (1) 871 611 Fax No: +265 (1) 871 260
Emergency No.	**+265 (1) 871 611 (24 hours)**

2 COMPOSITION/INFORMATION ON INGREDIENTS

Trade Name	Fire extinguishing agent NAF SIII
Chemical Name	i) Dichloro-1, 1, 1, - Trifluoroethane ii) Chlorodifluoromethane iii) 2 Chloro 1, 1 ,1, 2-Tetrafluoroethane iv) Isopropenyl-1-1 Methylcyclohexene
Chemical families	Chlorofluorocarbons
CAS Nos (See Section 1 above for chemical names)	i) 306-83-2 ii) 75-45-6 iii) 2837-89-0 iv) 5989-27-5
UN No.	3163
ERG No	126
Hazchem Warning	2C Non-flammable gas

3 HAZARDS IDENTIFICATION

Main Hazards All cylinders are portable gas containers, and must be regarded as pressure vessels at all times. NAF SIII does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in air below the levels necessary to support life. Contact with the liquid could cause cold burns.

Chemical Hazards Thermal decomposition could result in the formation of hydrogen chloride, hydrogen fluoride and phosgene.

Biological hazards NAF SIII has no known acute biological hazards

Vapour inhalation Mild irritation of the nose, throat and upper airways, light headaches, giddiness, dizziness, drowsiness and loss of co-ordination. More severe exposures may cause nausea, vomiting, irregular heartbeat and death from cardiac arrest.

Eye Contact	(Vapour)	No known effect
	(Liquid)	Could cause cold burns
Skin Contact	(Vapour)	No known effect
	(Liquid)	Could cause cold burns
Ingestion	Ingestion of liquid is not likely to happen, but the liquid could cause severe cold burns to the mouth and throat.	

4 FIRST AID MEASURES

Prompt medical attention is mandatory in all cases of overexposure to NAF SIII. Rescue personnel should be equipped with self- contained breathing apparatus. In case of frostbite from contact with liquid NAF SIII, place the frost-bitten part in warm water, about 40-42°C. If warm water is not available, or is impractical to use, wrap the affected part gently in blankets. Encourage the patient to exercise the affected part whilst it is being warmed. Do not remove clothing whilst frosted. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be removed to an uncontaminated area, and given mouth-to-mouth resuscitation and supplemental oxygen.

Eye Contact. Immediately flush with large quantities of tepid water, or with sterile saline solution. Seek medical attention.

Skin Contact. See above for handling of frostbite.

Ingestion. Allow damaged areas to warm gently. Seek medical attention.

5 FIRE FIGHTING MEASURES

Extinguishing media The appropriate media should be used for the surrounding fire. If feasible, cylinders of NAF SIII could be used to help extinguish the fire.

Specific Hazards NAF SIII does not support life. It can act as a simple asphyxiant by diluting the concentration of oxygen in the air below the levels to support life.

Emergency Actions If possible, shut off the source of escaping NAF SIII. Ventilate the area. Prevent liquid NAF SIII from entering sewers, basements and workpits. Keep the bulk tank or cylinders cool by spraying with water if exposed to a fire. CONTACT THE NEAREST AFROX BRANCH.

Protective Clothing Self-contained breathing apparatus. Safety gloves and shoes, or boots, should be worn when handling cylinders. **Environmental precautions**. NAF SIII is heavier than air and care should be taken when entering a potentially oxygen-deficient environment. If possible, ventilate the affected area.

6 ACCIDENTAL RELEASE MEASURES

Personal Precautions Do not enter any areas where NAF SIII has been spilled unless tests have shown that it is safe to do so.

Environmental precautions. NAF SIII does not pose a hazard to the environment

Small spills	Shut off the source of the escaping NAF SIII. Ventilate the area.
Large spills	Evacuate the area. Shut off the source of the spill if this can be done without risk. Restrict access to the area until completion of the clean-up procedure. Ventilate the area using forced-draught if necessary.

7 HANDLING AND STORAGE

Do not allow cylinders to slide or come into contact with sharp edges. NAF SIII containers should always be stacked vertically, firmly secured to prevent them from being knocked over. Use the "first in - first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Keep out of reach of children.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure hazards. As NAF SIII is a simple asphyxiant, avoid any areas where spillage has taken place. Only enter once testing has proved the atmosphere to be safe.

Engineering control measures. Engineering control measures are preferred to reduce exposures to oxygen depleted atmospheres. General methods include forced-draught ventilation, separate from other exhaust ventilation systems. Ensure that sufficient fresh air enters at, or near, floor level.

Personal protection Self contained breathing apparatus should always be worn when entering area where oxygen depletion may have occurred. Safety goggles, gloves and shoes or boots should be worn when handling cylinders.

Skin. No known effect.

9 PHYSICAL AND CHEMICAL PROPERTIES

Molecular Weight	92,9
Boiling point @ 101,325 kPa	- 38,3°C
Critical temperature	124,4°C
Density of saturated vapour @ boiling point	4,5 g/l

10 STABILITY AND REACTIVITY

Conditions to avoid The dilution of the oxygen concentration in the atmosphere to levels which cannot support life.
Incompatible materials. NAF SIII is stable under normal conditions and most common structural materials may be used.
Hazardous Decomposition Products. NAF SIII thermally decomposes to hydrogen chloride, hydrogen fluoride and phosgene.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity	Prolonged or repeated contact may cause skin irritation, reddening, drying and cracking
Skin & eye contact	No known effect
Chronic Toxicity	No known effect
Carcinogenicity	No known effect
Mutagenicity	No known effect
Reproductive Hazards	No known effect

12 ECOLOGICAL INFORMATION

Ozone Depletion Potential (ODP): 0.04
Global Warming Potential (GWP): 0.1
Atmospheric Lifetime (AL): 7 years

13 DISPOSAL CONSIDERATIONS

Disposal Methods Small amounts may be blown to the atmosphere under controlled conditions. Large amounts should only be handled by the gas supplier.

Disposal of packaging The disposal of cylinders must only be handled by the gas supplier.

14 TRANSPORT INFORMATION

ROAD TRANSPORTATION

UN No.	3163
ERG No	126
Hazchem warning	2C Non-flammable gas

SEA TRANSPORTATION

IMDG	3163
Class	2.2
Label	Non-flammable gas
Packaging group	

AIR TRANSPORTATION

ICAO/IATA Code	3163
Class	2.2
Packaging instructions	
- Cargo	200
- Passenger	200
Maximum quantity allowed	
- Cargo	150 kg
- Passenger	75 kg

15 REGULATORY INFORMATION

EEC Hazard class: Non-flammable
National legislation: OHSact and Regulations 85 of 1993.
Reference: SANS 10234 and its supplement.

16 OTHER INFORMATION

Bibliography
Showa Denko K.K. Gaseous Products Division
Technical Information on HFC-134a. March 1992

EXCLUSION OF LIABILITY