

MATERIAL SAFETY DATA SHEET (MSDS) ETHANEDINITRILE

Please ensure that this MSDS is received by the appropriate person

DATE: December 2010 Version 3

Ref. No.: MS018

1 PRODUCT AND COMPANY IDENTIFICATION

Product Name ETHANEDINITRILE

Chemical Formula C₂N₂

Company Identification African Oxygen Limited
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Johannesburg, 2001
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EMERGENCY NUMBER 0860111185 or (0860 02 02 02)
(24 hours)

Synonym(s) CYANOGEN, EDN, STERIGAS 1000

Use(s) FUMIGANT

2 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: Cyanogen (Oxalonitrile)
Chemical Abstract Service Number (CAS No.): 460-19-5

3 HAZARDS IDENTIFICATION

Classification

Liquified gas.
Highly flammable. Toxic by inhalation.
Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment

4 FIRST AID MEASURES

Inhalation: Toxic by inhalation. May cause damaging effects to central nervous system, metabolism and gastrointestinal tract. Remove victim to uncontaminated area wearing self-contained breathing apparatus. Remove contaminated clothing but keep victim warm and rested and do not permit the victim to exert himself. Break an amyl nitrite pearl in a cloth and hold it under the nose of the victim(but away from the person giving first aid) for 15 seconds. Repeat five times at about 15 second intervals. If victim is not breathing apply artificial respiration, preferably by the Holger-Nielsen method.

Antidote. Note to Physicians: The Nitrite-Thiosulfateregimen is a specific antidode for cyanide poisoning. The following procedure has been found to be very effective. It should be administered only under the direction of a physician.

1. Load two syringes without delay, one with 10 cc of 3% solution of sodium nitrite and other with 50 cc of a 25 % solution of sodium thiosulfate. Only a specially prepared intravenous solution in ampules should be used.
2. Stop administration of amyl nitrite and inject intravenously 10cc of 3% sodium nitrate at the rate of 2.5 – 5 cc per minute.
3. Inject by the same needle and vein, or by large needle and vein, 50 cc of 25% sodium thiosulfate solution.

The patient should be watched for at least 24-48 hours. If signs of poisoning reappear (giddiness, headache, fatigue, loss of appetite and nausea,) injection of both sodium nitrite and sodium thiosulfate should be repeated, but each in one-half the original dose. Even if the patient looks perfectly well, the medication may be given for prophylactic purposes, two hours after the first injections.

Users of sterigas should have readily available for the doctor a kit containing the following items:

- 12 pearls of amyl nitrite
- 1 sterile syringe, 10 cc
- 1 sterile syringe, 50 cc
- 2 ampules of sodium nitrite (10 cc, 3% solution)
- 2 ampules of sodium thiosulphate (50 cc, 25% solution)

Eyes: Hold eyelids apart and flush continuously with water. Continue until advised to stop by a doctor, or for at least 15 minutes. Keep victim calm

Skin: Remove contaminated clothing and gently flush affected areas with water. Launder clothing before reuse.

Ingestion: Ingestion is not considered a potential route exposure.

5 FIRE FIGHTING MEASURES

Specific hazards

Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

If involved in a fire the following toxic and /or corrosive fumes may be produced by thermal decomposition: Nitrogen dioxide, Carbon monoxide and Nitric oxide.

Extinguishing media

All known extinguishants can be used.

Specific Methods

If possible, stop flow of product. Move container away or cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.

Special protective equipment for fire fighters

Use self-contained breathing apparatus and chemically protective clothing.

5 ACCIDENTAL RELEASE MEASURES

Personal Precautions

Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Do not attempt to repair leaking valve or cylinder safety devices.

Environmental Precautions:

Try to stop release if safe to do so. Prevent from entering sewers/drains, basements and workpits, or any place where its accumulation can be dangerous.

Clean up methods

Ventilate area. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated (Ground free from frost).

7 HANDLING AND STORAGE

Safe handling

In a view of lethal nature of Sterigas, the handling of Sterigas should be undertaken only after the properties of Sterigas, its toxicity and proper safety and emergency measures have been thoroughly reviewed.

Self-contained breathing apparatus should be instantly available for use in emergencies.

Sterigas should be handled only in well-ventilated area, preferably a hood.

Sterigas should never be handled by one person. A second person, stationed at safe distance, should also be present. Workers handling sterigas should wear rubber gloves, rubber protective clothing and rubber-soled shoes at all times.

Adequate emergency showers and wash-up facilities should be available for use when working with Sterigas. Open flames or electrical equipment which is not explosion-proof must be avoided.

Waste disposal of Sterigas and materials containing it depends to a great extent on local conditions. All local, state and federal regulations regarding health and pollution must be followed.

Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas (e.g. If container is damaged).

Ensure equipment is adequately earthed. Suck back of water into the container must be prevented. Purge air from the system before introducing gas. Do not allow back feed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Keep away from ignition sources (including static discharges).

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Storage

Segregate from oxidant gases and other oxidants in store. Cylinders should be stored: upright, prevented from falling, in a secure area; below 50°C in a dry, well ventilated area constructed of non-combustible material with a firm level floor (concrete), away from areas of heavy traffic and emergency exits.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit value

Value type	Value	Note
TLV (ACGIH)	10ppm	ACGIH 1995 -1996
TWA-OEL-RL	10ppm	OHS Act 85 of 1993

Personal Protection

Wear splash-proof goggles to protect eyes, face and skin from liquid splashes. Ensure adequate ventilation. Keep suitable chemically resistant protective clothing readily available for emergency use. Do not smoke while handling product. Keep self-contained breathing apparatus readily available for emergency use. Carry working gloves and protection shoes while handling gas cylinders.

9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DATA

Chemical Symbol	C ₂ N ₂
Molecular Weight	52.04 g/mol
Boiling point @ 101,325 kPa	-21.17°C
Density, liquid @ -40°C	0.9896
Relative density, Gas @ 101,325 kPa	1.817
Latent heat of fusion @ -27.9°C	155.83kJ/kg
Colour	Colourless
Odour	Almond like odour

10 STABILITY AND REACTIVITY

Stability and Reactivity

Can form explosive mixture with air. May react violently with oxidants.

Materials

Glass-lines equipment is satisfactory for conveying or processing cyanogens. Stainless steel, monel and inconel are also satisfactory up to at least 65°C.

11 TOXICOLOGICAL INFORMATION

Acute Toxicity May cause irritation to respiratory tract.

12 ECOLOGICAL INFORMATION

Environment

ATMOSPHERE: Vapour-phase cyanogens is slowly degraded in the atmosphere by reaction with photochemically produced hydroxyl radicals. SOIL: Cyanogen is expected to volatilise from soil surfaces. WATER/BIOLOGICAL: Soluble cyanide compounds in water are expected to volatilise from water surfaces or undergo microbial degradation. Does not contain class I or II ozone depleting chemicals

13 DISPOSAL CONSIDERATIONS

General: Avoid discharge to atmosphere. Do not discharge to any place where its accumulation could be dangerous.

Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.

Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere.

Contact supplier if guidance is required.

14 TRANSPORT INFORMATION

ADR/RID

Class	2	Classification Code	2TF
UN number and proper shipping name			
UN 1026 Cyanogen			
Labels	2.3, 2.1	Hazard number	263

IMDG

Class	2.3
UN number and proper shipping name	
UN 1026 Cyanogen	
Labels	2.3, 2.1
Packing Instruction	P200
EmS	FD,SU

Other transport information: 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. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations. Avoid transport on vehicles where the load space is not separated from driver's compartment.

15 REGULATORY INFORMATION

SUPPLEMENT TO SANS 10234:2008

Edition 1

Annex A Index No. 608-011-00-8

Precautionary statement codes

Precautionary statement code	Precautionary Statement	Hazard Statement code	Hazard Statement
P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking	H220	Extremely flammable gas
P261	Avoid breathing dust/fume/gas/mist/vapours/spray	H331	Toxic if inhaled
P271	Use only outdoors or in a well ventilated area	H410	Very toxic to aquatic life with long lasting effects
P273	Avoid release into the environment – <i>if this is not the intended use</i>		
P312	Call a POISON CENTRE or doctor/physician if you feel unwell		
P321	Specific treatment (reference to supplemental first-aid instruction)		
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely		
P381	Eliminate all ignition sources if safe to do so		
P391	Collect spillage		
P304+P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing		
P403+P233	Store in a well ventilated place. Keep container tightly closed		
P405	Store locked up		
P501	Dispose of contents/container as a hazardous		

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16 OTHER INFORMATION

Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard. Before using this product in any new process or experiment, a through material compatibility and safety study should be carried out.

EXCLUSION OF LIABILITY

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