

Material Safety Data Sheet

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Version 1.2

According to 91/155/EEC

1 - Product and Company Information

Product Name	CYANAMIDE, 99%
Product Number	187364
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
Fax	65 271 1571

2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
CYANAMIDE	420-04-2	206-992-3	615-013-00-2
Formula	CH ₂ N ₂		
Molecular Weight	42.04 AMU		
Synonyms	Alzogur * Amidocyanogen * Carbamonitrile * Carbimide * Carbodiimide * Cyanamide (ACGIH) * Cyanoamine * N-Cyanoamine * Cyanogenamide * Cyanogen nitride * Hydrogen cyanamide * TsAKS * USAF EK-1995		

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT
Harmful in contact with skin. Toxic if swallowed. Irritating to eyes and skin. May cause sensitization by skin contact.

4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

5 - Fire Fighting Measures

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Do not use water.

SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

Explosion Hazards: Container explosion may occur under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SPECIFIC METHOD(S) OF FIRE FIGHTING

Use water spray to cool fire-exposed containers.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Conditions of Storage: Keep tightly closed.

Store at 2-8°C

SPECIAL REQUIREMENTS: Moisture sensitive. Avoid contact with bases.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	2 MG/M3
Poland		NDSCh	4 MG/M3
Poland		NDSP	-

EXPOSURE LIMITS - DENMARK

	Source OEL	Type TWA	Value 2 mg/m3
EXPOSURE LIMITS - GERMANY			
	Source TRGS 900	Type OEL	Value 2 mg/m3, E
Remarks: H			
EXPOSURE LIMITS - NORWAY			
	Source	Type OEL	Value 2 mg/m3
EXPOSURE LIMITS - SWITZERLAND			
	Source OEL	Type OEL	Value 2 mg/m3
Remarks: E			
EXPOSURE LIMITS - UNITED KINGDOM			
	Source OEL	Type OEL	Value 2 mg/m3

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

Appearance	Color: White Form: Crystals	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	83 °C	0.5 mmHg
MP/MP Range	44 °C	
Flash Point	141 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	0.00375 mmHg	20 °C
SG/Density	1.282 g/cm3	20 °C
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	1.45 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	< 2 %	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water: Soluble. Other Solvents: ETHER, AMINES, KETONES	

10 - Stability and Reactivity

STABILITY

Stable: Unstable.

Conditions of Instability: Heat sensitive.

Conditions to Avoid: Moisture. Contact with acids liberates very toxic gas.

Materials to Avoid: Strong oxidizing agents, Strong reducing agents, Bases, Acids Iron and iron salts., Steel, Brass, Lead

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Thermal decomposition may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: May occur

11 - Toxicological Information

RTECS NUMBER: GS5950000

ACUTE TOXICITY

LD50
Oral
Rat
125 mg/kg

LD50
Skin
Rat
84 mg/kg

LD50
Intravenous
Rat
56 MG/KG

LD50
Oral
Mouse
388 mg/kg

LD50
Intraperitoneal
Mouse
200 MG/KG

LD50
Oral
Cat
100 mg/kg

LD50
Oral
Rabbit
150 mg/kg

LD50
Skin
Rabbit
590 mg/kg

SENSITIZATION

Skin: May cause allergic skin reaction.

SIGNS AND SYMPTOMS OF EXPOSURE

Exposure to and/or consumption of alcohol may increase toxic effects. Causes severe corneal edema. Temporary blindness has been reported. Symptoms may be delayed. Exposure can cause: Headache. Dizziness. Hypotension. Salivation. Ataxia. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.
Skin Absorption: Toxic if absorbed through skin.
Eye Contact: Causes eye irritation.
Inhalation: May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
Ingestion: Toxic if swallowed.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 2450 MG/KG
Route of Application: Oral
Exposure Time: (70D MALE/2W PRE-2W PREG)
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Other measures of fertility

Species: Rat
Dose: 1750 MG/KG
Route of Application: Oral
Exposure Time: (70D MALE)
Result: Paternal Effects: Testes, epididymis, sperm duct.
Paternal Effects: Prostate, seminal vesicle, Cowper's gland, accessory glands. Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rat
Dose: 2600 MG/KG
Route of Application: Oral
Exposure Time: (70D MALE/2W PRE-3W PREG)
Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Delayed effects.

Species: Rat
Dose: 208 MG/KG
Route of Application: Oral
Exposure Time: (70D MALE/2W PRE-3W PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).

12 - Ecological Information

N/A

ECOTOXICOLOGICAL EFFECTS

Test Type: LC50 Fish

Species: Cyprinodon variegatus (Sheepshead minnow)
Time: 96 h
Value: 58 mg/l

Test Type: LC50 Fish
Species: Lepomis macrochirus (Bluegill)
Time: 96 h
Value: 88 mg/l

13 - Disposal Considerations

SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR

UN#: 2811
Class: 6.1
PG: II
Proper Shipping Name: Toxic solid, organic, n.o.s.

IMDG

UN#: 2811
Class: 6.1
PG: II
Proper Shipping Name: Toxic solid, organic, n.o.s.
Marine Pollutant: No
Severe Marine Pollutant: No
Technical Name: Required

IATA

UN#: 2811
Class: 6.1
PG: II
Proper Shipping Name: Toxic solid, organic, n.o.s.
Inhalation Packing Group I: No
Technical Name: Required

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 615-013-00-2

INDICATION OF DANGER: T

Toxic.

R-PHRASES: 21 25 36/38 43

Harmful in contact with skin. Toxic if swallowed. Irritating to eyes and skin. May cause sensitization by skin contact.

S-PHRASES: 3 22 36/37 45

Keep in a cool place. Do not breathe dust. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 2

16 - Other Information

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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