1. PRODUCT

1.1 Product identifiers

Name: Cyanamide

CAS-No.: 420-04-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301

Acute toxicity, Dermal (Category 3), H311

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Skin sensitisation (Category 1), H317

Reproductive toxicity (Category 2), H361

Specific target organ toxicity - repeated exposure (Category 2), H373

Acute aquatic toxicity (Category 3), H402

Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram	
Signal word	Danger
Hazard statement(s)	 H301 + H311 Toxic if swallowed or in contact with skin H314 Causes severe skin burns and eye damage. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H361 Suspected of damaging fertility or the unborn child. H373 May cause damage to organs through prolonged or repeated exposure. H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and
	P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
	P264 Wash skin thoroughly after handling.
	P270 Do not eat, drink or smoke when using this product.
	P272 Contaminated work clothing should not be allowed out of the workplace.
	P273 Avoid release to the environment.
	P280 Wear protective gloves/ protective clothing/ eye protection/ face
	P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse
	1100000. 1920 J. P220 J. P221 JE SWALLOWED: Pince mouth Do NOT induce veniting
	[P301 + P361 + P351] F ON SKIN (or bair). Take off immediately all contaminated clothing
	Binse skin with water/shower
	$F_{2304} + F_{2340} + F_{2310}$ IF INHALED: Remove person to fresh air and keep comfortable for
	breathing, Immediately call a POISON CENTER/doctor.
	P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove
	contact lenses, if present and easy to do. Continue rinsing. Immediately
	call a POISON CENTER/doctor.
	P308 + P313 IF exposed or concerned: Get medical advice/ attention.
	P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
	P362 Take off contaminated clothing and wash before reuse.
	P405 Store locked up.
	P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms:	Hydrogen cyanamide Carbodiimide
Formula:	CH ₂ N ₂
Molecular weight:	42.04 g/mol
CAS-No.:	420-04-2
EC-No.:	206-992-3

Hazardous components

Component	Classification	Concentration
Cyanamide		
	Acute Tox. 3; Skin Corr. 1B; Eye Dam. 1; Skin Sens. 1; Repr. 2; STOT RE 2; Aquatic Acute 3; Aquatic Chronic 3; H301 + H311, H314, H317, H318, H361, H373, H412	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice		
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.		
If inhaled		
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.		
In case of skin contact		
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.		
In case of eye contact		
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.		
If swallowed		
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.		

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.2 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

No data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

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

Recommended storage temperature 2 - 8 °C

Moisture sensitive.

Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials

causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis	
Cyanamide	420-04-2	TWA	2.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)	
	Remarks	Eye irritation Skin irritation			
		TWA	2.000000 mg/m3	USA. NIOSH Recommended Exposure Limits	
		Cyanamide is also a synonym for Calcium cyanamide.			
TWA		2 mg/m3	USA. ACGIH Threshold Limit Values (TLV)		
	Eye irritation Skin irritation				
		TWA	WA 2 mg/m3 USA. NIOSH Recommended Exposure Li		
Cyanamide is also a synonym for Ca TWA 2 mg/m3 PEL 2 mg/m3 Ca		lso a synonym fo	or Calcium cyanamide.		
		USA. OSHA -TABLE Z-1 Limits for Air Contaminants -1910.1000			
		2 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)		

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).				
Skin protection	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M) Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.				
Body Protection	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.				
Respiratory protection	Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).				
Control of environmen tal exposure	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.				

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Form: crystalline Colour: white		
Odour	No data available		
Odour Threshold	No data available		
рН	No data available		
Melting point/freezing point	Melting point/range: 45 - 46 °C (113 - 115 °F) - lit.		
Initial boiling point and boiling range	83 °C (181 °F) at 0.7 hPa (0.5 mmHg) - lit.		
Flash point	141 °C (286 °F) - closed cup		
Evaporation rate	No data available		
Flammability (solid, gas)	No data available		
Upper/lower flammability or explosive limits	No data available		
Vapour pressure	0.00500 hPa (0.00375 mmHg) at 20 °C (68 °F)		
Vapour density	No data available		
Relative density	1.282 g/cm3 at 20 °C (68 °F)		
Water solubility	soluble		
Partition coefficient: n-octanol/water	log Pow: -0.719		
Auto-ignition temperature	No data available		
Decomposition temperature	No data available		
Viscosity	No data available		
Explosive properties	No data available		
Oxidizing properties	No data available		

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Contact with acids liberates very toxic gas. Avoid moisture.

10.5 Incompatible materials

Strong oxidizing agents, Strong reducing agents, Bases, acids, Iron and iron salts., Steel (all types and surface treatments), Brass, Lead

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx)

Other decomposition products - No data available

In the event of fire: see section 5

11.1 Information on toxicological effects

Acute toxicity
L D50 Oral - Rat - 142 mg/kg
LC50 Inhalation - Rat - 4 h - > 2 mg/l (OECD Test Guideline 403) LD50 Dermal - Rabbit - 848 mg/kg No data available
Skin corrosion/irritation
Skin - Rabbit Result: Causes burns. (OECD Test Guideline 404)
Serious eye damage/eye irritation
Risk of serious damage to eyes. Expert judgement
Respiratory or skin sensitisation
Maximisation Test - Guinea pig May cause sensitisation by skin contact.
Germ cell mutagenicity
In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects
Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
Suspected of damaging the unborn child. Reproductive toxicity - Rat - Oral Paternal Effects: Testes, epididymis, sperm duct. Paternal Effects: Prostate, seminal vessicle, Cowper's gland, accessory glands. Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females). Reproductive toxicity - Rat - Oral 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). Reproductive toxicity - Rat - Oral Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Reproductive toxicity - Rat - Oral Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). 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. Suspected of damaging fertility.
Specific target organ toxicity -single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.
Specific target organ toxicity -repeated exposure
May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard
No data available
Additional Information
RTECS: GS5950000 Exposure to and/or consumption of alcohol may increase toxic effects., Causes severe corneal edema. Temporary blindness has been reported., Symptoms may be delayed., Headache, Dizziness, Lowered blood pressure, Salivation, Ataxia., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 90 mg/l - 96 h NOEC - Oncorhynchus mykiss (rainbow trout) - 3.7 mg/l - 21 d		
Toxicity to daphnia and other aquatic invertebrates NOEC - Daphnia magna (Water flea) - 0.1044 mg/l - 21 d			
Toxicity to algae	ErC50 - Selenastrum capricornutum (green algae) - 13.5 mg/l - 90 h		
Toxicity to bacteria	No data available		
2.2 Persistence and degradability			

12.2 Persistence and degradability

Biodegradability	Result: - Readily biodegradable (OECD Test Guideline 301B) Remarks: No data available
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12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

Not expected to adsorb on soil.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life with long lasting effects.

No data available

Stability in water pH < 4

Remarks: Hydrolyses readily.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. 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.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 2923 Class: 8 (6.1) Packing group: III

Proper shipping name: Corrosive solids, toxic, n.o.s. (Cyanamide)

Reportable Quantity (RQ):

Poison Inhalation Hazard: No

IMDG

UN number: 2923 Class: 8 (6.1) Packing group: III EMS-No: F-A, S-B

Proper shipping name: CORROSIVE SOLID, TOXIC, N.O.S. (Cyanamide)

ΙΑΤΑ

UN number: 2923 Class: 8 (6.1) Packing group: III

Proper shipping name: Corrosive solid, toxic, n.o.s. (Cyanamide)

15. REGULATORY INFORMATION

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De

Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Component	CAS-No.	Revision Date		
Cyanamide	420-04-2	1993-04-24		
Pennsylvania Right To Know Components				

Component	CAS-No.	Revision Date
Cyanamide	420-04-2	1993-04-24

New Jersey Right To Know Components

Component	CAS-No.	Revision Date
Cyanamide	420-04-2	1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other

reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox. Acute toxicity

Aquatic Acute Acute aquatic toxicity

Aquatic Chronic Chronic aquatic toxicity

Eye Dam. Serious eye damage

H301 Toxic if swallowed.

H301 + H311 Toxic if swallowed or in contact with skin

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H361 Suspected of damaging fertility or the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

H402 Harmful to aquatic life.

HMIS Rating

Health hazard: 3

Chronic Health Hazard: *

Flammability: 1

Physical Hazard 0

NFPA Rating

Health hazard: 3 Fire Hazard: 1

Reactivity Hazard: 0