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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Cyanamide

Company information

Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	07903
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Health hazards	Acute toxicity (oral)	Category 3
	Acute toxicity (dermal)	Category 3
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Skin sensitization	Category 1
	Reproductive toxicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (central nervous system)
	Specific target organ toxicity (single exposure)	Category 3 (respiratory tract irritation.)
	Specific target organ toxicity (repeated exposure)	Category 1 (blood, thyroid, liver, reproductive organs(male))
Environmental hazards	Aquatic acute	Category 1
	Aquatic chronic	Category 1

Hazard pictograms



Signal word : Danger

Hazard statements : Toxic if swallowed or in contact with skin
Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation
May cause respiratory irritation
Suspected of damaging fertility or the unborn child
Causes damage to organs (central nervous system)

Causes damage to organs (blood, thyroid, liver, reproductive organs(male)) through prolonged or repeated exposure
Very toxic to aquatic life
Very toxic to aquatic life with long lasting effects

Precautionary statements

Prevention : Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF SWALLOWED: Immediately call a POISON CENTER or doctor.
IF ON SKIN: Wash with plenty of water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Call a POISON CENTER or doctor.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor if you feel unwell.
Get medical advice/attention if you feel unwell.
Rinse mouth.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off immediately all contaminated clothing and wash it before reuse.
Take off contaminated clothing and wash it before reuse.
Collect spillage.

Storage : Store in a well-ventilated place. Keep container tightly closed.
Store locked up.

Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Synonyms : Carbodiimide

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Cyanamide	≥ 96	NH2CN	Listed	206-992-3	420-04-2

4. First aid measures

First aid measures

First-aid measures after : Remove the victim to fresh air, and make him blow his nose and

inhalation		gargle. If necessary, get medical treatment.
First-aid measures after skin contact	:	Wash the affected areas under running water, get medical treatment as soon as possible.
First-aid measures after eye contact	:	Wash the affected areas under running water for at least 15 minutes. If necessary, get medical treatment.
First-aid measures after ingestion	:	Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.
Personal Protection in First Aid and Measures	:	Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Suitable extinguishing media	:	Water, dry chemical powder, carbon dioxide, dry sand, foam
Unsuitable extinguishing media	:	None
Firefighting instructions	:	Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area. Fight fire from windward. Dry chemical powder, carbon dioxide or dry sand should be used for small fires. Foam extinguisher is effective for a large scale fire.
Personal protection (Emergency response)	:	Wear breathing apparatus.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures	:	Wear proper protective equipment and avoid contact with skin and inhalation of dust. Conduct operations from upwind and evacuate people downwind.

Environmental precautions

Environmental precautions	:	Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Methods and Equipment for Containment and Cleaning up

For containment	:	Sweep up in a chemical waste container. Flush contaminated area with copious amounts of water.
Prevention Measures for Secondary Accidents	:	Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and storage

Handling

Technical measures	:	Wear appropriate protective equipment to avoid contact with skin or inhalation of dust. Fire is prohibited.
Precautions for safe handling	:	Avoid formation of dust and aerosols. Do not allow contact with oxidizing substances.

Storage

Storage conditions	:	As the chemical is hygroscopic, keep the bottle tightly closed and store in a refrigerator (0-6℃).
Material used in packaging/containers	:	Glass, stainless steel. Polyethylene, Polypropylene, etc.

8. Exposure controls / Personal protection equipment

ACGIH TWA	2 mg/m³

Appropriate engineering controls	:	Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection	:	Dust mask
Hand protection	:	Impervious protective gloves
Eye protection	:	Safety goggles
Skin and body protection	:	Protective clothing, protective boots

9. Physical and chemical properties

Physical state	:	Solid
Color	:	Colorless-white
Odor	:	Odorless
pH	:	3.5 - 4.2 (560g/L, 20℃)
Melting point	:	44 ° C
Freezing point	:	No data available
Boiling point	:	83 ° C
Flash point	:	141 ° C (C.C.)
Auto-ignition temperature	:	No data available
Decomposition temperature	:	260 ° C
Flammability	:	Flammable solid
Vapor pressure	:	0.5 Pa (20℃)
Relative density	:	1.282 (20℃)
Density	:	1.28 g/cm³ (20℃)
Relative gas density	:	1.45
Solubility	:	Organic solvents: Soluble in methanol. Water: 85 g/100 mL (25℃)
Partition coefficient n-octanol/water (log Pow)	:	-0.82 (20℃)
Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	May react with oxidizing substances.
Chemical stability	:	Polymerize by heat. Hygroscopic.
Possibility of hazardous reactions	:	Thermally unstable and biquantifies at more than 40° C with intense release of heat.
Conditions to avoid	:	Light, heat. moisture.

Incompatible materials	:	Acids. Oxidizing substances. strong reducing agent.
Hazardous decomposition products	:	Carbon monoxide, nitrogen oxides. hydrogen cyanide.

11. Toxicological information

Acute toxicity (oral)	:	Toxic if swallowed rat LD50=100-125mg/kg
Acute toxicity (dermal)	:	Toxic in contact with skin rabbit LD50=590mg/kg
Acute toxicity (inhalation)	:	No classification (gas) No classification (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	Causes skin irritation Based on a description of strong irritation of the skin in humans and on a report that in a skin irritation test with rabbits, slight to moderate erythema and slight to severe oedema were produced on the intact skin, it was classified in category 2.
Serious eye damage/irritation	:	Causes serious eye irritation Based on a description of irritation of the eyes in humans, and on a report that in an eye irritation test with rabbits, moderate to severe irritation (redness, swelling of the conjunctiva, corneal opacity) was observed and this did not resolve within one week in some cases, it was classified in category 2A.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	May cause an allergic skin reaction In a maximization test with guinea pigs, intradermal injection and induction with a 10% aqueous solution of this substance and petrolatum containing 5% of this substance were performed, and a challenge with petrolatum containing 2.5% of this substance on Day 21 was performed. As a result, the positive rate was 100% 24 and 48 hours after the application. In addition, there is a description that repeated or prolonged contacts may cause skin sensitization in humans. From the above, it was classified in category 1.
Germ cell mutagenicity	:	No classification As for in vivo, micronucleus tests with mouse bone marrow cells were negative. As for in vitro, bacterial reverse mutation tests were negative. Therefore, it was classified as "No classification".
Carcinogenicity	:	Classification not possible

Reproductive toxicity	:	Suspected of damaging fertility or the unborn child In a two-generation study with rats dosed by gavage, decreased body weight gain, a decrease in the number of corpora lutea, implantations, and offspring, and decreased fertility rate were observed in F0 females at 25mg/kg/day. In F0 males, a decrease in the relative weight of the epididymis, testicular atrophy, and absence of sperm in the epididymal tubules were observed at 25mg/kg/day. In F1, effects on developmental indexes including opening failure of the auricle and descent failure of the testes were observed at 25mg/kg/day. Besides, in order to examine whether a cause of decreased fertility rate was in females or males, females and males which were dosed at 25mg/kg/day were mated with untreated females and males. As a result, decreased fertility rate was indicated when treated males were mated with untreated females, but no effect on a fertility rate was observed when treated females were mated with untreated males. From the above, effects on the male genetic organs and on development in pups, in addition to decreased fertility rate, were observed at the dose where decreased body weight gain in F0 females was observed. Therefore, it was classified in category 2.
STOT-single exposure	:	Causes damage to organs (central nervous system) May cause respiratory irritation There is a report that in a single oral administration test with rats, at 150mg/kg/day corresponding to category 1, lethargy, tremor, crouching position, ataxia and piloerection, and at higher doses, in addition to these symptoms, abnormal gait, abdominal position, labored breathing and bloody lacrimation were shown, and at necropsy, pulmonary hemorrhage and pleural effusion were observed. In addition, there is a report that in a single inhalation test in which rats were exposed to an aerosol of this substance, at a 4-hour inhalation exposure at 1 mg/L, closed eyes, shallow breathing, and frequent coughing and swallowing reaction were shown, but these resolved several hours after the end of exposure. From the above, it was classified in category 1 (central nervous system), category 3 (respiratory tract irritation).

STOT-repeated exposure	:	Causes damage to organs (blood, thyroid, liver, reproductive organs(male)) through prolonged or repeated exposure As for humans, there is a description that since this substance inhibits aldehyde dehydrogenase, it is used as an alcohol consumption inhibitor, and it is usually administered at 50-200 mg per day in alcohol abstinence therapy, and at 15-60mg per day in alcohol sobriety therapy, and as side effects, effects on the skin, blood, and liver are pointed out, and there are reports that in patients who used this substance as an alcohol aversion medication, ground-glass like hepatitis, which was not seen before the treatment, was seen after the treatment. As for experimental animals, in a 28-day repeated oral dose toxicity test with rats given by gavage, bile duct hyperplasia of the liver, decreased colloid of the thyroid follicles at or above 10mg/kg/day (converted guidance value: 3.11mg/kg/day) within a guidance value range for category 1, decreased body weight gain and increased liver weight at 20mg/kg/day or above (converted guidance value: 6.22mg/kg/day), and a decrease in the erythrocyte count, hemoglobin concentration and hematocrit value, an increase in weight of the thyroid and parathyroid, and hyperplasia of the thyroid follicular cells, etc. were observed at 40mg/kg/day (converted guidance value: 12.44mg/kg/day) within the guidance value range for category 2. In a 90-day repeated oral dose toxicity test with rats given by feeding, an increase in the solid and small thyroid follicle and increased incidence of proliferation of the follicular epithelial cells and parafollicular epithelial cells at 1.5mg/kg/day or above within the guidance value range for category 1, and an increase in the erythrocyte count and relative liver weight, decreased thymus relative weight at 4.5mg/kg/day were observed. In addition, in a 90-day repeated oral dose toxicity test with dogs given by gavage, decreased testes weight, atrophy of the testicular tubules, decreased spermatogenesis, and an decrease in the number of spermatocytes in the epididymis at or above 0.6mg/kg/day within the guidance value range for category 1, an decrease in T4 value and AST, increased ALT, and increased mononuclear leukocyte count at 2mg/kg/day or above, and decreased body weight gain and an decrease in the hemoglobin concentration and hematocrit value at 6mg/kg/day were observed. From the above, it was classified in category 1 (blood, thyroid, liver, reproductive organs(male)).
Aspiration hazard	:	Classification not possible

12. Ecological information

Ecotoxicity

Aquatic acute	:	Very toxic to aquatic life Anabaena flosaquae EC50=0.37mg/L/72h
Aquatic chronic	:	Very toxic to aquatic life with long lasting effects Daphnia magna NOEC=0.1mg/L/21-day

Persistence and degradability

Not readily biodegradable
BOD : 0%

Bioaccumulative potential

Low bioconcentration
BCF : 3.2

Mobility in soil

High mobility
Koc : 4.7-7.3

Hazardous to the ozone layer

Ozone : Classification not possible

13. Disposal considerations

Ecological waste information : Mixed with flammable organic solvents and burn in a chemical incinerator equipped with an afterburner and a scrubber. Or entrust approved waste disposal companies with the disposal.

Contaminated container and packaging : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG) : 3439
Proper Shipping Name (IMDG) : NITRILES, SOLID, TOXIC, N.O.S.
Packing group (IMDG) : III
Transport hazard class(es) (IMDG) : 6.1

Air transport(IATA)

UN-No. (IATA) : 3439
Proper Shipping Name (IATA) : Nitriles, solid, toxic, n.o.s.
Packing group (IATA) : III
Transport hazard class(es) (IATA) : 6.1

Marine pollutant : Applicable
MFAG-No : 151

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
ICSC Card (2009) .

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.