MATERIAL SAFETY DATA SHEET(MSDS)

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

·CHEMICAL PRODUCT NAME : CIMA-1420N

·NAME OF MANUFACTURER : CHEONGWOO CFC CO., LTD.

·ADDRESS : #14-1, Eogokgongdan3-gil, Yangsan-city, Gyeongnam. Korea
·TEL No. : 82-55-382-7576
·FAX No. : 82-55-382-7584
·EMERGENCY TEL No. : 82-55-338-7576 FAX No. : 82-55-338-7856

2. HAZARD IDENTIFICATION

2.1 Hazard Classification**:**

Acute toxic substances (Classification: 4)
Skin corrosive or irritating substances (Classification: 2)
Severe eye damage or irritating substance (Category: 2)
Characteristic target organ toxicity (single exposure): Category 3 (respiratory system irritation)
Reproductive toxicity (Classification: 1B)

2.2 Label Elements Including Precautionary Statements:

· CAUTION MARK IN KOREA

Symbol:  

Signal Word: Danger

Hazard Risk Statement**:** H360 May cause damage to the fetus or fertility.

H335 May cause respiratory irritation.

H319 Causes serious eye irritation.

H315 Causes skin irritation.

H312 Harmful in contact with skin.

Precautionary Statements

Precautions

P201 Please obtain instruction manual before use.
P202 Do not handle until all safety precautions have been read and understood
P261 Avoid breathing (dust/fume/gas/mist/vapours/spray).
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves, protective clothing, eye protection, face protection.

Response P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. If possible, remove contact lenses. Keep washing.

P308+P313 If exposed or concerned, seek medical advice/attention.

P312 If you feel unwell, consult a medical institution (doctor).

P332+P313 If skin irritation occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash before reuse.

Storage P403+P235 Store in a well-ventilated place and keep at low temperature.

P405 Store sealed

Disposal P501 Dispose of contents and container in accordance with the relevant laws and regulations.

· Harmful , dangerous and other hazardous that are not included in the classification criteria , hazard: Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS REGISTRY NUMBER	COMPOSITION (%)
N, N-1,6Hexanediylbis- [12-hydroxyoctadecanamide]	55349-01-04	50~56
N-methyl-2-pyrrolidone	872-50-4	43~48
Lithium chloride	7447-41-8	1~3

4. FIRST-AID MEASURES

·EYE CONTACT : First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

·SKIN CONTACT : Wash with soap and water. Get medical attention if irritation develops or persists.

·INHALATION : Remove to fresh air. If not breathing, give artificial respiration.

If breathing difficult, give oxygen. Get immediate medical attention.

·INGESTION : If swallowed, do not induce vomiting. Give victim a glass of water.

Call a physician immediately. Never give anything by mouth

to an unconscious person.

·First aid measures and caution to doctors :

Symptoms caused by contact or inhalation may be delayed.

Make sure medical personnel are aware of the substance and take protective measures.

5. FIRE-FIGHTING MEASURES

·Extinguishing Media : Water spray, foam extinguishing agent, carbon dioxide, dry sand or soil for asphyxiation.

(Inappropriate extinguishing agent: No data)

·Specific hazards with regard to fire-fighting measures:

Non-flammable, the material itself does not burn, but it may decompose when heated to generate corrosive/toxic fumes.

Container may explode when heated

During burning, irritating and very toxic gases may be produced by pyrolysis or combustion.

Some can burn but do not ignite easily

·Protective equipment and precautions to be worn when fighting fire:

Rescuer wear appropriate protective equipment

Extinguish from the area and keep a safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precaution : Wear protective equipment

·Environmental precution : Collect the spilled product, transfer it to an appropriate container for disposal, and purify the air .

·Procedure for clean up of spills and leaks: Use of non-active and adsorbent materials such as sand silica gel.

7. HANDLING & STORAGE

Handling : Put in a closed container, keep away from fire

·Storage: Store in a safe and cool place at room temperature.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

·Exposure standards for chemical substances, biological exposure standards, etc.

Domestic regulations: No data available

ACGIH regulations : No data available

Biological exposure limit : No data available

Other exposure standards : No data available

·Appropriate engineering controls: process isolation, local exhaust, or other engineering controls that control air levels below exposure limits.

·Personal protective equipment

○ Respiratory protection : Wear protective respiratory equipment.

○ Eye protection : Wear protective glasses. Install cleansing equipment and emergency washing equipment(shower type) near the workplace.

○ Hand protection : Wear gloves with appropriate chemical resistance.

○ Body protection : Wear work clothes to protect the body from contact..

9. PHYSICAL & CHEMICAL PROPERTIES

·APPEARANCE : Dark yellow liquid

·PH : Not available

·MELTING POINT : Not available

·BOILING POINT : Not available

·FLASH POINT : Approx 89℃

·DENSITY : 1.13±0.02 (20℃)

·VAPOUR PRESSURE : Not available

10. PHYSICAL HAZARD(STABILITY & REACTIVITY)

·Chemical stability and Possibility of hazardous decomposition products

Container may explode when heated
Fire may generate irritating, corrosive and toxic gases.
Some can burn but do not ignite easily

·Conditions to avoid : Sources of ignition such as heat, sparks, flames, etc.

·

Incompatible materials : combustible substances, reducing substances

·Hazardous substances produced during decomposition

Irritating, corrosive and toxic gases

During burning, irritating and very toxic gases may be produced by pyrolysis or combustion.

11. TOXICOLOGICAL INFORMATION

·Information on the likely routes of exposure : No data available

·Health Hazard Information

○ Acute toxicity

Oral : Lithium chloride: LD50 526 ~ 840 ㎎/kg Rat
1-methyl-2-pyrrolidinone : LD50 4150 mg/kg Rat
Dermal : Lithium chloride: LD50 1488 mg/kg Rabbit
1-methyl-2-pyrrolidinone : LD50> 5000 ㎎/kg Rat
Inhalation : 1-methyl-2-pyrrolidinone : Mist LC50> 5.1 ㎎/ℓ 4 hr Rat

○ Skin corrosive or irritating substance

Lithium chloride: Irritating to rabbit skin
1-methyl-2-pyrrolidinone : erythema score: 0.5/4, fully recovered: 72 hours, not subject to GHS classification criteria , Rabbit, OECD TG 4 04 EU CLP Harmonized Classification: Category 2

○ Serious eye damage or irritant substance

Lithium chloride : moderately irritating to rabbit eyes
1-methyl-2-pyrrolidinone : Category 2 (eye irritation) GHS classification basis, Rabbit, completely reversible within 14 days , OECD TG 405 EU CLP Harmonized classification:

Category 2

○ Respiratory Sensitization: No data available

○ Skin sensitizing substances

1-methyl-2-pyrrolidinone : Not classified according to GHS criteria (no sensitization), Mouse, GLP, female, OECD TG 429

○ Carcinogenic substances

Occupational Safety and Health Act : No data available

Ministry of Employment and Labor Notification : No data available

IARC : No data available

OSHA : No data available

ACGIH : No data available

NTP : No data available

EU CLP : No data available

○ Germ cell mutagenic substance

Lithium chloride (LITHIUM CHLORIDE) : negative for in vitro Bacillus subtilis recombination assay, positive for cytogenetic assay

1-Methyl-2-pyrrolidinone : in vitro-Reverse mutation test using bacteria: negative (TA98, TA1535, TA100, TA1537, regardless of metabolic activity system), OECD TG 471

○ Reproductive toxicity

Lithium Chloride (LITHIUM CHLORIDE) : No difference from rats being treated with 20 mmol exposure for 6 weeks, no effect on reproductive toxicity, changes in maternal behavior when exposed to 2.8-3.7nEq/kg rats for 10-28 days Decreased stiffness, slow recovery and lack of nursing care, becoming careless

1-Methyl-2-pyrrolidinone : In a second generation reproductive toxicity study, NMP did not adversely affect the fertility or fertility of the F0 or F1 maternal animals in all dose groups. There were signs of systemic toxicity in the high-dose groups of 500 mg/kg bw/day and 350 mg/kg bw/day, respectively. Parental toxicity is a component of body weight and weight. Developmental toxicity was observed in pups exposed to 500-350 mg/kg bw/day, with increased mortality and body weight gain, including organs ., OECD TG 416, GLP Maternal toxicity NOAEC = 116 ppm (equivalent to 478 mg/m3). The 116 ppm irradiated on the basis of the reduced litter weight was not NOAEC for fetal toxicity, but this concentration should be considered as LOAEC for developmental toxicity, rat, equivalent or similar to Guideline: OECD TG 414, GLP EU CLP Harmonized Category: Category 1

○ Specific target organ toxicity (single exposure)

1-methyl-2-pyrrolidinone : EU CLP harmonized classification: Category 3

○ Specific target organ toxicity (repeated exposure)

Lithium Chloride (LITHIUM CHLORIDE) : Hormones and glands sluggish after 0.4% dietary exposure of male rats for 15-20 days. Epithelial cells shrink in size and change shape

1-methyl-2-pyrrolidinone : oral (subchronic): NOAEL=3000 ppm (about 169 mg/kg bw/day(M), 217 mg/kg bw/day(F)), for systemic toxicity related to compounds No specific target organs have been identified for , Rat, OECD TG 408, GLP Transdermal (short base coat): As a result of transdermal exposure through rabbits, NOAEL for local irritation was <based on minor local skin irritation at all dose levels tested. Set to 413 mg/kg bw/day (corresponding to 0.4 mL/kg bw/day) , Rabbit, OECD TG 410 Inhalation (subchronic): High concentration (3 mg) after inhalation exposure for 6 hours per day for 3 months /ℓ) Exposure indicates upper respiratory irritation, nonspecific systemic toxicity, clinical signs of minor liver damage, and cell depletion of the testicular genital epithelium in some male animals. During the four-week recovery period, symptoms of general toxicity hardly disappeared, but testicular damage was still present at a similar level. NOAEC for systemic toxicity was judged to be 1.0 mg/ℓ, NOAEC for local effects on upper respiratory tract was judged to be 0.5 mg/ℓ, Rat, OECD TG 413, GLP

○ Aspiration hazard : No data availalbe

○ Other hazardous substances: No data available

12. ECOLOGICAL INFORMATION

·Ecotoxicity

Fish : Lithium chloride : LC50 315 ㎎/ℓ 96 hr Fundulus heteroclitus

1-methyl-2-pyrrolidinone : NOEC 500 ㎎/ℓ 96 hr Oncorhynchus mykiss

(Exponential?fish?toxicity?test?according?to?BBA-bulletin?No.?33, static, freshwater)

Crustacean: Lithium chloride : EC50 1.2 ㎎/ℓ 64 hr Daphnia magna

1-methyl-2-pyrrolidinone : EC0> 1000 mg/ℓ 24 hr Daphnia magna

(German Industrial Standard DIN 38 412 Part 11, static, freshwater)

Algae: 1-methyl-2-pyrrolidinone : EC10 92.6 mg/ℓ 72 hr Desmodesmus subspicatus

(German Industrial Standard DIN 38412 Part 9, static, fresh water)

·Persistence and degradability

Persistence

Lithium chloride : log Kow -2.7

1-methyl-2-pyrrolidinone : log Kow -0.46 (log Pow, 25℃)

Degradability: No data available

·Bioaccumulation

Concentration: 1-methyl-2-pyrrolidinone : 01 3 BCF

Degradability: 1-methyl-2-pyrrolidinone : about 92 01 120 day (DOC removal)

·Mobility in soil: No data available

·Other adverse effects: No data available

* According to the product composition, this product does not contain heavy metals or Halogen compounds.

13. DISPOSAL CONSIDERATION

·Disposal method : If specified in the Waste Management Act, dispose of the contents and container according to the regulations.

·Disposal precautions : Dispose of the contents container (according to the contents specified in the relevant laws and regulations).

14. TRANSPORT INFORMATION

·UN number: No data available

·UN proper shipping name : No data available

·Transport hazard class : No data available

·Packing group (if applicable) : No data available

·Marine pollutant (applicable/not available) : No data available

·Special safety measures that the user needs or needs to know about the transport or means of transport

Emergency measures in case of fire: F-E

Emergency measures in case of spill: S-E

15. LEGAL REGULATION

·Regulations under the Occupational Safety and Health Act : No data available

·Regulation by Chemical Substance Management Act:

1-methyl-2-pyrrolidinone: Toxic substance

·Regulations under the Dangerous Goods Safety Management Act: 4 - 3 Oil class

·Regulation by Waste Management Act: Designated waste.

·Regulations by other domestic and foreign laws

Domestic regulation

Other domestic regulations: Not available

Overseas regulation

US management information (OSHA regulation): Not available

US management information (CERCLA regulations) : Not available

US management information (EPCRA 302 regulation): Not available

US management information (EPCRA 304 regulation): Not available

US management information (EPCRA 313 regulation) :

1-methyl-2-pyrrolidinone : Applicable

US management information (Rotterdam Convention Substance): Not available

US management information (Stockholm Convention substance): Not available

US management information (Montreal Protocol): Not available

EU classification information (confirmed classification result)

1-methyl-2-pyrrolidinone : Repr. 1B, STOT SE 3, Skin Irrit. 2, Eye Irrit. 2

EU classification information (danger phrases)

1-methyl-2-pyrrolidinone : H360D, H335, H315, H319

EU classification information (safety statements)

1-methyl-2-pyrrolidinone : S:53-45

16. REFERENCE MATERIALS

·Material source : product handbook issued by manufacturing company

MSDS from korea occupational safety & health agency

·The framing date : 2019.01.28

·The final revision date : 2021.05.24