

Material Safety Data Sheet

according to MOEL Public notice 2020-130
MSDS Number: No data available

1. Chemical product and company identification

1.1. Product identifier

Product form : Mixture
Trade name : ABCD

1.2. Recommended uses and restrictions

1.2.1. Recommended use

Other.

1.2.2. Restrictions on use

No data available

1.2.3. Use Categories

48 - Others

1.3. Supplier information

Supplier name: Total Energy Solution Co., Ltd.
Address: 6, Jije-ro, Pyeongtaek-si, Gyeonggi-do (Jije-dong), Republic of Korea
Name of representative: Sunho Cho, Changho Byun
Contact person: Yoosung Yoon
Contact number: +82-31-653-0949

2. Hazards identification

2.1. Classification of the substance or mixture

Serious eye damage/eye irritation, Category 1 H318

2.2. Label elements

2.2.1. Hazard pictograms (GHS KR)



2.2.2. Signal word (GHS KR)

Danger.

2.2.3. Hazard statements (GHS KR)

H318 - Causes serious eye damage.

2.2.4. Precautionary statements (GHS KR)

Precaution:

P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

Treatment:

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 - Immediately call a POISON CENTER/doctor/....

Storage:

Not applicable

Disposal:

Not applicable

Material Safety Data Sheet

according to MOEL Public notice 2020-130

2.3. Hazards - Other hazards which do not result in classification - Hazard Risk

Not applicable

3. Composition/information on ingredients

Product form : Mixture

Substance name	Other Names	Product identifier number	Concentration (%)
Urea	-	CAS-No.: 57-13-6 KECI-No.: KE-35144	10
Calcium Chloride	-	CAS-No.: 10043-52-4 KECI-No.: KE-04496	20
Calcium carbonate	-	CAS-No.: 471-34-1 KECI-No.: KE-04487	15
Vanadium monocarbide	-	CAS-No.: 12070-10-9 KECI-No.: KE-35282	25
Sodium chloride	-	CAS-No.: 7647-14-5 KECI-No.: KE-31387	10

4. First-aid measures

4.1. First-aid measures after eye contact

Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Call a physician immediately.

4.2. First-aid measures after skin contact

Wash skin with plenty of water.

4.3. First-aid measures after inhalation

Remove person to fresh air and keep comfortable for breathing.

4.4. First-aid measures after ingestion

Call a poison center or a doctor if you feel unwell.

4.5. Other medical advice or treatment

Treat symptomatically.

5. Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray.
Dry powder.
Foam.
Carbon dioxide.

Unsuitable extinguishing media : Do not use a heavy water stream.

Material Safety Data Sheet

according to MOEL Public notice 2020-130

5.2. Special hazards arising from the substance or mixture

- Fire hazard : No fire hazard.
- Explosion hazard : No direct explosion hazard.

5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Fight fire from safe distance and protected location.
Do not enter fire area without proper protective equipment, including respiratory protection.
- Protection during firefighting : Do not attempt to take action without suitable protective equipment.
Self-contained breathing apparatus.
Complete protective clothing.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- Wear recommended personal protective equipment.
- Ventilate spillage area.
- Avoid contact with skin and eyes.
- Do not attempt to take action without suitable protective equipment.
- For further information refer to section 8: "Exposure controls/personal protection".
- Evacuate unnecessary personnel.
- Stop leak if safe to do so.
- Dispose of materials or solid residues at an authorized site.

6.2. Environmental precautions and protective procedures

- Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- Absorb spilled material with sand or earth.
- Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
- Stop leak without risks if possible.
- Take up liquid spill into absorbent material.

7. Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station.
Avoid contact with skin and eyes.
Wear personal protective equipment.
- Hygiene measures : Do not eat, drink or smoke when using this product.
Always wash hands after handling the product.
- Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.

7.2. Conditions for safe storage

- Technical measures : Keep in a cool, well-ventilated place away from heat.
- Storage conditions : Keep cool. Protect from sunlight.
- Packaging materials : Store always product in container of same material as original container.

8. Exposure controls/personal protection

8.1. Occupational Exposure Limits

No data available

Material Safety Data Sheet

according to MOEL Public notice 2020-130

Urea (57-13-6)

No data available

Calcium Chloride (10043-52-4)

No data available

Calcium carbonate (471-34-1)

Korea - Occupational Exposure Limits

Local name	탄산 칼슘 # Calcium carbonate
ISHA OEL TWA	10 mg/m ³
Regulatory reference	고용노동부 고시 제 2020-48호 # MOEL Public Notice. No. 2020-48

Vanadium monocarbide (12070-10-9)

No data available

Sodium chloride (7647-14-5)

No data available

8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station.
Environmental exposure controls	: Avoid release to the environment.

8.3. Personal protection

Personal protective equipment

Wear recommended personal protective equipment.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment

Eye protection

Safety glasses

Hand protection

Protective gloves

Skin and body protection

Wear suitable protective clothing

Personal protective equipment symbol(s):



9. Physical and chemical properties

a) Appearance	: No data available
Physical state	: Liquid
b) Odour	: No data available
c) Odour threshold	: No data available
d) pH	: No data available
e) Melting / freezing point	: Not applicable / No data available
f) Initial boiling point and boiling range	: No data available
g) Flash point	: No data available
h) Evaporation rate	: No data available
i) Flammability (solid, gas)	: No data available

Material Safety Data Sheet

according to MOEL Public notice 2020-130

j) Upper / lower flammability or explosive limits	: No data available
k) Vapour pressure	: No data available
l) Solubility	: No data available
m) Vapour density	: No data available
n) Relative density	: No data available
o) Partition coefficient n-octanol/water (Log Kow)	: No data available
p) Auto-ignition temperature	: No data available
q) Decomposition temperature	: No data available
r) Viscosity, kinematic	: <
Viscosity, dynamic	: No data available
s) Molecular mass	: No data available

Urea (57-13-6)

Vapour pressure	0.000012 mm Hg at 25 °C Source: National Library of Medicine/Hazardous Substances Data Bank
-----------------	---

Calcium Chloride (10043-52-4)

Boiling point	1670 °C Source: HSDB
---------------	----------------------

Vanadium monocarbide (12070-10-9)

Boiling point	3900 °C
---------------	---------

Sodium chloride (7647-14-5)

Boiling point	1465 °C Source: HSDB
Vapour pressure	1 mm Hg at 1589 °F Source: CAMEO

10. Stability and reactivity

10.1. Chemical stability and Possibility of hazardous reactions

The product is non-reactive under normal conditions of use, storage and transport.
Stable under normal conditions.
No dangerous reactions known under normal conditions of use.

10.2. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.3. Incompatible materials

No data available

10.4. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

11.1. Information on exposure routes

Oral	: Not classified (Not applicable)
Skin and eyes contact	: Acute toxicity (dermal) - Not classified (Not applicable)
	Skin corrosion/irritation - Not classified (Not applicable)
	Serious eye damage/eye irritation - Causes serious eye damage.
	Skin sensitization - Not classified (Not applicable)
Inhalation	: Not classified (Not applicable)

Material Safety Data Sheet

according to MOEL Public notice 2020-130

11.2. Health hazards

Acute toxicity (oral):

Not classified (Not applicable)

Acute toxicity (dermal):

Not classified (Not applicable)

Acute toxicity (inhalation):

Not classified (Not applicable)

Urea (57-13-6)

LD50 oral rat	8470 mg/kg Source: GESTIS
---------------	---------------------------

Calcium Chloride (10043-52-4)

LD50 oral	1000 mg/kg bodyweight Animal: rabbit, Animal sex: male, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
-----------	---

LD50 dermal rabbit	> 5000 mg/kg Source: SIDS
--------------------	---------------------------

Calcium carbonate (471-34-1)

LD50 oral rat	6450 mg/kg Source: International Uniform Chemical Information Database
---------------	--

LD50 dermal rat	> 2000 mg/kg Source: ECHA
-----------------	---------------------------

LC50 Inhalation - Rat	> 3 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation)), Guideline: EPA OPPTS 870.1300 (Acute inhalation toxicity)
-----------------------	--

LC50 Inhalation - Rat (Dust/Mist)	> 3 mg/l Source: ECHA
-----------------------------------	-----------------------

Vanadium monocarbide (12070-10-9)

LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method)
---------------	---

LC50 Inhalation - Rat	> 5.05 mg/l air Animal: rat, Guideline: OECD Guideline 436 (Acute Inhalation Toxicity: Acute Toxic Class Method), Guideline: other:
-----------------------	---

Sodium chloride (7647-14-5)

LD50 oral rat	3000 mg/kg Source: ChemIDplus
---------------	-------------------------------

LD50 dermal rabbit	> 10000 mg/kg Source: ChemIDplus
--------------------	----------------------------------

LC50 Inhalation - Rat (Dust/Mist)	> 10.5 mg/l Source: Corporate Solution From Thomson Micromedex
-----------------------------------	--

Skin corrosion/irritation:

Not classified (Not applicable)

Serious eye damage/irritation:

Causes serious eye damage.

Additional information	:
------------------------	---

Respiratory sensitization:

Not classified (Not applicable)

Skin sensitization:

Not classified (Not applicable)

Material Safety Data Sheet

according to MOEL Public notice 2020-130

Carcinogenicity:

Not classified (Not applicable)

Mutagenicity:

Not classified (Not applicable)

Reproductive toxicity:

Not classified (Not applicable)

STOT-single exposure:

Not classified (Not applicable)

STOT-repeated exposure:

Not classified (Not applicable)

Calcium carbonate (471-34-1)	
NOAEL (oral, rat, 90 days)	1000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	≥ 0.212 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Vanadium monocarbide (12070-10-9)	
NOAEL (oral, rat, 90 days)	≥ 1000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)

Aspiration hazard:

Not classified (Not applicable)

Viscosity, kinematic	<
----------------------	---

Urea (57-13-6)	
Viscosity, dynamic	1.78 cP Source: OECD Screening Information Data Set

Calcium Chloride (10043-52-4)	
Density	2.15 g/cm ³ Type: 'density' Temp.: 25 °C

12. Ecological information

12.1. Ecotoxicity

Ecology - general	: The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Hazardous to the aquatic environment, short-term (acute)	: Not classified (Not applicable)
Hazardous to the aquatic environment, long-term (chronic)	: Not classified (Not applicable)

Urea (57-13-6)	
LC50 - Fish [1]	22500 mg/l Source: OECD Screening Information Data Set
EC50 96h - Algae [1]	42184 mg/l Source: Ecological Structure Activity Relationships
EC50 72h - Algae [1]	24541.9 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)
Partition coefficient n-octanol/water (Log Pow)	-2.11 Source: HSDB

Material Safety Data Sheet

according to MOEL Public notice 2020-130

Calcium Chloride (10043-52-4)	
LC50 - Fish [1]	4630 mg/l Source: SIDS
EC50 - Crustacea [1]	2400 mg/l Source: SIDS
EC50 72h - Algae [1]	2900 mg/l Source: SIDS
LOEC (chronic)	240 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	481 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	230 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri) Duration: '25 d'
Partition coefficient n-octanol/water (Log Pow)	0.05 Source: QSAR

Calcium carbonate (471-34-1)	
LC50 - Fish [1]	> 56000 mg/l Source: ECOTOX
EC50 96h - Algae [1]	22000 mg/l Source: Ecological Structure Activity Relationships
EC50 72h - Algae [1]	> 14 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

Sodium chloride (7647-14-5)	
LC50 - Fish [1]	5840 mg/l Test organisms (species): Lepomis macrochirus
LOEC (chronic)	441 mg/l Test organisms (species): Daphnia pulex Duration: '21 d'
NOEC (chronic)	314 mg/l Test organisms (species): Daphnia pulex Duration: '21 d'

12.2. Persistence and degradability

Persistence and degradability	Not rapidly degradable
-------------------------------	------------------------

Urea (57-13-6)	
Persistence and degradability	Not rapidly degradable

Calcium Chloride (10043-52-4)	
Persistence and degradability	Not rapidly degradable

Calcium carbonate (471-34-1)	
Persistence and degradability	Not rapidly degradable

Vanadium monocarbide (12070-10-9)	
Persistence and degradability	Not rapidly degradable

Sodium chloride (7647-14-5)	
Persistence and degradability	Not rapidly degradable

Material Safety Data Sheet

according to MOEL Public notice 2020-130

12.3. Bioaccumulative potential

Urea (57-13-6)

Partition coefficient n-octanol/water (Log Pow) : -2.11 Source: HSDB

Calcium Chloride (10043-52-4)

Partition coefficient n-octanol/water (Log Pow) : 0.05 Source: QSAR

12.4. Mobility in soil

Urea (57-13-6)

Partition coefficient n-octanol/water (Log Pow) : -2.11 Source: HSDB

Calcium Chloride (10043-52-4)

Partition coefficient n-octanol/water (Log Pow) : 0.05 Source: QSAR

Calcium carbonate (471-34-1)

Mobility in soil : 4.971 Source: Quantitative Structure Activity Relation

12.5. Other adverse effects

Ozone : Not classified (Not applicable)
Other adverse effects : No data available

13. Disposal considerations

13.1. Disposal method

Regional waste regulation : Disposal must be done according to official regulations.
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

13.2. Disposal precaution

Product/Packaging disposal recommendations : Disposal must be done according to official regulations.
Sewage disposal recommendations : Disposal must be done according to official regulations.
Additional information : Do not re-use empty containers.

14. Transport information

In accordance with UN RTDG / ADR / IMDG / IATA

UN RTDG	ADR	IMDG	IATA
14.1. UN number			
Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name			
Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)			
Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group			
Not regulated	Not regulated	Not regulated	Not regulated

Material Safety Data Sheet

according to MOEL Public notice 2020-130

UN RTDG	ADR	IMDG	IATA
14.5. Marine pollutant			
Not regulated	Not regulated	Not regulated	Not regulated
No data available			

14.6. Special precautions for user

No data available

15. Regulatory information

15.1. Occupational Safety and Health Act

Hazardous Substances Prohibited for Manufacturing	Not applicable	
Hazardous Substances Requiring Permission	Not applicable	
Threshold Limit Values Chemicals	Applicable	471-34-1: Calcium carbonate
Hazardous Substances Below Permissible Level	Not applicable	
Hazardous Substances Subject to Working Environment Measurement	Not applicable	
Hazardous Substances Subject to Workers Requiring Health Examination	Not applicable	
Hazardous Substances Subject to Control	Not applicable	
Substance Subject to Submission of PSM	Not applicable	

15.2. Chemicals Control Act

Toxic Substances	Not applicable
Prohibited Substances	Not applicable
Restricted Substances	Not applicable
Substances Requiring Preparation for Accident	Not applicable

15.3. Safety Control of Dangerous Substances Act

Safety Control of Dangerous Substances Act	Not applicable
--	----------------

15.4. Wastes Control Act

Hazardous Substances in Designated wastes	Not applicable
Types of wastes	No data available

15.5. Other Domestic and International Regulatory Information

Act on Registration and Evaluation of Chemicals (K-REACH)

Korea Existing Chemicals Inventory (KECI)	Applicable	57-13-6: Urea (KECI-No. : KE-35144) 10043-52-4: Calcium Chloride (KECI-No. : KE-04496) 471-34-1: Calcium carbonate (KECI-No. : KE-04487) 12070-10-9: Vanadium monocarbide (KECI-No. : KE-35282) 7647-14-5: Sodium chloride (KECI-No. : KE-31387)
Priority Existing Chemicals (PEC)	Not applicable	
Substances Subject to Intensive Control	Not applicable	
CMR Substances	Not applicable	

Other Domestic Regulations

Persistent Organic Pollutants(POPs) Control Act	Not applicable
Ozone Depleting Substances(ODS)	Not applicable
PRTR Substances	Not applicable

EU Regulatory Information

EU Candidate list (SVHC)	Contains no substance on the REACH candidate list
EU authorization list (REACH Annex XIV)	Contains no REACH Annex XIV substances
EU restriction list (REACH Annex XVII)	Not applicable

Material Safety Data Sheet

according to MOEL Public notice 2020-130

US Regulatory Information

CERCLA Section 103 (40CFR302.4)	Not applicable
EPCRA Section 302 (40CFR355.30)	Not applicable
EPCRA Section 304 (40CFR355.40)	Not applicable
EPCRA Section 313 (40CFR372.65)	Not applicable

16. Other information

16.1. Data sources

ECHA (European Chemicals Agency), This safety data sheet was compiled with data and information from the following sources : RTECS, ECOSAR, HSDB, SIDS SIAP, ChemWATCH, CESAR, Chemical DB, This MSDS is prepared based on Article 41 of the Occupational Safety and Health Act and Notice No.2016-19 of the Ministry of Employment and Labor (based on the availability of material safety and health data), taking into account the status of regulations related to Korea, This MSDS is prepared based on KOSHA, NITE, ESIS, NLM, SIDS, IPCS, NCIS, etc, REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006, Supplier's safety documents, Classification according to Classification, Labelling and Packaging of Substances and Mixtures (SEA) Regulation published in the Official Journal numbered 28848 on December 11, 2013.

16.2. Issue date

24.06.19

16.3. Revision number and date

Version	: No data available
Revision date	: No data available

16.4. Other information

No data available

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.