EF-200K

Material Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130
MSDS Number: AA06900-0000000504
Issue date: 11/3/2020 Revision date: 11/23/2021 Version: 4.1

1. Chemical product and company identification

1.1. Product identifier

Product form : Mixture
Trade name : EF-200K

1.2. Recommended uses and restrictions

Use Categories

35 - Welding and soldering products, flux products

1.2.1. Recommended use

Welding and soldering products, flux products.

1.2.2. Restrictions on use

1.3. Supplier information

- Supplier

Company : KISWEL
Address : (51544) South Korea 704, Gongdan-ro, Seongsan-gu, Changwon-si, Gyeongnam, Korea
Tel. : 055)269-7200
Fax : 055)266-4487

2. Hazards identification

2.1. Classification of the substance or mixture

Acute toxicity (oral), Category 5	H303
Acute toxicity (inhalation:dust,mist), Category 4	H332
Skin corrosion/irritation, Category 1	H314
Serious eye damage/eye irritation, Category 1	H318
Respiratory sensitisation, Category 1	H334
Skin sensitisation, Category 1	H317
Specific target organ toxicity - Single exposure, Category 2	H371
Specific target organ toxicity - Repeated exposure, Category 2	H373
Hazardous to the aquatic environment – Acute Hazard, Category 1	H400
Hazardous to the aquatic environment – Chronic Hazard, Category 3	H412

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)

H303 - May be harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H332 - Harmful if inhaled.
H334 - May cause allergic reactions, asthma or shortness of breath and etc if inhaled.
H371 - May cause damage to organs.
H373 - May cause damage to organs through prolonged or repeated exposure.
H400 - Very toxic to aquatic life.
H412 - Harmful to aquatic life with long lasting effects.

2.2.4. Precautionary statements (GHS KR)

Precaution:

P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
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 protection/hearing protection.
P284 - Wear respiratory protection.

Treatment:

P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352 - IF ON SKIN: Wash with plenty of water/….
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with 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. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P311 - IF exposed or concerned: Call a POISON CENTER/doctor/….
P310 - Immediately call a POISON CENTER/doctor/….
P312 - Call a POISON CENTER/doctor/… if you feel unwell.
P314 - Get medical advice/attention if you feel unwell.
P321 - Take … treatment.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor/….
P362+P364 - Take off contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P391 - Collect spillage.

Storage:

P405 - Store locked up.

Disposal:

P501 - Dispose of contents/container according to waste related regulations.

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 (%)
	Calcined magnesite / Magnesium oxide / MAGNESIUM OXIDE / Magnesia	CAS-No.: 1309-48-4 KECI-No.: KE-22728	25 – 32

Substance name	Other Names	Product identifier number	Concentration (%)
	Aluminum oxide / .alpha.-Alumina / Alumina / Aluminium oxide / Aluminium oxide (Al2O3) / .alpha.-Aluminum oxide / Alundum / ALUMINA / Dialuminium trioxide / Dialuminum trioxide	CAS-No.: 1344-28-1 KECI-No.: KE-01012	16 – 25
Silicon dioxide	Quartz (SiO2) / Silica, crystalline, quartz / Crystalline silica, quartz / .alpha.-Quartz / QUARTZ / Silica, crystalline, .alpha.-quartz / Crystalline silica in the form of quartz / Quartz, silica / Quartz (respirable fraction) / Silica dust / Silica, crystalline-.alpha.quartz / Silica, quartz / Silica, .alpha.-quartz / Silicon dioxide / Silica, crystalline / Quartz (crystalline silica) / Silica dust, crystalline / QUARTZ POWDER / Silica, crystalline (quartz)	CAS-No.: 14808-60-7 KECI-No.: KE-29983	15 – 19
CaF2	Calcium fluoride / Fluorspar / FLUORSPAR / CALCIUM FLUORIDE / Calcium difluoride / calcium fluoride	CAS-No.: 7789-75-5 KECI-No.: KE-04538	5 – 15
	Lime / Quicklime / CALCIUM OXIDE / Quicklime (CaO) / Calcium oxide (CaO) / Lime (calcium oxide)	CAS-No.: 1305-78-8 KECI-No.: KE-04588	6 – 12
Iron	Iron, elemental / Direct reduced Iron / Iron, reduced / Elemental iron / IRON POWDER / iron	CAS-No.: 7439-89-6 KECI-No.: KE-21059	≤ 10
Manganese	Manganese, elemental / Manganese metal / manganese	CAS-No.: 7439-96-5 KECI-No.: KE-22999	≤ 10
Titanium Dioxide	C.I. 77891 / C.I. Pigment White 6 / Titanium oxide (TiO2) / CI 77891 / Titanium(IV) oxide / C.I. Pigment White 7 / Pigment White 6 / Titanium dioxide nanoparticles / TITANIUM DIOXIDE / Titanium oxide / Titanium dioxide(2)	CAS-No.: 13463-67-7 KECI-No.: KE-33900	≤ 5
	C.I. Pigment White 18 / Calcium carbonate / Pigment White 18 / C.I. 77220 / Carbonic acid, calcium salt / CALCIUM CARBONATE / CI 77220 / calcium carbonate	CAS-No.: 471-34-1 KECI-No.: KE-04487	≤ 5
Silicon Metal	Silicon powder / Silicon powder, amorphous / Ammonium hexafluorosilicate / SILICON / silicon	CAS-No.: 7440-21-3 KECI-No.: KE-31029	0.5 – 2

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

Rinse skin with water/shower.
Take off immediately all contaminated clothing.
Call a physician immediately.

4.3. First-aid measures after inhalation

Remove person to fresh air and keep comfortable for breathing.
Call a poison center or a doctor if you feel unwell.

4.4. First-aid measures after ingestion

Rinse mouth.
Do not induce vomiting.
Call a physician immediately.

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.
Unsuitable extinguishing media	:	No data available

5.2. Special hazards arising from the substance or mixture

No data available

5.3. Special protective equipment and precautions for fire-fighters

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

Ventilate spillage area.
Do not breathe dust/fume/gas/mist/vapours/spray.
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".
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

Collect spillage.
Mechanically recover the product.

7. Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well-ventilated area. Avoid contact with skin and eyes. Wear personal protective equipment.

Hygiene measures : Wash contaminated clothing before reuse.
Contaminated work clothing should not be allowed out of the workplace.
Do not eat, drink or smoke when using this product.
Always wash hands after handling the product.

7.2. Conditions for safe storage

Storage conditions : Store locked up.
Store in a well-ventilated place.
Keep cool.

8. Exposure controls/personal protection

8.1. Occupational Exposure Limits

EF-200K	
No data available	
CaF2 (7789-75-5)	
China - Occupational Exposure Limits	
OEL PC-TWA	0.7 mg/m³ (mixed dust, respirable) 1 mg/m³ (mixed dust, total)No data available
Catalogue of Occupational Hazard Factors	Category 1 - DustsNo data available
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	2.5 mg/m³No data available
Silicon dioxide (14808-60-7)	
Korea - Occupational Exposure Limits	
Local name	산화규소(결정체 석영) # Silica (Crystalline quartz)No data available
ISHA OEL TWA	0.05 mg/m³ 호흡성 # (Respirable fraction)No data available
Remark (KR)	발암성 1A # Carcinogenicity 1ANo data available
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
OEL PC-TWA	0.7 mg/m³ (containing 50-80% free SiO2-total dust) 0.3 mg/m³ (containing 50-80% free SiO2-respirable dust) 1 mg/m³ (containing 10-50% free SiO2-total dust) 0.7 mg/m³ (containing 10-50% free SiO2-respirable dust) 0.5 mg/m³ (containing >80% free SiO2-total dust) 0.2 mg/m³ (containing >80% free SiO2-respirable dust)No data available
Chemical category	Carcinogenic to humans crystalline silicaNo data available
Catalogue of Occupational Hazard Factors	Category 1 - DustsNo data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	0.025 mg/m³ (respirable particulate)No data available
Chemical category	A2 - suspected human carcinogenNo data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	0.1 mg/m³ (respirable dust)No data available
Thailand - Occupational Exposure Limits	
OEL TWA	0.025 mg/m³ (respirable dust)No data available

Silicon dioxide (14808-60-7)	
Australia - Occupational Exposure Limits	
OES TWA [1]	0.05 mg/m³ (respirable dust)No data available
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	0.025 mg/m³ (respirable particulate matter)No data available
ACGIH chemical category	Suspected Human CarcinogenNo data available
USA - IDLH - Occupational Exposure Limits	
IDLH	50 mg/m³ (respirable dust)No data available
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	0.05 mg/m³ (respirable dust)No data available
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	50 µg/m³ (Respirable crystalline silica)No data available

Titanium Dioxide (13463-67-7)	
Korea - Occupational Exposure Limits	
Local name	이산화티타늄 # Titanium dioxideNo data available
ISHA OEL TWA	10 mg/m³No data available
Remark (KR)	발암성 2 # Carcinogenicity 2No data available
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
OEL PC-TWA	8 mg/m³ (total dust)No data available
Chemical category	Possibly carcinogenic to humans dustNo data available
Catalogue of Occupational Hazard Factors	Category 1 - DustsNo data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	10 mg/m³No data available
Chemical category	A4 - not classifiable as a human carcinogenNo data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	10 mg/m³No data available
Taiwan - Occupational Exposure Limits	
OEL TWA	10 mg/m³No data available
OEL STEL	15 mg/m³No data available
Vietnam - Occupational Exposure Limits	
OEL TWA	6 mg/m³ (inhalable dust) 5 mg/m³ (respirable dust)No data available
OEL STEL	10 mg/m³ (inhalable dust)No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	10 mg/m³ (containing no asbestos and <1% crystalline silica-inhalable dust)No data available
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	10 mg/m³No data available
ACGIH chemical category	Not Classifiable as a Human CarcinogenNo data available

Titanium Dioxide (13463-67-7)	
USA - IDLH - Occupational Exposure Limits	
IDLH	5000 mg/m³No data available
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	2.4 mg/m³ (CIB 63-fine) 0.3 mg/m³ (CIB 63-ultrafine, including engineered nanoscale)No data available
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	15 mg/m³ (total dust)No data available

(1305-78-8)	
Korea - Occupational Exposure Limits	
Local name	산화칼슘 # Calcium oxideNo data available
ISHA OEL TWA	2 mg/m³No data available
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
OEL PC-TWA	2 mg/m³No data available
Catalogue of Occupational Hazard Factors	Category 3 - ChemicalsNo data available
India - Occupational Exposure Limits	
PEL (OEL TWA)	2 mg/m³No data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	2 mg/m³No data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	2 mg/m³No data available
Taiwan - Occupational Exposure Limits	
OEL TWA	5 mg/m³No data available
OEL STEL	10 mg/m³No data available
Thailand - Occupational Exposure Limits	
OEL TWA	5 mg/m³No data available
Vietnam - Occupational Exposure Limits	
OEL TWA	2 mg/m³No data available
OEL STEL	4 mg/m³No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	2 mg/m³No data available
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	2 mg/m³No data available
USA - IDLH - Occupational Exposure Limits	
IDLH	25 mg/m³No data available
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	2 mg/m³No data available
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	5 mg/m³No data available

(471-34-1)	
Korea - Occupational Exposure Limits	
Local name	탄산칼슘 # Calcium carbonateNo data available
ISHA OEL TWA	10 mg/m³No data available
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
Catalogue of Occupational Hazard Factors	Category 3 - ChemicalsNo data available
Vietnam - Occupational Exposure Limits	
OEL TWA	10 mg/m³No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	10 mg/m³ (containing no asbestos and <1% crystalline silica-inhalable dust)No data available
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)No data available

(1309-48-4)	
Korea - Occupational Exposure Limits	
Local name	산화마그네슘 # Magnesium oxideNo data available
ISHA OEL TWA	10 mg/m³No data available
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
OEL PC-TWA	10 mg/m³ (fume)No data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	10 mg/m³ (inhalable particulate)No data available
Chemical category	A4 - not classifiable as a human carcinogenNo data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	10 mg/m³ (fume)No data available
Taiwan - Occupational Exposure Limits	
OEL TWA	10 mg/m³ (fume)No data available
OEL STEL	15 mg/m³ (fume)No data available
Vietnam - Occupational Exposure Limits	
OEL TWA	5 mg/m³No data available
OEL STEL	10 mg/m³No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	10 mg/m³ (fume)No data available
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	10 mg/m³ (inhalable particulate matter)No data available
ACGIH chemical category	Not Classifiable as a Human CarcinogenNo data available
USA - IDLH - Occupational Exposure Limits	
IDLH	750 mg/m³ (fume)No data available

(1309-48-4)	
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	15 mg/m³ (fume, total particulate)No data available
Iron (7439-89-6)	
Korea - Occupational Exposure Limits	
Local name	철 염 (가 용 성) # Iron salts (Soluble, as Fe)No data available
ISHA OEL TWA	1 mg/m³No data available
Regulatory reference	고 용 노 동 부 고 시 제 2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
Catalogue of Occupational Hazard Factors	Category 1 - DustsNo data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	1 mg/m³No data available
Silicon Metal (7440-21-3)	
Korea - Occupational Exposure Limits	
Local name	실 리 콘 # SiliconNo data available
ISHA OEL TWA	10 mg/m³No data available
Regulatory reference	고 용 노 동 부 고 시 제 2020-48호 # MOEL Public Notice. No. 2020-48No data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	10 mg/m³ (not containing Asbestos and the crystal content is <1%)No data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	10 mg/m³No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	10 mg/m³ (containing no asbestos and <1% crystalline silica-inhalable dust)No data available
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)No data available
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)No data available
Manganese (7439-96-5)	
Korea - Occupational Exposure Limits	
Local name	망 간 및 무 기 화 합 물 # Manganese&Inorganic compounds, as MnNo data available
ISHA OEL TWA	1 mg/m³ 1 mg/m³ (흄) # (Fume)No data available
ISHA OEL STEL	3 mg/m³ (흄) # (Fume)No data available
ISHA PEL TWA	1 mg/m³No data available
Regulatory reference	고 용 노 동 부 고 시 제 2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
OEL PC-TWA	0.15 mg/m³No data available
OEL PC-TWA (Highly Toxic Goods)	0.15 mg/m³ (dust and fume)No data available

Manganese (7439-96-5)	
OEL PC-STEL (Highly Toxic Goods)	0.45 mg/m³ (dust and fume)No data available
Catalogue of Occupational Hazard Factors	Category 3 - ChemicalsNo data available
India - Occupational Exposure Limits	
PEL (OEL TWA)	1 mg/m³ (fume)No data available
PEL (OEL STEL)	0.03 mg/m³ (fume)No data available
PEL (OEL C)	5 mg/m³ (dust)No data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	0.1 mg/m³ (inhalable particulate) 0.02 mg/m³ (respirable particulate)No data available
Chemical category	A4 - not classifiable as a human carcinogenNo data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	1 mg/m³ (dust and fume)No data available
OEL STEL	3 mg/m³ (fume)No data available
Singapore - BTLV	
BTLV	50 µg/l Parameter: Manganese - Medium: urineNo data available
Taiwan - Occupational Exposure Limits	
OEL TWA	1 mg/m³ (category C3 special chemical-fume)No data available
OEL STEL	2 mg/m³ (category C3 special chemical-fume)No data available
OEL C	5 mg/m³ (category C3 special chemical)No data available
Vietnam - Occupational Exposure Limits	
OEL TWA	0.3 mg/m³No data available
OEL STEL	0.6 mg/m³No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	1 mg/m³ (dust and fume)No data available
OES STEL	3 mg/m³ (fume)No data available
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL TWA	0.02 mg/m³ (respirable particulate matter) 0.1 mg/m³ (inhalable particulate matter)No data available
ACGIH chemical category	Not Classifiable as a Human CarcinogenNo data available
USA - IDLH - Occupational Exposure Limits	
IDLH	500 mg/m³No data available
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	1 mg/m³ (fume)No data available
NIOSH REL STEL	3 mg/m³No data available
USA - OSHA - Occupational Exposure Limits	
OSHA PEL C	5 mg/m³ (fume)No data available

(1344-28-1)	
Korea - Occupational Exposure Limits	
Local name	알파-알루미나 (산화 알루미늄) # a-Alumina (Aluminum oxide)No data available

(1344-28-1)	
ISHA OEL TWA	10 mg/m³No data available
Regulatory reference	고용노동부고시 제2020-48호 # MOEL Public Notice. No. 2020-48No data available
China - Occupational Exposure Limits	
OEL PC-TWA	4 mg/m³ (total dust)No data available
Indonesia - Occupational Exposure Limits	
NAB (OEL TWA)	10 mg/m³No data available
Chemical category	A4 - not classifiable as a human carcinogenNo data available
Singapore - Occupational Exposure Limits	
PEL (OEL TWA)	10 mg/m³No data available
Thailand - Occupational Exposure Limits	
OEL TWA	15 mg/m³ (inhalable dust) 5 mg/m³ (respirable dust)No data available
Australia - Occupational Exposure Limits	
OES TWA [1]	10 mg/m³ (containing no asbestos and <1% crystalline silica-inhalable dust)No data available
USA - OSHA - Occupational Exposure Limits	
OSHA PEL TWA [1]	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)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

Respiratory protection:
[In case of inadequate ventilation] wear respiratory protection.

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	: Solid
b)	Odour	: No data available
c)	Odour threshold	: No data available
d)	pH	: No data available
e)	Melting / freezing point	: No data available / Not applicable
f)	Initial boiling point and boiling range	: No data available
g)	Flash point	: Not applicable
h)	Evaporation rate	: No data available
i)	Flammability (solid, gas)	: Non flammable.
j)	Upper / lower flammability or explosive limits	: Not applicable
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	: No data available
p)	Auto-ignition temperature	: Not applicable
q)	Decomposition temperature	: No data available
r)	Viscosity, kinematic	: Not applicable
	Viscosity, dynamic	: No data available
s)	Molecular mass	: No data available

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	: May be harmful if swallowed.
Skin and eyes contact	: Causes severe skin burns. Causes serious eye damage. May cause an allergic skin reaction.
Inhalation	: Inhalation:dust,mist: Harmful if inhaled. May cause allergic reactions, asthma or shortness of breath and etc if inhaled.

11.2. Health hazards

Acute toxicity (oral):

May be harmful if swallowed.

Acute toxicity (dermal):

Not classified

Acute toxicity (inhalation):

Inhalation:dust,mist: Harmful if inhaled.

EF-200K	
ATE KR (oral)	4474.381 mg/kg bodyweight
ATE KR (dust,mist)	5 mg/l/4h

CaF2 (7789-75-5)	
LD50 oral rat	4250 mg/kg
LC50 Inhalation - Rat	> 5.07 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)

Titanium Dioxide (13463-67-7)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 425 (Acute Oral Toxicity: Up-and-Down Procedure), Guideline: EPA OPPTS 870.1100 (Acute Oral Toxicity)
LC50 Inhalation - Rat	> 6.82 mg/l (Other, 4 h, Rat, Male, Experimental value, Inhalation (dust), 14 day(s))
LC50 Inhalation - Rat (Dust/Mist)	> 3.43 mg/l Source: ECHA

(1305-78-8)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 420 (Acute Oral Toxicity - Fixed Dose Method)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal))
LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit, Guideline: other:US Federal Register 38: 187, Part 1500, Section 41, 1973.
LC50 Inhalation - Rat	> 6.04 mg/l/4h

(471-34-1)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 420 (Acute Oral Toxicity - Fixed Dose Method), Guideline: EU Method B.1 bis (Acute Oral Toxicity - Fixed Dose Procedure)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal))
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)

(1309-48-4)	
LD50 oral rat	3990 mg/kg Source: HSDB
LD50 dermal rabbit	> 2000 mg/kg bodyweight (Rabbit, Literature study, Dermal)

Iron (7439-89-6)	
LD50 oral rat	98600 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LC50 Inhalation - Rat	> 250 mg/m³ air (6 h, Rat, Male, Experimental value, Inhalation (dust))

Silicon Metal (7440-21-3)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)

Silicon Metal (7440-21-3)	
LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit

Manganese (7439-96-5)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 420 (Acute Oral Toxicity - Fixed Dose Method), Guideline: EU Method B.1 bis (Acute Oral Toxicity - Fixed Dose Procedure)
LC50 Inhalation - Rat	> 5.14 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity), Guideline: EU Method B.2 (Acute Toxicity (Inhalation))
LC50 Inhalation - Rat (Dust/Mist)	> 5.14 mg/l Source: ECHA

(1344-28-1)	
LD50 oral rat	> 10000 mg/kg Source: ECHA
LC50 Inhalation - Rat (Dust/Mist)	> 2.3 mg/l Source: ECHA

Skin corrosion/irritation:

Causes severe skin burns.

Serious eye damage/irritation:

Causes serious eye damage.

Respiratory sensitization:

May cause allergic reactions, asthma or shortness of breath and etc if inhaled.

Skin sensitization:

May cause an allergic skin reaction.

Carcinogenicity:

Not classified

Silicon dioxide (14808-60-7)	
IARC group	1 - Carcinogenic to humans

Titanium Dioxide (13463-67-7)	
IARC group	2B - Possibly carcinogenic to humans

Mutagenicity:

Not classified

Reproductive toxicity:

Not classified

STOT-single exposure:

May cause damage to organs.

STOT-repeated exposure:

May cause damage to organs through prolonged or repeated exposure.

(1305-78-8)	
LOAEL (oral, rat, 90 days)	300 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
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)

(1305-78-8)	
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.413 mg/l air Animal: rat, Animal sex: male, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)

(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)

(1344-28-1)	
LOAEC (inhalation, rat,dust/mist/fume, 90 days)	0.015 mg/l air Animal: rat, Guideline: OECD Guideline 452 (Chronic Toxicity Studies)
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.07 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard:

Not classified

EF-200K	
Viscosity, kinematic	Not applicable

CaF2 (7789-75-5)	
Density	3.18 g/cm³ Type: 'density'
False	False

Silicon dioxide (14808-60-7)	
Density	2.635 – 2.66 g/cm³ (at 20 °C)
False	False

Titanium Dioxide (13463-67-7)	
Viscosity, kinematic (calculated value) (40 °C)	Not applicable (solid)
Density	3.9 – 4.1 g/cm³
Viscosity, kinematic	Not applicable (solid)
Viscosity, dynamic	Not applicable (solid)
False	False

(1305-78-8)	
Viscosity, kinematic (calculated value) (40 °C)	Not applicable (solid)
Density	3.3 g/cm³ Type: 'density' Temp.: 25 °C
Viscosity, kinematic	Not applicable (solid)
Viscosity, dynamic	760 mPa.s Temp.: '20°C' Parameter: 'dynamic viscosity (in mPa s)'
False	False

(471-34-1)	
Viscosity, kinematic (calculated value) (40 °C)	Not applicable (solid)
Density	2.7 – 2.9 g/cm³ (at 20 °C)
Viscosity, kinematic	Not applicable (solid)
Viscosity, dynamic	Not applicable (solid)
False	False

(1309-48-4)	
Density	3.58 g/cm³ (at 25 °C)
False	False

Iron (7439-89-6)	
Density	7.87 g/cm³ Type: 'density' Temp.: 20 °C
False	False

Silicon Metal (7440-21-3)	
Density	2.33 g/cm³ Type: 'density' Temp.: 25 °C
Viscosity, dynamic	Not applicable (solid)
False	False

Manganese (7439-96-5)	
Density	7200 kg/m³
False	False

(1344-28-1)	
Density	3.94 g/cm³ (at 20 °C)
False	False

12. Ecological information

12.1. Ecotoxicity

Ecology - general : Very toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

Hazardous to the aquatic environment, short–term (acute) : Very toxic to aquatic life.

Hazardous to the aquatic environment, long–term (chronic) : Harmful to aquatic life with long lasting effects.

CaF2 (7789-75-5)	
LC50 - Fish [1]	51 mg/l Test organisms (species): other:summary of finidngs in various species
LC50 - Fish [2]	165 mg/l Test organisms (species): other:summary of finidngs in various species
EC50 - Crustacea [1]	97 – 270 mg/l (48 h, Daphnia magna, Static system, Fresh water, Literature, Fluorine ion)
EC50 96h - Algae [1]	7444.076 mg/l Source: Ecological Structure Activity Relationships

CaF2 (7789-75-5)	
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
NOEC (chronic)	14.1 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	4 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri) Duration: '21 d'

Titanium Dioxide (13463-67-7)	
LC50 - Fish [1]	155 mg/l Test organisms (species): other:Japanese Medaka
EC50 - Crustacea [1]	19.3 mg/l Test organisms (species): Daphnia magna
EC50 - Crustacea [2]	27.8 mg/l Test organisms (species): Daphnia magna
EC50 - Other aquatic organisms [1]	> 100 mg/l Test organisms (species):
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	61 mg/l (EPA 600/9-78-018, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)
LOEC (chronic)	5 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	≥ 2.92 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

(1305-78-8)	
LC50 - Fish [1]	387 mg/l Test organisms (species): Poecilia reticulata
EC50 - Crustacea [1]	49.1 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Read-across, Locomotor effect)
EC50 96h - Algae [1]	1130.3 mg/l Test organisms (species): Navicula seminulum
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	184.57 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Read-across, GLP)
NOEC (chronic)	32 mg/l Test organisms (species): Crangon septemspinosa Duration: '14 d'
NOEC chronic fish	100 mg/l Test organisms (species): other:Tilapia nilotica Duration: '46 d'
BCF - Fish [1]	(no bioaccumulation)

(471-34-1)	
LC50 - Fish [1]	> 56000 mg/l Source: ECOTOX
EC50 - Crustacea [1]	> 100 % (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
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)
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)
BCF - Fish [1]	(no bioaccumulation)

Iron (7439-89-6)	
LC50 - Fish [1]	8.65 mg/l Source: ECHA
LC50 - Other aquatic organisms [1]	106.3 mg/l Source: ECHA
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
EC50 - Crustacea [2]	> 10000 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	18 mg/l Source: ECHA

Silicon Metal (7440-21-3)	
LC50 - Fish [1]	100 mg/l (Pisces)
EC50 72h - Algae [1]	250 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
ErC50 algae	250 mg/l (Equivalent or similar to OECD 201, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Weight of evidence)

Manganese (7439-96-5)	
LC50 - Fish [1]	> 3.6 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
EC50 - Crustacea [1]	> 1.6 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	4.5 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	2.8 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
NOEC (chronic)	1.7 mg/l Test organisms (species): Ceriodaphnia dubia Duration: '8 d'
BCF - Fish [1]	81 (Pisces)
BCF - Other aquatic organisms [1]	300000 (Mollusca)
BCF - Other aquatic organisms [2]	125000 (Crustacea)

(1344-28-1)	
LC50 - Fish [1]	0.078 – 0.108 mg/l Source: ECHA
EC50 96h - Algae [1]	> 0.024 mg/l Source: ECHA
EC50 72h - Algae [1]	1.05 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	0.2 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

12.2. Persistence and degradability

CaF2 (7789-75-5)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

Silicon dioxide (14808-60-7)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)

Silicon dioxide (14808-60-7)	
ThOD	Not applicable (inorganic)

Titanium Dioxide (13463-67-7)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

(1305-78-8)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

(471-34-1)	
Persistence and degradability	Biodegradability in soil: not applicable. Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

(1309-48-4)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

Iron (7439-89-6)	
Persistence and degradability	Biodegradability in soil: not applicable. Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

Silicon Metal (7440-21-3)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

Manganese (7439-96-5)	
Persistence and degradability	Biodegradability: not applicable.
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

12.3. Bioaccumulative potential

CaF2 (7789-75-5)	
Bioaccumulative potential	No bioaccumulation data available.

Silicon dioxide (14808-60-7)	
Bioaccumulative potential	No bioaccumulation data available.

Titanium Dioxide (13463-67-7)	
Bioaccumulative potential	Not bioaccumulative.

(1305-78-8)	
BCF - Fish [1]	(no bioaccumulation)
Bioaccumulative potential	Not bioaccumulative.

(471-34-1)	
BCF - Fish [1]	(no bioaccumulation)
Bioaccumulative potential	Not bioaccumulative.

(1309-48-4)	
Bioaccumulative potential	Bioaccumulation: not applicable.

Iron (7439-89-6)	
Bioaccumulative potential	No bioaccumulation data available.

Silicon Metal (7440-21-3)	
Bioaccumulative potential	Not bioaccumulative.

Manganese (7439-96-5)	
BCF - Fish [1]	81 (Pisces)
BCF - Other aquatic organisms [1]	300000 (Mollusca)
BCF - Other aquatic organisms [2]	125000 (Crustacea)
Bioaccumulative potential	No bioaccumulation data available.

12.4. Mobility in soil

CaF2 (7789-75-5)	
Ecology - soil	No (test)data on mobility of the substance available.

Silicon dioxide (14808-60-7)	
Ecology - soil	No (test)data on mobility of the substance available.

Titanium Dioxide (13463-67-7)	
Surface tension	No data available in the literature

Titanium Dioxide (13463-67-7)	
Ecology - soil	Low potential for mobility in soil.

(1305-78-8)	
Surface tension	No data available in the literature
Ecology - soil	No (test)data on mobility of the substance available.

(471-34-1)	
Mobility in soil	4.971 Source: Quantitative Structure Activity Relation
Surface tension	No data available (test not performed)
Ecology - soil	Low potential for adsorption in soil.

(1309-48-4)	
Ecology - soil	No (test)data on mobility of the substance available.

Iron (7439-89-6)	
Surface tension	Not applicable (solid)
Ecology - soil	Adsorbs into the soil.

Silicon Metal (7440-21-3)	
Ecology - soil	Highly mobile in soil.

Manganese (7439-96-5)	
Ecology - soil	No (test)data on mobility of the substance available.

12.5. Other adverse effects

Ozone : Not classified
Other adverse effects : No data available

13. Disposal considerations

13.1. Disposal method

Dispose of contents/container in accordance with licensed collector's sorting instructions.

13.2. Disposal precaution

No data available

14. Transport information

UN RTDG	ADR	IMDG	IATA
14.1. UN number			
Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name			
Not applicable	Not applicable	Not applicable	Not applicable

UN RTDG	ADR	IMDG	IATA
14.3. Transport hazard class(es)			
Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Marine pollutant			
Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information 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	14808-60-7: Silica (Crystalline quartz) 13463-67-7: Titanium dioxide 1305-78-8: Calcium oxide 1309-48-4: Magnesium oxide 7439-89-6: Iron salts (Soluble, as Fe) 7440-21-3: Silicon 7439-96-5: Manganese&Inorganic compounds, as Mn 1344-28-1: a-Alumina (Aluminum oxide)
Hazardous Substances Below Permissible Level	Applicable	7439-96-5: Manganese and its inorganic compounds
Hazardous Substances Subject to Working Environment Measurement	Applicable	14808-60-7: Quartz 13463-67-7: Titanium dioxide 1309-48-4: Magnesium oxide 7439-96-5: Manganese and its inorganic compounds 1344-28-1: Aluminium oxide ; Alumina (contains above 1%)
Hazardous Substances Subject to Workers Requiring Health Examination	Applicable	7439-96-5: Manganese and its inorganic compounds 1344-28-1: Aluminium oxide ; Alumina (contains above 1%)
Hazardous Substances Subject to Control	Applicable	13463-67-7: Titanium dioxide 1309-48-4: Magnesium oxide 7439-89-6: Iron and its compounds 7439-96-5: Manganese and its inorganic compounds 1344-28-1: Aluminium oxide (contains above 1%)

15.2. Chemicals Control Act

No data available

15.3. ACT ON REGISTRATION, EVALUATION, ETC. OF CHEMICALS (K-REACH)

No data available

15.4. Safety Control of Dangerous Substances Act

Safety Control of Dangerous Substances Act	Applicable	(Class 2 Combustible solid - category 4 Iron Powder (Designated quantity: 500kg); Class 2 Combustible solid - category 5 Metal powder (Designated quantity: 500kg))
	Applicable	13463-67-7: Titanium(IV) oxide 471-34-1: Calcium carbonate 1309-48-4: Magnesium oxide

7439-89-6: Iron powder
(Class 2 Combustible solid - category 4 Iron Powder (Designated quantity: 500kg))
7440-21-3: Silicon powder
(Class 2 Combustible solid - category 5 Metal powder (Designated quantity: 500kg))
7439-96-5: Manganese powder
(Class 2 Combustible solid - category 5 Metal powder (Designated quantity: 500kg))
1344-28-1: Aluminum oxide

15.5. Wastes Control Act

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

15.6. Other Domestic and International Regulatory Information

Domestic

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

International

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

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)	Contains listed substances

International agreements

No data available

16. Other information

16.1. Data sources: 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,Classification according to Classification, Labelling and Packaging of Substances and Mixtures (SEA) Regulation published in the Official Journal numbered 28848 on December 11, 2013,ECHA (European Chemicals Agency),Supplier's safety documents,This MSDS is prepared based on KOSHA, NITE, ESIS, NLM, SIDS, IPCS, NCIS, etc,No data available,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 safety data sheet was compiled with data and information from the following sources : RTECS, ECOSAR, HSDB, SIDS SIAP, ChemWATCH, CESAR, Chemical DB.

16.2. Issue date: 11/3/2020

16.3. Revision number and date: 4.1, 23/11/2021

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.