

SAFETY DATA SHEET

1. Identification of the substance or mixture and of the supplier

- A. GHS product identifier Mirinae® A-7401S Brilliant Red
- B. Recommended use of the chemical and restrictions on use
Recommended use Cosmetic
Restrictions on use Not available
- C. Manufacturers
Company name CQV Co., Ltd.
Address 144, Seongjung-Ro, Jincheon-Eup, Jincheon-Gun, Chungbuk-Do, Korea
Emergency phone number 82-43-531-2500
Respondent Byung-Ki Choi
Fax 82-43-536-0314

2. Hazards identification

- A. GHS classification of the substance/mixture
Not classified
- B. GHS label elements, including precautionary statements
Pictogram and symbol : Not applicable
Signal word : Not applicable
Hazard statements : Not applicable
Precautionary statements
Precaution : Not applicable
Treatment : Not applicable
Storage : Not applicable
Disposal : Not applicable
- C. Other hazard information not included in hazard classification (NFPA)
Health 0
Flammability Not available
Reactivity Not available

3. Composition/information on ingredients

Chemical Name (INCI Name)	CAS number	EC number	Content (%)
Alumina	1344-28-1	215-691-6	44 - 54
Tin Oxide (CI 77861)	18282-10-5	242-159-0	1 - 5
Silica	7631-86-9	231-545-4	1 - 5
Titanium Dioxide (CI 77891)	13463-67-7	236-675-5	40 - 50

4. First aid measures

- A. Eye contact
- Call emergency medical service.
 - In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

B. Skin contact

- Call emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.

C. Inhalation

- If exposed or concerned: Get medical advice/ attention.
- Move victim to fresh air.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Keep victim warm and quiet.

D. Ingestion

- If exposed or concerned: Get medical advice/ attention.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

E. Indication of immediate medical attention and notes for physician

- Exposures require specialized first aid with contact and medical follow-up .
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Fire fighting measures

A. Suitable (and unsuitable) extinguishing media

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.

B. Specific hazards arising from the chemical

- Non-combustible, substance itself does not burn.

C. Special protective equipment and precautions for fire-fighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- Substance may be transported in a molten form.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks; Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks; Always stay away from tanks engulfed in fire.
- Fire involving Tanks; For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

- Clean up spills immediately, observing precautions in Protective Equipment section.

- Eliminate all ignition sources.
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Cover with plastic sheet to prevent spreading.
- Please note that there are materials and conditions to avoid.

B. Environmental precautions and protective procedures

- Prevent entry into waterways, sewers, basements or confined areas.

C. The methods of purification and removal

- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and water.

7. Handling and storage

A. Precautions for safe handling

- Do not handle until all safety precautions have been read and understood.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- Avoid breathing vapors from heated material.
- Do not enter storage area unless adequately ventilated.
- Please note that there are materials and conditions to avoid.

B. Conditions for safe storage

- Store locked up.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

8. Exposure controls/personal protection

A. Occupational Exposure limits

Korea regulation

Alumina TWA = 10 mg/m³

Silica TWA = 10 mg/m³

Titanium Dioxide TWA = 10 mg/m³

ACGIH regulation

Alumina TWA 10 mg/m³ (as Al, Total particulate containing no asbestos and < 1% crystalline silica)

Titanium Dioxide TWA 10 mg/m³

Biological exposure index : Not available

OSHA regulation

Alumina TWA = 15 mg/m³ (total), TWA = 5 mg/m³ (respirable fraction)

Silica TWA = 20 mg/m³ (80 mg/m³/%SiO₂)(Mineral Dusts)

Titanium Dioxide TWA = 15 mg/m³

NIOSH regulation

Alumina TWA = 10 mg/m³

Tin Oxide TWA = 2 mg/m³ (as Sn)

Silica TWA = 6 mg/m³

EU regulation : Not available

Other

Alumina Austria: TWA = 5 mg/m³, STEL = 10 mg/m³ Belgium: TWA = 5 mg/m³ (as Al) Denmark: TWA = 5 mg/m³ (total, as Al), 2 mg/m³ (respirable, as Al) Estonia: TWA = 10 mg/m³ (total dust), 4 mg/m³ (respirable dust) France: TWA = 10 mg/m³ Hungary: TWA = 6 mg/m³ [AK] (respirable dust) Latvia: TWA = 6 mg/m³ Spain: TWA = 10 mg/m³ Australia: TWA = 10 mg/m³ Canada: TWA = 10 mg/m³ China: TWA = 4 mg/m³ (total dust), STEL = 8 mg/m³ (total dust) Russia: TWA = 6 mg/m³ (aerosol)

Tin Oxide Belgium: TWA = 2 mg/m³ (as Sn) Canada: TWA = 2 mg/m³ (as Sn) Finland: TWA = 2 mg/m³ (as Sn) Spain: TWA = 2 mg/m³ (as Sn)

Silica Australia: TWA = 2 mg/m³ (respirable dust, listed under Fumed silica) Switzerland: TWA = 4 mg/m³ (inhalable); 0.3 mg/m³ (respirable) UK: TWA = 6 mg/m³ (inhalable dust); 2.4 mg/m³ (respirable dust), STEL = 18 mg/m³ (calculated, inhalable dust); 7.2 mg/m³ (calculated, respirable dust) Czech Republic: TWA = 0.1 mg/m³ (respirable fraction); 4.0 mg/m³ (as amorphous SiO₂) Austria: TWA = 4 mg/m³ (inhalable fraction); 0.3 mg/m³ (respirable fraction)

Titanium Dioxide Austria: TWA = 10 mg/m³ France: TWA = 10 mg/m³ (as Ti) Italy: TWA = 10 mg/m³ United Kingdom: TWA = 10 mg/m³ Russia: TWA = 10 mg/m³

B. Appropriate engineering controls

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

C. Personal protective equipment

Respiratory protection

- Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment when necessary.
- In case exposed to particulate material, the respiratory protective equipments as follow are recommended. ;facepiece filtering respirator or air-purifying respirator, high-efficiency particulate air(HEPA) filter media or respirator equipped with powered fan, filter media of use(dust, mist, fume)
- In lack of oxygen(< 19.5%), wear the supplied-air respirator or self-contained breathing apparatus.oxygen

Eye protection

- Wear breathable safety goggles to protect from particulate material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.

Hand protection

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

Body protection

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. Physical and chemical properties

A. Appearance

Description Powder

Color Brilliant Silver White

B. Odor No odor

C. Odor threshold Not available

D. pH 5 – 10

E. Melting point/freezing point Not available

F. Initial boiling point and boiling range Not available

G. Flash point Not available

- H. Evaporation rate Not available
- I. Flammability (solid, gas) Not applicable
- J. Upper/lower flammability or explosive limits Not available
- K. Vapor pressure Not available
- L. Solubility (ies) Not available
- M. Vapor density Not available
- N. Specific gravity 3.5 – 3.9 g/cm³
- O. Partition coefficient: n-octanol/water Not available
- P. Auto ignition temperature Not available
- Q. Decomposition temperature Not available
- R. Viscosity Not available
- S. Molecular weight Not available

10. Stability and reactivity

A. Chemical stability and Possibility of hazardous reactions:

- Non-combustible, substance itself does not burn.

B. Conditions to avoid:

- Heat, sparks or flames

C. Incompatible materials:

- Combustibles, reducing agents

D. Hazardous decomposition products:

- Not available

11. Toxicological information

A. Information of Health Hazardous

Acute toxicity

Oral : Not classified

- Alumina : Rat LD₅₀ > 2,000 mg/kg (OECD Guideline 420)
- Tin oxide : Rat LD₅₀ > 9,000 mg/kg
- Silicon dioxide : Rat LD₅₀ > 5,000 mg/kg (OECD TG 401, GLP)
- Titanium dioxide : Rat LD₅₀ > 5,000 mg/kg (OECD Guideline 425, EPA OPPTS 870.1100)

Dermal : Not classified

- Silicon dioxide : Rabbit LD₅₀ > 5,000 mg/kg

Inhalation : Not classified

- Alumina : Rat LC₅₀ > 2.3 mg/L/4hr
- Tin oxide : Rat LC₅₀ > 5 mg/L/4hr (OECD TG 403, GLP)
- Silicon dioxide : Rat LC₅₀ > 2.08 mg/kg/4hr (OECD TG 403, GLP)
- Titanium dioxide : Rat LC₅₀ > 6.82 mg/L/4hr

Skin corrosion/ irritation : Not classified

– Alumina : In the skin irritation test using rabbit, skin irritation was not observed. (OECD Guideline 404)

– Tin oxide : Skin irritation test using rabbit, not skin irritation. (OECD TG 404)

– Silicon dioxide : In skin irritation test with rabbits, there were no symptoms of skin irritation (OECD TG 404, GLP).

– Titanium dioxide : In test on skin irritation with rabbits, skin irritations were not observed. (OECD Guideline 404)

Serious eye damage/ irritation : Not classified

– **Alumina** : The slight erythema was reversible, resolving by 48 hours post administration of the test substance. The scores observed for conjunctival erythema would not lead to a classification under EU-CLP (Regulation (EC) 1272/2008)(OECD Guideline 405).

– **Tin oxide** : The test substance was not irritating to the rabbit eyes. (OECD TG 405)

– **Silicon dioxide** : In eye irritation test with rabbits, there were no symptoms of eye irritation.(OECD TG 405, GLP)

– **Titanium dioxide** : In test on eye irritation with rabbits, eye irritations were not observed. (OECD Guideline 405, EU Method B.5, EPA OPPTS 870.2400)

Respiratory sensitization : Not classified

– **Titanium dioxide** : Titanium oxide does not show respiratory sensitizing properties in animal studies or in exposure related observations in humans.

Skin sensitization : Not classified

– **Alumina** : In the skin sensitisation test using guinea pig, skin sensitisation was not observed.

– **Tin oxide** : No activation of the lymph nodes of mice were observed in the LLNA performed with the test material. (OECD TG 429)

– **Silicon dioxide** : There is no evidence of skin sensitisation in workers over decades.

– **Titanium dioxide** : In test on skin sensitization with guinea pig, skin sensitizations were not observed. (OECD Guideline 406, EU Method B.6, EPA OPP 81–6, GLP)

Carcinogenicity : Not classified

Mutagenicity : Not classified

– **Alumina** : In the mammalian erythrocyte micronucleus test, the results were positive for the nano-sized materials(below 40nm) with evidence of a positive dose-response relationship for MN(OECD Guideline 75). Positive reactions were observed in Mammalian Erythrocyte Micronucleus Test(OECD Guideline 474, GLP).

– **Tin oxide** : Negative reactions were observed in these in vitro genotoxicity studies(bacterial reverse mutation assay(e.g. Ames test)(gene mutation)(OECD Guideline 471), mammalian cell gene mutation assay(OECD Guideline 476), mammalian cell micronucleus test(OECD Guideline 487)).

– **Silicon dioxide** : Negative reactions were observed in both in vitro ((Bacterial reverse mutation assay(OECD TG 471, GLP), Mammalian Chromosome Aberration Test(OECD TG 473, GLP), Mammalian Cell Gene Mutation Test(OECD TG 476, GLP)) and in vivo (mammalian cell gene mutation assay).

– **Titanium dioxide** : Negative reactions were observed in in vitro (mammalian cell gene mutation test(OECD Guideline 476, GLP), mammalian chromosome aberration test(OECD Guideline 473, GLP), bacterial reverse mutation assay(OECD Guideline 471)) and in in vivo (micronucleus assay).

Reproductive toxicity : Not classified

– **Silicon dioxide** : No effects were observed in developmental toxicity and teratogenicity test with mouse(OECD TG 414).

– **Titanium dioxide** : Based on the weight of evidence from the available long-term toxicity/carcinogenicity studies in rodents and the relevant information on the toxicokinetic behaviour in rats it is concluded that TiO₂ does not present a reproductive toxicity hazard.

Specific target organ toxicity (single exposure) : Not classified

– **Silicon dioxide** : In acute inhalation toxicity study with rats, restlessness and half-closed eyes were observed.(OECD TG 403, GLP)

Specific target organ toxicity (repeat exposure) : Not classified

– **Alumina** : In the inhalation toxicity test(90 day) with rats, NOAEC = 70 mg/m³.

– **Tin oxide** : No toxicity related symptoms were observed in the 13-week repeat oral administration toxicity test using rats. (NOAEL ≥ 10000 mg / kg)

- **Silicon dioxide** : In repeated-dose inhalation toxicity study with rats for 13 weeks, inflammatory responses in the respiratory tract and increased respiration rate were observed.(OECD TG 413, GLP)
 - **Titanium dioxide** : Titanium dioxide did not show any adverse effects whatsoever in a chronic oral repeated dose toxicity study in rats, with a NOAEL of 3500 mg/kg bw/day. Titanium dioxide is not absorbed to any relevant extent through human skin, thus no toxic effects can be expected via the dermal route of exposure. Titanium dioxide showed fibrogenic effects in a chronic inhalation repeated dose toxicity study in rats with a NOAEC of 10 mg/m³.
- Aspiration Hazard** : Not available

12. Ecological information

A. Ecological toxicity

- Acute toxicity : Not classified
- Chronic toxicity : Not classified

Fish

- **Alumina** : 96hr-NOEC(*Salmo trutta*) > 0.072 mg/L (OECD Guideline 203)
- **Silicon dioxide** : 96hr-LC₀ (*Brachydanio rerio*) = 10000 mg/L (OECD TG 203, GLP)
- **Titanium dioxide** : 96hr-NOEC(*Oncorhynchus mykiss*) > 100 mg/L (OECD Guideline 203)

crustacean

- **Alumina** : 48hr-NOEC(*Daphnia magna*) > 0.071 mg/L
- **Silicon dioxide** : 24hr-EC₅₀ (*Daphnia magna*) > 1000 mg/L (OECD TG 202, GLP)

Algae

- **Alumina** : 72h-NOEC(*Pseudokirchneriella subcapitata*) >= 0.052 mg/L
- **Silicon dioxide** : 72hr-EC₅₀ (*Scenedesmus subspicatus*) > 10000 mg/L (OECD TG 201, GLP), 72h-NOELR(*Scenedesmus subspicatus*)= 10000 mg/L (OECD TG 201, GLP)
- **Titanium dioxide** : 72hr-EC₅₀ = 61 mg/L , 72hr-NOEC(*Pseudokirchnerella subcapitata*) = 12.7 mg/L

B. Persistence and degradability

Persistence

- **Alumina** : Low persistency (log Kow is less than 4 estimated.) (Log Kow = -0.83) (estimated)
- **Tin oxide** : Low persistency (log Kow is less than 4 estimated.) (Log Kow = 1.29) (estimated)
- **Titanium dioxide** : Low persistency (log Kow is less than 4 estimated.) (Log Kow = 2.23) (estimated)

Degradability : Not available

C. Bioaccumulative potential

Bioaccumulation

- **Alumina** : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 3.162) (estimated)
- **Tin oxide** : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 100) (estimated)
- **Silicon dioxide** : Not bioaccumulating due to inherent substance properties.
- **Titanium dioxide** : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 13.73) (estimated)

Biodegradation

- **Alumina** : Not readily biodegradable(estimated)
- **Tin oxide** : not readily biodegradable (estimated)
- **Silicon dioxide** : Not applicable for inorganic substance.
- **Titanium dioxide** : not readily biodegradable (estimated)

D. Mobility in soil

- **Alumina** : Low potency of mobility to soil. (Koc = 0.1902) (estimated)
- **Tin oxide** : Low potency of mobility to soil. (Koc = 13.16) (estimated)
- **Titanium dioxide** : Low potency of mobility to soil. (Koc = 86.1) (estimated)

E. Other hazardous effect : Not available

F. HAZARDOUS TO THE OZONE LAYER : Not classified

13. Disposal considerations

A. Disposal method

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

B. Disposal precaution

Consider the required attentions in accordance with waste treatment management regulation.

14. Transport information

A. UN Number Not applicable

B. UN Proper shipping name Not applicable

C. Transport Hazard class Not applicable

D. Packing group Not applicable

E. Marine pollutant Not applicable

F. IMDG/IATA/ICAO Not applicable

G. Special precautions

in case of fire Not applicable

in case of leakage Not applicable

15. Regulatory information

A. Occupational Safety and Health Regulation

Alumina : Administration subject listed

Alumina : Occupational exposure limits listed

Alumina : Work environment monitoring listed (6 months)

Alumina : Health examination agent (12 months)

Tin Oxide : Work environment monitoring listed (6 months)

Tin Oxide : Administration subject listed

Silicon dioxide : Occupational exposure limits listed

Silicon dioxide : Work environment monitoring listed (6 months)

Silicon dioxide : Health examination agent (24 months)

Titanium Dioxide : Administration subject listed

Titanium Dioxide : Occupational exposure limits listed

Titanium Dioxide : Work environment monitoring listed (6 months)

B. Chemical Control Act

Alumina : Existing Chemical Substance KE-01012

Tin oxide : Existing Chemical Substance (KE-33849)

Silicon dioxide : Existing Chemical Substance (KE-31032)

Titanium dioxide : Existing Chemical Substance KE-33900

C. Dangerous Material Safety Management Regulation

Alumina : Dangerous Material Safety Management Regulation

Tin oxide : Dangerous Material Safety Management Regulation

Silicon dioxide : Dangerous Material Safety Management Regulation

Titanium dioxide : Dangerous Material Safety Management Regulation

D. Wastes Control Act : Not regulated

E. Other regulation (internal and external)

Internal information

Persistent Organic Pollutants Acts : Not regulated

② Foreign Regulatory Information

External information

EU classification(classification)

Alumina : Not classified

Tin oxide : Not classified

Silicon dioxide : Not classified

Titanium dioxide : Not classified

EU classification(risk phrases)

Alumina : Not applicable

Tin oxide : Not applicable

Silicon dioxide : Not applicable

Titanium dioxide : Not applicable

EU classification(safety phrases)

Alumina : Not applicable

Tin oxide : Not applicable

Silicon dioxide : Not applicable

Titanium dioxide : Not applicable

EU SVHC list Not regulated

EU Authorisation List Not regulated

EU Restriction list Not regulated

U.S.A management information (OSHA Regulation) Not regulated

U.S.A management information (CERCLA Regulation) Not regulated

U.S.A management information (EPCRA 302 Regulation) Not regulated

U.S.A management information (EPCRA 304 Regulation) Not regulated

U.S.A management information (EPCRA 313 Regulation) Not regulated

Substance of Roterdame Protocol Not regulated

Substance of Stockholme Protocol Not regulated

Substance of Montreal Protocol Not regulated

Foreign Inventory Status

Alumina

U.S.A management information Section 8(b) Inventory (TSCA): Present

Japan management information Existing and New Chemical Substances (ENCS):
(1)-23

China management information Inventory of Existing Chemical Substances
(IECSC): Present 37546

Canada management information Domestic Substances List (DSL): Present

Australia management information Inventory of Chemical Substances (AICS):
Present

New Zealand management information Inventory of Chemicals (NZIoC): May be
used as a single component chemical under an appropriate group standard

Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Japan management information ISHL Harmful Substances Whose Names Are to be Indicated on the Label: ≥ 1 % weight

Japan management information ISHL Notifiable Substances: ≥ 1 % weight

Tin oxide

U.S.A management information Section 8(b) Inventory (TSCA): Present

Japan management information Existing and New Chemical Substances (ENCS): (1)–551

Japan management information ISHL Harmful Substances Whose Names Are to be Indicated on the Label: ≥ 1 % weight

Japan management information ISHL Notifiable Substances: ≥ 0.1 % weight

China management information Inventory of Existing Chemical Substances (IECSC): Present 37645

Canada management information Domestic Substances List (DSL): Present

Australia management information Inventory of Chemical Substances (AICS): Present

New Zealand management information Inventory of Chemicals (NZIoC): HSNO Approval: HSR002805

Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Silicon dioxide

U.S.A management information Section 8(b) Inventory (TSCA): Present

Japan management information Existing and New Chemical Substances (ENCS): (1)–548

China management information Inventory of Existing Chemical Substances (IECSC): Present [11361]

Canada management information Domestic Substances List (DSL): Present

Australia management information Inventory of Chemical Substances (AICS): Present

New Zealand management information Inventory of Chemicals (NZIoC): May be used as a single component chemical under an appropriate group standard.

Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Japan management information ISHL Harmful Substances Whose Names Are to be Indicated on the Label: ≥ 0.1 % weight (listed under Silica)

Japan management information ISHL Notifiable Substances: ≥ 0.1 % weight (listed under Silica)

Titanium dioxide

U.S.A management information Section 8(b) Inventory (TSCA): Present

Japan management information Existing and New Chemical Substances (ENCS): (5)–5225, (1)–558

Japan management information ISHL Harmful Substances Whose Names Are to be Indicated on the Label: ≥ 1 % weight

Japan management information ISHL Notifiable Substances: ≥ 0.1 % weight

China management information Inventory of Existing Chemical Substances (IECSC): Present 11377

Canada management information Domestic Substances List (DSL): Present

Australia management information Inventory of Chemical Substances (AICS): Present

New Zealand management information Inventory of Chemicals (NZIoC): May be used as a single component chemical under an appropriate group standard.

16. Other information

A. Information source and references

Emergency Response Guidebook 2008;
http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/erg2008_eng.pdf
U.S. National library of Medicine(NLM) ChemIDplus; <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>
Korea Occupational Health & Safety Agency; <http://www.kosha.net>
EPISUITE v4.11; <http://www.epa.gov/opt/exposure/pubs/episuitedl.html>
Ministry of Public Safety and Security–Korea dangerous material inventory management system; <http://hazmat.mpss.kfi.or.kr/index.do>
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans;
<http://monographs.iarc.fr>
TOMES–LOLI®; <http://www.rightanswerknowledge.com/loginRA.asp>
National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>
Waste Control Act enforcement regulation attached [1]
REACH information on registered substances; <https://echa.europa.eu/information-on-chemicals/registered-substances>
American Conference of Governmental Industrial Hygienists TLVs and BEIs.
NIOSH Pocket Guide; <http://www.cdc.gov/niosh/npg/npgdcas.html>
National Toxicology Program; <http://ntp.niehs.nih.gov/results/dbsearch/>
International Uniform Chemical Information Database(IUCLID)
Korea Maritime Dangerous Goods Inspection Center; <http://www.komdi.or.kr/index.html>
EU CLP; <https://echa.europa.eu/information-on-chemicals/cl-inventory-database>

B. Issuing date 25–06–2015

C. Revision number and date

revision number 4

date of the latest revision 01–04–2024

D. Others

- Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.
- The product must not be used for any purposes other than those specified under heading 1 without first obtaining written handling instructions.
- It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.
- The information given on this safety data sheet must be regarded as a description of the safety requirements relating to our product and not a guarantee of its properties.