

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Identifier
Product Description:
Cat No. :
Synonyms
CAS No
Molecular Formula
Zinc oxide target
S55169

Chinese white; Zinc white; C.I. Pigment White 4

1314-13-2

O Zn

Relevant identified uses of the substance or mixture and uses advised against
Recommended Use

Laboratory chemicals.

Uses advised against

No Information available

Details of the supplier of the safety data sheet
Importer

 Fisher Scientific Korea
 D5,D6, Incheon Airport Logistics Complex
 150, Gonghangdong-Ro 296 Beon-Gil
 Jung-Gu, Incheon
 Tel: +82-1661-9555
 Fax: +82-2-2023-0603

Supplier

 Thermo Fisher Scientific Chemicals, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099

E-mail address

Chem.KR@thermofisher.com

Emergency Telephone Number

Emergency telephone: Medical: +(82) 070-7686-0086 or + 1-703-741-5970

CHEMTREC: 080 822 1374 (Local), CHEMTREC: 1-800-424-9300 or + 1-703-527-3887

Korea: 00-308-13-2549 (24 hours a day, 7 days a week)

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture
Physical hazards

Based on available data, the classification criteria are not met

Health hazards

Based on available data, the classification criteria are not met

Environmental hazards

Acute aquatic toxicity

Category 1

Chronic aquatic toxicity

Category 1

Label Elements

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Signal Word

Danger

Hazard Statements

H400 - Very toxic to aquatic life

H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements

Prevention

P273 - Avoid release to the environment

Response

P391 - Collect spillage

Disposal

P501 - Dispose of contents/container to industrial incineration plant

Other Hazards

Toxic to terrestrial vertebrates

This product does not contain any known or suspected endocrine disruptors

NFPA

Health
1

Flammability
0

Instability
0

Physical hazards
N/A

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

| Component | Common Name | CAS No | Index No | Weight % |
|------------|---|-----------|----------|----------|
| Zinc oxide | Chinese white; Zinc white; C.I. Pigment White 4 | 1314-13-2 | KE-35565 | 99 - 100 |

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if symptoms occur.

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Ingestion

Do NOT induce vomiting. Get medical attention if symptoms occur.

Inhalation

Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Self-Protection of the First Aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Extinguishing media which must not be used for safety reasons

No information available.

Special hazards arising from the substance or mixture

Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products

None under normal use conditions.

Advice for fire-fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes or clothing.

Environmental precautions

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods and Material for Containment and Cleaning Up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

Reference to Other Sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.

Conditions for Safe Storage, Including any Incompatibilities

ALFAAS55169

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Keep containers tightly closed in a dry, cool and well-ventilated place.

Specific End Uses

Use in laboratories.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

| Component | CAS No | Korea | ACGIH TLV | OSHA PEL |
|------------|-----------|--|--|--|
| Zinc oxide | 1314-13-2 | STEL: 10 mg/m ³ TWA: 2 mg/m ³ TWA: 5 mg/m ³ | TWA: 2 mg/m ³ STEL: 10 mg/m ³ | (Vacated) TWA: 5 mg/m ³ (Vacated) TWA: 10 mg/m ³ (Vacated) STEL: 10 mg/m ³ TWA: 5 mg/m ³ TWA: 15 mg/m ³ |

| Component | CAS No | European Union | The United Kingdom | Germany |
|------------|-----------|----------------|--------------------|--|
| Zinc oxide | 1314-13-2 | Not listed | Not listed | TWA: 0.1 mg/m ³ (8 Stunden). MAK TWA: 2 mg/m ³ (8 Stunden). MAK Höhepunkt: 0.4 mg/m ³ Höhepunkt: 4 mg/m ³ |

ACGIH - Biological Exposure Indices

| Component | CAS No | ACGIH - Biological Exposure Indices |
|------------|-----------|-------------------------------------|
| Zinc oxide | 1314-13-2 | Not listed |

Exposure Controls

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection

Wear safety glasses with side shields (or goggles)

Hand Protection

Protective gloves

Skin and body protection

Long sleeved clothing

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Personal protective equipment

Respiratory Protection

Use only those certified by the Korea Occupational Safety and Health Administration.

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice

Environmental exposure controls

Prevent product from entering drains Do not allow material to contaminate ground water

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system Local authorities should be advised if significant spillages cannot be contained

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance (Physical State, Color, etc.) Off-white Powder Solid

Odor Odorless

Odor Threshold No data available

pH 7 50 g/l aq.sol.(susp)

Melting Point/Range 1975 °C / 3587 °F

Softening Point No data available

Boiling Point/Range No information available

Flash Point No information available **Method -** No information available

Evaporation Rate Not applicable

Solid

Flammability (solid,gas) No information available

Explosion Limits No data available

Vapor Pressure No information available

Vapor Density Not applicable

Solid

Specific Gravity / Density 5.600

Bulk Density No data available

Water Solubility 1.6 mg/L (29°C)

Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

| Component | CAS No | log Pow |
|------------|-----------|-------------------|
| Zinc oxide | 1314-13-2 | No data available |

Autoignition Temperature No data available

Decomposition Temperature No data available

Viscosity Not applicable

Solid

Explosive Properties No information available

Oxidizing Properties No information available

Molecular Formula O Zn

Molecular Weight 81.38

SECTION 10: STABILITY AND REACTIVITY

Reactivity

None known, based on information available

Chemical Stability

Stable under normal conditions.

Possibility of Hazardous Reactions

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Hazardous Polymerization No information available.
Hazardous Reactions No information available.

Conditions to Avoid Avoid dust formation. Incompatible products.

Incompatible Materials Strong acids.

Hazardous Decomposition Products None under normal use conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

Information on expected route of exposure

Inhalation May cause irritation of respiratory tract. May be harmful if inhaled. Avoid breathing dust or spray mist.
Ingestion May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Eyes Avoid contact with eyes.
Skin May cause irritation. May be harmful in contact with skin. Avoid contact with skin.

Information on Health Hazards

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met
Dermal No data available
Inhalation No data available

| Component | CAS No | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|------------|-----------|---------------------------|------------------------------|---------------------------|
| Zinc oxide | 1314-13-2 | LD50 > 5000 mg/kg (Rat) | LD50 > 2000 mg/kg, 24h (Rat) | LC50 > 5.7 mg/L, 4h (Rat) |

(b) skin corrosion/irritation; No data available
Test species rabbit
Observational endpoint No skin irritation

(c) serious eye damage/irritation; No data available
Test method Test method B.5
OECD 405
Test species rabbit
Observation end point No eye irritation

(d) respiratory or skin sensitization;
Respiratory No data available
Skin No data available

| Component | CAS No | Test method | Test species | Study result |
|------------|-----------|--|--------------|-----------------|
| Zinc oxide | 1314-13-2 | in vivo OECD Test Guideline 406 Test method B.6 | guinea pig | non-sensitising |

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(e) germ cell mutagenicity; No data available

| Component | CAS No | Test method | Test species | Study result |
|------------|-----------|--|----------------------|--------------|
| Zinc oxide | 1314-13-2 | in vitro OECD Test Guideline 471 Bacterial Reverse Mutation Test | in vitro: Bacteria | negative |
| | | in vivo OECD Test Guideline 474 Mammalian | in vivo Mammalian | negative |

Mutagenic effects have occurred in experimental animals

(f) carcinogenicity; No data available

| Component | CAS No | Test method | Test species / Duration | Study result |
|------------|-----------|-------------------|-------------------------|-------------------|
| Zinc oxide | 1314-13-2 | No data available | No data available | No data available |

There are no known carcinogenic chemicals in this product

| Component | CAS No | IARC | NTP | ACGIH | OSHA | UK |
|------------|-----------|------------|------------|------------|------------|------------|
| Zinc oxide | 1314-13-2 | Not listed | Not listed | Not listed | Not listed | Not listed |

(g) reproductive toxicity; No data available

| Component | CAS No | Test method | Test species / Duration | Study result |
|------------|-----------|-------------------|-------------------------|-------------------|
| Zinc oxide | 1314-13-2 | No data available | No data available | No data available |

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

Target Organs No information available.

(j) aspiration hazard; Not applicable
Solid

Other Adverse Effects
No information available.

| Component | CAS No | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|------------|-----------|--|--|---|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | Not applicable |

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

| Component | CAS No | Freshwater Fish | Water Flea | Freshwater Algae | Microtox |
|------------|-----------|--------------------|-------------------|-------------------|-------------------|
| Zinc oxide | 1314-13-2 | LC50: = 1.55 mg/L, | No data available | No data available | No data available |

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| | | | | | |
|--|--|--------------------------|--|--|--|
| | | 96h static (Danio rerio) | | | |
|--|--|--------------------------|--|--|--|

Persistence and degradability

Persistence

Soluble in water, Persistence is unlikely, based on information available.

Degradability

Not relevant for inorganic substances.

Degradation in sewage treatment plant

Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Bioaccumulative potential

Bioaccumulation is unlikely

Mobility in soil

The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility. Highly mobile in soils.

Ozone Depletion Potential

| Component | CAS No | Ozone Depletion Potential |
|------------|-----------|---------------------------|
| Zinc oxide | 1314-13-2 | Not listed |

Other adverse effects

No information available

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from Residues/Unused Products

Waste is classified as hazardous. Dispose in accordance with the Wastes Control Act (폐기물관리법).

Contaminated Packaging

Dispose of this container to hazardous or special waste collection point.

Other Information

Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not let this chemical enter the environment.

SECTION 14: TRANSPORT INFORMATION

Road and Rail Transport

UN-No

UN3077

Proper Shipping Name

Environmentally hazardous substances, solid, n.o.s.

Technical Shipping Name

Zinc oxide

Hazard Class

9

Packing Group

III

IATA

UN-No

UN3077

Proper Shipping Name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.*

Technical Shipping Name

Zinc oxide

Hazard Class

9

Packing Group

III

IMDG/IMO

UN-No

UN3077

Proper Shipping Name

Environmentally hazardous substances, solid, n.o.s.

Technical Shipping Name

Zinc oxide

Hazard Class

9

Packing Group

III

Marine Pollutant

Dangerous for the environment

Product is a marine pollutant according to the criteria set by IMDG/IMO

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Special Precautions for User No special precautions required

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

Legend: X - Listed '-' - Not Listed

International Inventories

| Component | CAS No | KECL | TSCA | EINECS | IECSC | DSL | NDSL | PICCS | ENCS | ISHL | AICS |
|------------|-----------|----------|------|-----------|-------|-----|------|-------|------|------|------|
| Zinc oxide | 1314-13-2 | KE-35565 | X | 215-222-5 | X | X | - | X | X | X | X |

| Component | CAS No | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|------------|-----------|---|--|----------------------------|------------------------------------|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | Not applicable | Annex I - Y23 |

| Component | CAS No | OECD HPV | Persistent Organic Pollutant | Ozone Depletion Potential |
|------------|-----------|----------|------------------------------|---------------------------|
| Zinc oxide | 1314-13-2 | Listed | Not applicable | Not applicable |

Korean National Regulations

| Component | CAS No | Act on Registration and Evaluation of Chemical Substances (K-REACH) | Ministry of Environment - CMR risk | Ministry of Environment - Critically Controlled Substance |
|------------|-----------|---|------------------------------------|---|
| Zinc oxide | 1314-13-2 | Annex 1 - KE-35565 | Not applicable | Not applicable |

| Component | CAS No | Chemical Control Act - Acute Hazard to Human Health | Chemical Control Act - Chronic Hazard to Human Health | Chemical Control Act - Ecological Hazard |
|------------|-----------|---|---|--|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | 97-1-91 (>=25%) |

| Component | CAS No | Chemical Control Act - Accident Precaution Chemicals (% in mixtures) | Chemical Control Act - Accident Precaution Chemicals - Quantity limits Storage (% in mixtures) | Chemical Control Act - Accident Precaution Chemicals - Quantity limits Manufacture/Use (% in mixtures) |
|------------|-----------|--|--|--|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | Not applicable |

| Component | CAS No | Chemical Control Act - Prohibited Chemicals | Chemical Control Act - Use Restricted Chemicals | Chemical Control Act - Authorised Chemicals |
|------------|-----------|---|---|---|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | Not applicable |

| Component | CAS No | Waste Control Law |
|------------|-----------|-------------------|
| Zinc oxide | 1314-13-2 | > 25% (CCA) |

| Component | CAS No | ISHA - Harmful Agents Subject to Work Environment Monitoring | ISHA - Prohibited substances | ISHA - Substances requiring permission |
|------------|-----------|--|------------------------------|--|
| Zinc oxide | 1314-13-2 | Listed | Not applicable | Not applicable |

| Component | CAS No | ISHA - Substances | ISHA - Harmful Agents | ISHA - Permissible |
|-----------|--------|-------------------|-----------------------|--------------------|
|-----------|--------|-------------------|-----------------------|--------------------|

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| | | subject to control | Requiring Health Examination | Exposure Limits |
|------------|-----------|--------------------|------------------------------|-----------------|
| Zinc oxide | 1314-13-2 | Listed | Listed | Not applicable |

| Component | CAS No | ISHA - Subject to Process Safety Reports (minimum quantity) | ISHA - Threshold Limit Values (TLVs) Chemicals | ISHA - Special management materials |
|------------|-----------|---|--|-------------------------------------|
| Zinc oxide | 1314-13-2 | Not applicable | STEL: 10 mg/m ³ TWA: 2 mg/m ³ TWA: 5 mg/m ³ | Not applicable |

National Fire Association - Dangerous Substances Minimum quantity requiring a permit

| Component | CAS No | Class 1 - Oxidising solids | Class 2 - Flammable solid | Class 3 - Spontaneously Combustible Substances and Dangerous Substances When Wet | Class 4 - Flammable liquids | Class 5 - Self-reactive substances | Class 6 - Oxidising liquids |
|------------|-----------|----------------------------|---------------------------|--|-----------------------------|------------------------------------|-----------------------------|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable |

Control Parameters

| Component | CAS No | Korea | ACGIH - Biological Exposure Indices |
|------------|-----------|--|-------------------------------------|
| Zinc oxide | 1314-13-2 | STEL: 10 mg/m ³ TWA: 2 mg/m ³ TWA: 5 mg/m ³ | Not listed |

US Management Information

OSHA - Occupational Safety and Health Administration

Not applicable

| Component | CAS No | Specifically Regulated Chemicals | Highly Hazardous Chemicals |
|------------|-----------|----------------------------------|----------------------------|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable |

CERCLA Not applicable

| Component | CAS No | CERCLA Extremely Hazardous Substances RQs | Hazardous Substances RQs | SARA 313 - Threshold Values % |
|------------|-----------|---|--------------------------|-------------------------------|
| Zinc oxide | 1314-13-2 | Not applicable | Not applicable | 1.0 % |

GHS Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Warning.

H410 - Very toxic to aquatic life with long lasting effects.

SECTION 16: OTHER INFORMATION

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

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WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

POW - Partition coefficient Octanol:Water

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from Ships

ATE - Acute Toxicity Estimate

VOC - (Volatile Organic Compound)

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice

Chemical incident response training.

Prepared By

Health, Safety and Environmental Department

Creation Date

19-Jan-2010

Revision Date

08-Aug-2025

Revision Number

7

Revision Summary

SDS sections updated.

MOEL's Public Notice No. 2023-9 (Standards for Classification and Labeling of Chemical Substances and Safety Data Sheets)

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet