

SAFETY DATA SHEETS

1. Chemical product and company identification

Chemical Name Zinc Oxide
 Product Name FINEX-50-OTS (Trial product)
 Company Name Sakai Chemical Industry Co.,Ltd.
 Section Name Development & Technology Section
 Advanced Materials Department
 Address 110 tajuku, shimogawa, izumimachi, iwaki, fukushima 971-8183 JAPAN
 Tel. 0246 (56) 5111
 Fax. 0246 (53) 5223
 Recommended Use Inorganic UV filter for sun-screens, cosmetics, coatings, plastics etc.

2. Hazard identification

GHS Classification¹⁾

Physical hazards : Explosives Not applicable
 Flammable gases Not applicable
 Flammable aerosols Not applicable
 Oxidizing gases Not applicable
 Gases under pressure Not applicable
 Flammable liquids Not applicable
 Flammable solids Not classified
 Self-reactive substances Not applicable
 Pyrophoric liquids Not applicable
 Pyrophoric solids Not classified
 Self-heating substances Not classified
 Substances which, in contact with water, emit flammable gases
 Not classified
 Oxidizing liquids Not applicable
 Oxidizing solids Classification not possible
 Organic peroxides Not applicable
 Corrosive to metals Classification not possible

Health hazards : Acute toxicity (Oral) Not classified
 Acute toxicity (Dermal) Classification not possible
 Acute toxicity (Gases) Not applicable
 Acute toxicity (Vapors) Classification not possible
 Acute toxicity (Dusts) Not classified
 Acute toxicity (Mists) Not applicable
 Skin corrosion/irritation Not classified
 Serious eye damage/eye irritation Not classified
 Respiratory sensitization Classification not possible
 Skin sensitization Not classified
 Germ cell mutagenicity Classification not possible
 Carcinogenicity Not classified
 Productive toxicity Category 2
 Specific target organs systemic toxicity (Single exposure)
 Category 1 (Lung, Total body)
 Specific target organs systemic toxicity (Repeated exposure)
 Classification not possible
 Aspiration hazard Classification not possible

Environmental hazards Hazardous to the aquatic environment(acute) Category 1
 Hazardous to the aquatic environment(long-term) Category 1
 Hazardous to the ozone layer Classification not possible.

Label elements ¹⁾

Labeling or symbol : Health hazard, environmental hazard
 Environmentally hazardous substance (class 9)



Signal words : Danger
 Hazard statements : Causes damage to lung and systemic toxicity
 Causes serious toxicity to aquatic life.
 Causes long lasting serious toxicity to aquatic life.

Precautionary statements :

Prevention Do not handle until all safety precautions have been read and understood.
 Do not eat, drink or smoke when using this product.
 Wear appropriate protective equipment.
 Do not breathe dust and fume.
 Wash hands thoroughly after handling.
 Avoid release to the environment.

Response If inhaled or feared inhalation, get medical advice/attention.
 Get medical advice/attention if you feel unwell.
 Leakage shall be recovered.

Storage Store container tightly closed in well-ventilated place.
 Preferably store locked up.

Disposal Dispose of contents in accordance with local/regional/national
 /international regulation.

3. Composition/information on ingredients

Substance or mixture : substance

Substances presenting a health or environmental hazard within the meaning of Directive 67/548/EEC : None

	(main)	(surface)
Chemical name	Zinc Oxide	<i>n</i> -Octyltriethoxysilane
General name	Zinc Oxide	Triethoxyoctylsilane
INCI name	Zinc Oxide	Triethoxycaprylylsilane
Formula	ZnO	C ₈ H ₁₇ Si(OCH ₂ CH ₃) ₃
Content	> 90.0% (as ZnO)	< 10.0%
CAS No.	1314-13-2	2943-75-1
EINECS No.	215 222 5	220 941 2
ELINCS No.	---	---

Hereinafter, described the data about Zinc Oxide as main component.

4. First-aid measures

- Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Get medical advice/attention if you feel unwell.
- Skin : Wash with plenty of soap and water.
If skin irritation occurs, get medical advice/attention.
- Eye : Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists, get medical advice/attention.
- Ingestion : Rinse mouth.
Get medical advice/attention if you feel unwell.
- Expected immediate and delayed symptoms :
Irritation of eyes, skin and/or respiratory.
Cephalgia, chill, boke, vomit, diarrhea, or languor.
Late symptom : metal fume fever
- The most important signs and symptoms :
If inhaled fume, it may cause metal fume fever.

5. Fire-fighting measures

- Extinguishing media : Not combustible.
- Unsuitable extinguishing media :
Use an extinguishing media that is suitable for the materials
involved in the surrounding fire.
- Peculiar hazards : Zinc oxide fume may be released when heated.
- Peculiar fire extinguishing method :
Not applicable
- Protective equipment : Firefighters should ware a full set of protective clothing,
including a breathing apparatus.

6. Accidental release measures

- Personal precautions, protective equipment and emergency procedures :
Notify safety personnel.
Ware protective gloves/clothing and eye/face protections.
Avoid contact to skin and eyes. Avoid inhalation of dust and fume.
- Environmental precautions :
Be careful not to release to the environment.
- Methods for containment and cleaning up :
Scoop up material and all contaminated soil for later disposal.
Not to generate dust.
- Prevention of side hazards :
Keep floor clean each time because the substance may causes slip when it gets wet.

7. Handling and storage

Handling Technical measures (Ventilation): Described in "8. Exposure controls/personal protection".

Caution : Containers should be protected from physical damage.
 Avoid inhalation and ingestion.
 Do not get in eyes.
 Do not breathe dust and fume.
 Wash hands thoroughly after handling.
 Use only outdoors or in a well-ventilated area.
 Do not eat, drink or smoke when using this product.

Storage Safety Conditions : Store in a fixed place under less humid atmosphere.
 Safety container : No requirements.

8. Exposure controls/personal protection

Exposure limit:	ACGIH (2005)	TLV-TWA		2mg/m ³
		TLV-STEL		10mg/m ³
	OHS	PEL-TWA	Respirable dust	5mg/m ³
			Fume	5mg/m ³
			Total dusts	15mg/m ³

Facilities : Eyewash fountains should be available in work area.
 In the case of creating dust, local exhaust ventilation should be provided.
 General ventilation should be provided to keep dust concentrations below the exposure limits.

Personal protective equipment

Respirator : Wear appropriate respirator.
 Hands : Wear appropriate gloves.
 Eyes : Wear safety glasses with side shields.
 Skin : Wear appropriate protective clothing.

Hygiene : Do not eat, drink or smoke when using this product.
 Wash hands thoroughly after handling.

9. Physical and chemical properties

Appearance : White powder.
 Odor : No data.
 pH : Zinc Oxide is neutral (litmus paper) in condition of water suspension (1:10).⁵⁾
 However this product is no data because of hydrophobic in water with influence of hydrogen dimethicone treated.

Melting point/freezing point : 1950 degrees-C⁴⁾, >1975 degrees-C (under pressure)⁵⁾
 Boiling range : Stable at 1275 degrees-C⁷⁾, may sublime at low temperature^{2), 5)}
 Flash point : Incombustibles⁴⁾, not applicable⁵⁾
 Explosive limits : Nonexplosive⁵⁾
 Vapor pressure : Not applicable⁹⁾
 Relative density : 5.67¹⁾, 5.607 (20°C)⁹⁾
 Solubility : Insoluble in water¹⁾
 0.00042g/100g water (20 degrees-C)⁶⁾, 0.00016g/100cm³ (29 degrees-C)⁸⁾
 Insoluble in alcohols⁵⁾, soluble in acids⁵⁾
 Soluble in dilute acetic acid or inorganic acids or ammonia²⁾

Partition coefficient (n-octanol/water) : No data.⁹⁾

Auto ignition temperature : Incombustibles ⁴⁾, not applicable ⁵⁾
 Decomposition temperature : No data.
 Evaporation rate (BuAc = 1) : No data.
 Flammability (solid, gas) : Not applicable.
 Viscosity : No data.

10. Stability and reactivity

Reactivity: Zinc oxide does not react in general conditions.
 Chemical stability : Zinc oxide is stable in general conditions.
 Soluble in acids and alkalis.
 React with sulfur compounds (gas) such as hydrogen sulfide when heated.
 Absorbs carbon dioxide from air.
 Possibility of hazardous reactions: Has exploded when mixed with chlorinated rubber.
 Reacts violently with magnesium, linseed oil.
 Zinc oxide and magnesium can react explosively when heated.
 Conditions to avoid : Heat, incompatibles.
 Incompatible materials : Chlorinated rubber, magnesium, linseed oil.
 Hazardous decomposition products : When heated to very high temperatures, zinc oxide sublimes to produce toxic fumes.

11. Toxicological information

Acute toxicity :	Oral	Rat	LD50	>5000mg/kg ⁵⁾
	Inhalation(dust)	Rat	LC	>5.7mg/L /4H ⁵⁾

Skin corrosion/irritation : Rabbit : not irritating. ⁵⁾, ⁶⁾
 Serious eye damage/ irritation : Rabbit : minimal or not irritating. ⁵⁾
 Respiratory sensitization : No information.
 Skin sensitization : No affections. ⁵⁾
 Germ cell mutagenicity : Suspected of positive (chromosomal aberration test, in vivo),
 divided into positive and negative (in vitro). ³⁾, ⁵⁾
 Carcinogenicity : EPA : group D (unable to divide into carcinogenicity in humans).
 Reproductive toxicity : There are reports that the administration of zinc oxide via diet affect the unbor child in rats. But in dam animals, it is undeniable that expression of general toxicity by the same doses zinc oxid.
 STOST-single exposure : Category 1 : Inhalation can cause a flu-like illness (metal fume fever). ⁶⁾
 No respiratory tract irritation. ⁵⁾
 STOST-repeated exposure : Classification is not possible due to a data deficiency.
 Aspiration hazard : No information

12. Ecological information

Hazardous to the aquatic environment(acute):
 Category 1
 Celenastrum 72 hour EC50 >0.17mg/L (ECH221, 2001) (0.21mg/L as ZnO)
 Hazardous to the aquatic environment(long-term):
 Category 1
 Acute toxicity is category 1.
 Low biological cumulation (BCF=217), but the behavior of zinc oxide in water is unknown.

Eco-toxicity: Crustacean(Daphnids) 48-h LC50=0.098 mg Zn/L
Biodegradability: No relevant information found.
Bioaccumulation potential: Low bioaccumulation potential (BCF=217)
Mobility in soil: No relevant information found.
Hazardous to the ozone layer: No relevant information found.

13. Disposal considerations

Waste disposal : Comply with local/regional/national regulations.
Containers : Containers should be cleaned up, then recycle or dispose of in accordance with regulations.

14. Transport information

International regulation : Transporting by sea : dangerous goods
Transporting by air : dangerous goods
Peculiar protection : Containers should be protected from direct sunlight, fall, shock, corrosion etc.
Pallets with containers should not be stacked up.
UN Number : 3077
Class : 9
Proper Shipping Name : Environmentally hazardous substance (solid)
Packing group : III
label : environmental hazard, Environmentally hazardous substance (class 9)



15. Regulatory information

EU COMMISSION DIRECTIVE 2001/58/EC

Label Name : Ultrafine Zinc Oxide FINEX-50-OTS (Trial product)

According to Directives 67/548/EEC

Information To List With Respect To Hazardous Ingredients :
Contains : > 72.0% as ZnO

Hazard Symbols : N : Dangerous for the environment



Risk Phrases : R50 : Very toxic to aquatic organisms
R53 : May cause long-term adverse effect in the aquatic environment

Safety Phrases : S60 : This material and its container must be disposed of as hazardous waste
S61 : Avoid release to the environment.
Refer to special instruction/safety data sheet

Please refer to any other national measures that may be relevant

16. Other information

References	1) GHS Classification (2006) "National Institute of Technology and Evaluation"
	2) HSDB (2005)
	3) IRIS (2005)
	4) ICSC (2004)
	5) EU-RAR 43 (2004)
	6) ACGIH (2003)
	7) Gangolli (2nd, 1999)
	8) Chaoman (2005)
	9) PATTY (5th, 2001)
	10) DFGOT vol 18 (2002)

17. Caution

- This information may be amended in the light of newly acquired knowledge and/or test results.
- The information provided has been prepared on the basis of materials, knowledge, data, etc. which are currently available.
However, the information given on the contents, physical properties, and the hazardous or harmful nature of the product cannot be guaranteed.
- Cautions are given on the handling of the product in normal circumstances.
If the product is to be used in a special manner, precautionary measures must be taken appropriate to such usage.
- Since any chemical product is liable to have unknown harmful effects, very careful handling is always necessary.
Users are advised that it is their responsibility to establish safe conditions for handling the product.

