

MATERIAL SAFETY DATA SHEET

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Department: Develop Department
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Product name : Pana-Tetra

1. Specific of material

Chemical name : Zinc oxide
Contents : above 99.9%
Chemical formula : ZnO
CAS No. : 1314-13-2
ENCS No. : 1-561 (Zinc oxide)
CAS No. : 1314-13-2 (Zinc oxide)

2. SUMMARY OF DANGEROUSNESS OR HARMFUL PROPERTY

GHS Classification

Physical and Chemical 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 chemical substance : Not applicable
- Pyrophoric liquids : Not applicable
- Pyrophoric solids : Not classified
- Self-heating chemical substance : Not classified
- Chemical substance which, in contact with water, emit flammable gasses : Not classified
- Oxidizing liquids : Not applicable
- Oxidizing solids : Not classified
- Organic peroxides : Not applicable
- Corrosive to metals : Not applicable

Health Hazards

- Acute toxicity (oral) : Not classified

- Acute toxicity (skin) : Not classified
- Acute toxicity (inhalation: gas) : Not applicable
- Acute toxicity (inhalation: vapour) : Not applicable
- Acute toxicity (inhalation: dust) : Category 5
- Acute toxicity (inhalation: mist) : Not applicable
- skin corrosion / irritation : Not classified
- Respiratory sensitization : Not applicable
- Skin sensitization : Not classified
- Germ cell mutagenicity : Not applicable
- Carcinogenicity : Not classified
- Specific target organ toxicity : Category 1 (inhalation: whole body)
- Specific target organ toxicity : Category 1 (Inhalation: lung)
- Respiratory organ hazard : Not applicable

Environmental Hazards

- Aquatic toxicity(acute) : Category 1
- Aquatic toxicity(chronic) : Category 1

FIRST AID MEASURES

- Eye contact : Flush with plenty of water immediately. In case of continuous pain, tears in excess, or continuous congestion etc, consult physician for medical attention
- Skin contact : Wash off in flowing water or soapsuds. In case of pain, or inflammation etc, consult physician for medical attention.
- Inhalation : In case of coughing, losing breath, or feeling stimulation in the throat or the respiratory organ etc, move to the fresh air at once. If symptom doesn't settle, consult physician for medical attention.

3. FIRE FIGHTING MEASURES

Fire-extinguishing method: Extinguish fire by the method suitable for the surroundings.

(This material itself is nonflammable.)

Unsuitable extinguishing media: Water jet.

Protection for fire-extinguishing people: During a fire, wear self-contained breathing apparatus and other protective equipments.

4. MEASURES FOR SPILL

Precautions for human body: Wearing a suitable protective equipment, do not contact eyes/skin and do not inhale the gas. Remove by vacuum cleaner etc, avoiding powder to be airborne.

Environmental precautions: Do not let the substance enter the environment. Collect the dust after it is dampened by water if necessary.

Enclosure and Depuration/Equipment: Stop leakage if it is not dangerous.

Prevention of Secondary disaster: Avoid inflow to the drain, subway or the close place.

5. PRECAUTIONS FOR HANDLING AND STORAGE

Handling

Technical measure: Take measures of as described in chapter “6. EXPOSURE CONTROLS / PERSONAL PROTECTION” and wear an appropriate protective equipment.

Local-ventilation/ Whole-ventilation: Set local exhaust or general ventilation of as described in chapter “6. EXPOSURE EXPOSURE CONTROLS / PERSONAL PROTECTION”

Precautions for safety handling: Do not eat, drink, or smoke when using this product.
Use only outdoors or in well ventilated areas.
Do not contact, inhale and ingest.

Contact evasion: Refer to “8. STABILITY AND REACTIVITY”.

Storage

Technical measure: Technical measure is not specially needed.

Storage condition: Keep containers tightly closed and storage in well ventilated areas.
The storehouse should be locked.

Packing materials: There is no regulation for packaging or container. However, storage in the container which is tightly closed and cannot be damaged.

6. EXPOSURE PREVENTION AND PROTECTION MEASURES

Control concentration: Not specified.

Permissible concentration: Japan Association of Industrial Health(2005)

Level 2	Respirable dust	1mg/m ³
	Total dust	4mg/ m ³
ACGIH(2005)	TLV-TWA	2mg/ m ³
	TLV-STEL	10mg/ m ³ (dust)

Facility and equipment measures: Equip the partial exhauster in the work area where dust may generate.

Protective device: Wear dust mask, eye shield, protective gloves if necessary.

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

7. PHYSICAL AND CHEMICAL PROPERTIES

Physical state, form, color	: White powder
Smell	: No odor
Melting point	: 1975°C
Boiling point	: 1720°C (Sublimation)
Flash point	: Nonflammable
Explosion properties	: No data
Vapor pressure	: No data
Vapor density	: No data
Specific gravity	: 5.78

Solubility	: No soluble in water
Natural ignition temperature	: No data
Decomposition temperature	: No data
Combustibility	: Not applicable
Viscosity	: No data

8. STABILITY AND REACTIVITY

Stability	: Stable for normal storage and handling.
Possibility of hazardous reactions:	Reacts with aluminum, magnesium powder, and chlorinated rubber if heated.
Conditions to be avoided	: Contacts incompatible materials.

9. HAZARDOUS PROPERTY INFORMATION

Acute toxicity(Oral)	: Not classified because of "rat LD50 > 7950mg/kg(EU-PAR 43(2004))".
Acute toxicity(skin)	: Not applicable because of "no data".
Acute toxicity(inhalation: dust):	Category 5 because of "rat LC50 > 5.7mg/L(EU-PAR43(2004))".
Skin corrosion/ irritation:	Not classified because of "no irritation by the experiment of the rabbit which was quoted to ACGIH(2003) and EU-RAR43(2004)".
Serious eye damage/ eye irritation:	No classified because of "no irritation at one report and light irritation at two reports out of three reports which were recorded in EU-RAR(2004)".

10. ENVIRONMENTAL INFLUENCE INFORMATION

Aquatic acute toxicity:	Category 1 because of "EC ₅₀ =0.17mg/L (The value of the conversion of the density of zinc oxide 0.21mg/L) of 72 hours of the alga". Very strong toxicity for aquatic life.
Aquatic chronic toxicity:	Category 1 because of "the metallic compound and the unknown behavior in the aqua while accumulation of aquatic life is low as BCF=217(the existing chemical safety inspection data)". Very strong toxicity for aquatic life by the long influence.

11. PRECAUTIONS FOR DISPOSAL

Residual waste:	• Disposal should obey the relevant law and the official regulation. • Consign to the waste treatment company having the official approval of regulation or to the local government, if they treat the waste. • Notify the dangerous and hazardous information thoroughly to waste treatment company, when the processing of waste is consigned.
Pollution container and packing:	Used containers could be recycled by cleaning or should be disposed in accordance with the official treatment. In case of disposal, remove all contents.

12. PRECAUTIONS FOR TRANSPORTATION

International regulation

Sea : non-dangerous substance

Air : non-dangerous substance

Domestic regulation

Land : not applicable

Sea : non-dangerous substance

Air : non-dangerous substance

Special cautions: Confirm that there are no damage, no corrosion, or no leakage etc of the container before the transportation. Load without fall or damage, and deal with prevention of the cargo collapse.

13. APPLICABLE LAWS AND REGULATIONS

Industrial Safety and Health Act

Notifiable substances

(Article 57-2 of Act, appended table 9 of article 18-2 of Order)

(The 188th of government ordinance numbers)

Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

(PRTR Law): Not applicable

14. OTHER INFORMATION

Handling of written contents: The contents of descriptions above are based on documents, information, and data currently available. We, however, do not give any guarantee about physical-chemical property, hazard, and toxicity. Precautions are intended for normal handling. Take necessary safety measures matched to purpose and usage in the case of special handling.