

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product Name: Zinc Oxide Nanowires A50, Research Grade

Catalog Number: NovaWire-ZnO-A50

Formula: ZnO

Diameter: ~ 50 nm

Length: ~ 20  $\mu$ m

Supplier: Novarials Corporation  
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**2. HAZARDS IDENTIFICATION**

**GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 1), H410

**GHS Label elements, including precautionary statements**



Pictogram

Signal word Warning

Hazard statement(s)

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273 Avoid release to the environment.

P391 Collect spillage.

P501 Dispose of contents/container to an approved waste disposal plant.

**NFPA Ratings**

Health Hazard: 0

Fire Hazard: 0

Reactivity Hazard: 0

**HMIS Ratings**

**Health Hazard:** 0  
**Chronic Health Hazard:**  
**Flammability:** 0  
**Physical Hazard:** 0

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Zinc oxide  
Formula: ZnO  
Molecular weight: 81.39 g/mol

Component	Concentration
<b>Zinc oxide</b>	
CAS-No.	1314-13-2
EC-No.	215-222-5

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### 4. FIRST AID MEASURES

#### General advice

Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

#### If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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### 5. FIREFIGHTING MEASURES

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

#### Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

#### Hazardous combustion products

Hazardous decomposition products formed under fire conditions – Zinc/zinc oxides

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### 6. ACCIDENTAL RELEASE MEASURES

#### Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

#### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

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## 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

### Conditions for safe storage

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

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Personal protective equipment

#### Respiratory protection

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Eye/Face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Body protection

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Form	cotton
Color	white

### Safety data

pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Auto ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available

Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

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## 10. STABILITY AND REACTIVITY

### Reactivity

no data available

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

no data available

### Conditions to avoid

no data available

### Materials to avoid

Strong oxidizing agents.

### Hazardous decomposition products

Other decomposition products -no data available

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## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

LD50 Oral - Mouse - 7,950 mg/kg

LC50 Inhalation - Mouse - 2,500 mg/m<sup>3</sup>

Dermal: No data available

### Skin corrosion/irritation

Skin - Rabbit

Result: Mild skin irritation - 24 h

### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Mild eye irritation - 24 h

Eyes - Rabbit

Result: Mild eye irritation - 24 h

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as

probable, possible or confirmed human carcinogen by IARC.  
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.  
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**Reproductive toxicity**

no data available

**Specific target organ toxicity -single exposure (Globally Harmonized System)**

no data available

**Specific target organ toxicity -repeated exposure (Globally Harmonized System)**

no data available

**Aspiration hazard**

no data available

**Additional Information**

RTECS: Not available

Zinc oxide dust or fume can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called oxide pox. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain, and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin. Prolonged or repeated exposure can cause: reversible liver enzyme abnormalities, diarrhea.

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**12. ECOLOGICAL INFORMATION**

**Toxicity**

Toxicity to fish LC50 - Oncorhynchus mykiss (rainbow trout) - 1.1 mg/l - 96.0 h

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 0.098 mg/l - 48 h

**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

**Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Very toxic to aquatic life.

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**13. DISPOSAL CONSIDERATIONS**

**Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

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**14. TRANSPORT INFORMATION**

**DOT (US)**

Not a dangerous goods.

**IMDG**

UN number: 3077      Class: 9      Packing group: III EMS-No: F-A, S-F  
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Zinc oxide)  
Marine pollutant: Marine pollutant

**IATA**

UN number: 3077      Class: 9      Packing group: III  
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Zinc oxide)

**Further information**

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

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**15. REGULATORY INFORMATION**

**SARA 302 Components**

Not required

**SARA 313 Components**

The following components are subject to reporting levels established by SARA Title III, Section 313:  
Zinc oxide      CAS-No. 1314-13-2

**SARA 311/312 Hazards**

No SARA Hazards

**Massachusetts Right To Know Components**

Zinc oxide      CAS-No. 1314-13-2

**Pennsylvania Right To Know Components**

Zinc oxide      CAS-No. 1314-13-2

**New Jersey Right To Know Components**

Zinc oxide      CAS-No. 1314-13-2

**California Prop. 65 Components**

This product does not contain any chemical known to State of California to cause cancer, birth defects, or any other reproductive harm.

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**16. DISCLAIMER**

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