

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Tungsten Oxide Nanowires A20**

Catalog Number: NovaWire-WO-20

Formula: WO_3

Diameter: ~ 20 nm

Length: ~ 10 μ m

Supplier : Novarials Corporation
800 W Cummings Park, Suite 4600
Woburn, MA 01801

Email: info@novarials.com
Telephone: +1 617-276-5642
Fax: +1 781-995-0388

2. HAZARDS IDENTIFICATION

Emergency Overview

GHS Label elements, including precautionary statements

Not a dangerous substance or mixture according to the Globally Harmonised System (GHS)

HMIS Classification

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

NFPA Rating

Health hazard:	0
Fire:	0
Reactivity Hazard:	0

Potential Health Effects

Inhalation	Maybe harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. May causes skin irritation.
Eyes	May causes eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Tungsten Oxide

Formula: WO₃
Molecular Weight: 231.84 g/mol

Component	Concentration
Tungsten trioxide	
CAS-No.	1314-35-8
EC-No.	215-231-4

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.

5. FIREFIGHTING MEASURES

Conditions of flammability

Not flammable or combustible

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 – Tungsten/Tungsten oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.

Environmental precautions

No special environmental precautions required.

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.

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. Normal measures for preventive fire protection.

Conditions for safe storage

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

8. 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 cartridge. 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 protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

General industrial hygiene practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES**APPEARANCE**

Form	powder
Color	white

Safety data

pH	no data available
Melting point/freezing point	1,472 °C
Boiling point	1,837 °C at 1,013 hPa
Flash point	not applicable
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	7.16 g/cm ³
Water solubility	no data available
Partition coefficient:	no data available

n-octanol/water	
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong acids

Hazardous decomposition products

Hazardous decomposition products formed under fire condition – Tungsten/Tungsten oxides

Other decomposition products -no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

LD50 oral – rat – male and female - >2,000 mg/kg

Inhalation LC50

LC50 Inhalation – rat – male and female – 4h - >5.36 mg/l

Dermal LD50

no data available

Skin corrosion/irritation

Skin – rabbit – No skin irritation – 4h – OECD – Test Guideline 404

Serious eye damage/eye irritation

Eyes – rabbit – No eye irritation – 72h – OECD – Test Guideline 405

Respiratory or skin sensitization

Maximisation Test – guinea pig – Does not cause skin sensitization – OECD Test Guideline 406

Germ cell mutagenicity

Genotoxicity in vitro – Ames test – S. typhimurium – with and without metabolic activation - negative

Carcinogenicity

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

Teratogenicity

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

Synergistic effects

No data available

Additional Information

RTECS: YO7760000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	Static test LC0 – Danio rerio (zebra fish) ->= 5.25 mg/l – 96h Method: OECD Test Guidline 203
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC0: Daphnia magna (water flea) - >= 2.6 mg/l - 48h Method: OECD Test Guidline 202
Toxicity to algae	Growth inhibition EC0 – Desmodesmus subspicatus (green algae) - >= 1 mg/l – 72h Method: OECD Test Guidline 201
Toxicity to bacteria	Respiration inhibition EC50 – Sludge Treatment -> 10,000 mg/l – 3h

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

PBT and vPvB assessment

No data available

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards

Target Organ Effect

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components:

SARA 313: This materials does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

Tungsten trioxide

CAS-No. 1314-35-8

New Jersey Right To Know Components

Tungsten trioxide

CAS-No. 1314-35-8

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.

16. DISCLAIMER

Novarials Corporation believes that the information in this Safety Data Sheet is accurate and represents the best and most current information available to us. Novarials Corporation makes no representations or warranties either express or implied, regarding the suitability of the materials for any purpose or the accuracy if the information contained within this document. Accordingly, Novarials Corporation and its affiliates shall not be held liable for any damage resulting from shipping, handling, storage, use of the above product.