

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product Name: **Manganese Oxide Nanowires A1, Research Grade**

Catalog Number: NovaWire-MnO-A1

Formula: MnO<sub>2</sub>

Diameter: ~ 10 nm

Length: ~ 10 micron

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

Email: info@novarials.com  
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Fax: +1 781-995-0388

**2. HAZARDS IDENTIFICATION**

**Emergency Overview**

**GHS Classification**

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

**GHS Label elements, including precautionary statements**

Pictogram



Signal word Warning

Hazard statement(s)

H302 + H332 Harmful if swallowed or if inhaled

Precautionary statement(s)

P261 Avoid breathing dust/ fume/gas/mist/vapors/spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

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

**HMIS Classification**

Health hazard: 2  
Chronic Health Hazard: \*  
Flammability: 0  
Physical hazards: 0

**NFPA Rating**

Health hazard: 2  
Fire: 0  
Reactivity Hazard: 0

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms : Manganese Dioxide  
Formula: MnO<sub>2</sub>  
Molecular Weight: 86.94 g/mol

Component	Concentration
<b>Manganese dioxide</b>	
CAS-No.	1313-13-9
EC-No.	215-202-6
Index-No	025-001-00-3
<b>Water</b>	
CAS-No.	7732-18-5
EC-No.	231-791-2

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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****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 – Manganese/manganese 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. Avoid breathing dust.

**Environmental precautions**

Do not let product enter drains.

**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 dry and well-ventilated place.

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**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).

**Body protection**

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

**APPEARANCE**

Form wet cake  
Color black

**Safety data**

pH no data available  
Melting point/freezing point no data available  
Boiling point no data available  
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 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****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, strong reducing agents, organic materials

**Hazardous decomposition products**

Hazardous decomposition products formed under fire conditions– Manganese/manganese oxides  
Other decomposition products -no data available

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**11. TOXICOLOGICAL INFORMATION****Acute toxicity**

no data available

**Skin corrosion/irritation**

no data available

**Serious eye damage/eye irritation**

no data available

**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 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

**Signs and Symptoms of Exposure**

Men exposed to manganese dusts showed a decrease in fertility. Chronic manganese poisoning primarily involves the central nervous system. Early symptoms include languor, sleepiness and weakness in the legs. A stolid mask-like appearance of the face, emotional disturbances such as uncontrollable laughter and a spastic gait with tendency to fall in walking are findings in more advanced cases. High incidence of pneumonia has been found in workers exposed to the dust or fume of some manganese compounds.

**Synergistic effects**

no data available

**Additional Information**

RTECS: OP0350000

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**12. ECOLOGICAL INFORMATION****Toxicity**

no data available

**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**  
no data available

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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 dangerous goods

**IMDG**

Not dangerous goods

**IATA**

Not dangerous goods

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### 15. REGULATORY INFORMATION

**OSHA Hazards**

Target Organ Effect, Toxic by inhalation.

**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:**

Manganese Dioxide	CAS-No. 1313-13-9
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**SARA 311/312 Hazards**

Acute Health Hazards, Chronic Health Hazard

**Massachusetts Right To Know Components**

Manganese Dioxide	CAS-No. 1313-13-9
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**Pennsylvania Right To Know Components**

Manganese Dioxide	CAS-No. 1313-13-9
Water	CAS-No. 7732-18-5

**New Jersey Right To Know Components**

Manganese Dioxide	CAS-No. 1313-13-9
Water	CAS-No. 7732-18-5

**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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