



Safety Data Sheet

Version 4.4
Revision date 01/05/2019

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Indium Tin Oxide in Water
Product Number : 7026HZW
CAS-No. : 50926-11-9

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Nanostructured & Amorphous Materials Inc.
1526 Katy Gap Rd, STE 302
Katy, TX 77494, USA

Telephone : +1 281-858-6571
Fax : +1 281-858-6507

1.4 Emergency telephone number

Emergency Phone # : +1 281-858-6571

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

Flammable liquids (Category 2) H225

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Specific target organ toxicity - single exposure (Category 3), Respiratory system,

Central nervous system, H335, H336

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.
H315 Causes skin irritation
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.2 Mixtures**

Synonyms : ITO

Hazardous components

| Component | Classification | Concentration |
|--------------------------|----------------|---------------|
| 2-Propanol | | |
| CAS-No. | 67-63-0 | 70 - 90 % |
| EC-No. | 200-661-7 | |
| Index-No. | 603-117-00-0 | |
| Diindium trioxide | | |
| CAS-No. | 1312-43-2 | 20 - 30 % |
| EC-No. | 215-193-9 | |

Tin(IV) oxide

| | | | |
|---------|------------|--|---------|
| CAS-No. | 18282-10-5 | | 1 - 5 % |
| EC-No. | 242-159-0 | | |

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

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. Consult a physician

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

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

5.2 Special hazards arising from the substance or mixture

No data available

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE**7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature -20°C

Handle and store under inert gas. Hygroscopic.

Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1 Control parameters**

| Component | CAS-No. | Value | Control parameters | Basis |
|------------|---------|--|--------------------|---|
| 2-Propanol | 67-63-0 | TWA | 200.000000 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | Remarks | Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen | | |
| | | TWA | 200 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | | Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen | | |
| | | STEL | 400.000000 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| | | Central Nervous System impairment | | |

| | | | | |
|-------------------|------------|---|--------------------------------------|---|
| | | Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen | | |
| | | TWA | 400.000000 ppm 980.000000 mg/m3 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| | | The value in mg/m3 is approximate. | | |
| | | TWA | 400.000000 ppm 980.000000 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| | | ST | 500.000000 ppm 1,225.000000 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| | | PEL | 400 ppm 980 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |
| | | STEL | 500 ppm 1,225 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |
| Diindium trioxide | 1312-43-2 | TWA | 0.100000 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Pulmonary edema Pneumonitis Dental erosion Malaise | | |
| | | TWA | 0.100000 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| | | TWA | 0.1 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Pulmonary edema Pneumonitis Dental erosion Malaise | | |
| | | TWA | 0.1 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| Tin(IV) oxide | 18282-10-5 | TWA | 2.000000 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| | | Also see specific listing for Tin(II) oxide (as Sn). | | |
| | | TWA | 2.000000 mg/m3 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| | | TWA | 2.000000 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Eye & Upper Respiratory Tract irritation Headache Pneumoconiosis Nausea varies | | |
| | | TWA | 2.000000 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |

| | | | | |
|--|--|--|---------|---|
| | | Pneumoconiosis (or Stannosis) varies | | |
| | | TWA | 2 mg/m3 | USA. NIOSH Recommended Exposure Limits |
| | | Also see specific listing for Tin(II) oxide (as Sn). | | |
| | | TWA | 2 mg/m3 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| | | TWA | 2 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Pneumoconiosis (or Stannosis) varies | | |
| | | PEL | 2 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

| Component | CAS-No. | Parameters | Value | Biological specimen | Basis |
|-----------|---------|---------------------------------|--------------|---------------------|---|
| alcohol | - | Acetone | 40.0000 mg/l | Urine | ACGIH - Biological Exposure Indices (BEI) |
| | Remarks | End of shift at end of workweek | | | |

8.2 Exposure controls

Appropriate engineering controls

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

Personal protective equipment

Eye/face protection

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

Skin 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.

Body Protection

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

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

| | |
|---|--|
| a) Appearance | Form: Liquid |
| b) Odour | No data available |
| c) Odour Threshold | No data available |
| d) pH | 5.0 - 6.0 |
| e) Melting point/freezing point | No data available |
| f) Initial boiling point and boiling range | 82 °C (180 °F) at 1,013 hPa (760 mmHg) |
| g) Flash point | 14 °C (57 °F) - closed cup |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapour pressure | No data available |
| l) Vapour density | No data available |
| m) Relative density | 1.040 g/cm ³ at 25 °C (77 °F) |
| n) Water solubility | No data available |
| o) Partition coefficient: n-octanol/water | No data available |
| p) Auto-ignition temperature | 399 °C (750 °F) |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Aluminium, Acids, Oxidizing agents, Strong oxidizing agents, Potassium, Halogenated compounds, Strong acids, Acid anhydrides, Aluminum, Sodium/sodium oxides, Magnesium

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Tin/tin oxides, Indium/indium oxides

Other decomposition products - No data available

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

No data available

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

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 probable, possible or confirmed human carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: Not available

Central nervous system depression, prolonged or repeated exposure can cause: Nausea, Dizziness, narcosis, Drowsiness, Inorganic tin salts are poorly absorbed into the body. When parenterally administered tin salts are highly toxic. Tin oxide inhaled as a dust or fume leads to a benign pneumoconiosis with no sign of interference with pulmonary function. Deposited dust appears nodular with the particles being mostly extracellular. No necrosis, foreign-body giant-cell reaction, or collagen formation has been seen. Tin salts that have gained access to the blood stream are highly toxic and produce neurologic damage and paralysis. With most common tin salts, the toxicity profile is complicated by hydrolysis in body fluids producing unphysiologic pH values. The reported symptoms of hyperemia, vascular changes with bleeding in the central nervous system, liver, heart, and other organs may be due to tin itself or to the unphysiological pH changes. Ingestion produces vomiting due to the gastric irritation from the activity and astringency of tin compounds. Injection of inorganic tin salts produces diarrhea, muscle paralysis, and twitching.

Kidney - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

Kidney - Irregularities - Based on Human Evidence (2-Propanol)

Stomach - Irregularities - Based on Human Evidence (Tin(IV) oxide)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

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

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. 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.

14. TRANSPORT INFORMATION

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

15. REGULATORY INFORMATION

SARA 302 Components

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

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

| | CAS-No. | Revision Date |
|------------|---------|---------------|
| 2-Propanol | 67-63-0 | 1987-01-01 |

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

| | CAS-No. | Revision Date |
|---------------|------------|---------------|
| 2-Propanol | 67-63-0 | 1987-01-01 |
| Tin(IV) oxide | 18282-10-5 | 2007-03-01 |

Pennsylvania Right To Know Components

| | CAS-No. | Revision Date |
|-------------------|------------|---------------|
| 2-Propanol | 67-63-0 | 1987-01-01 |
| Diindium trioxide | 1312-43-2 | |
| Tin(IV) oxide | 18282-10-5 | 2007-03-01 |

| | CAS-No. | Revision Date |
|-------------------|-----------|---------------|
| 2-Propanol | 67-63-0 | 1987-01-01 |
| Diindium trioxide | 1312-43-2 | |

New Jersey Right To Know Components

| | CAS-No. | Revision Date |
|-------------------|------------|---------------|
| 2-Propanol | 67-63-0 | 1987-01-01 |
| Diindium trioxide | 1312-43-2 | |
| Tin(IV) oxide | 18282-10-5 | 2007-03-01 |

California Prop. 65 Components

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

16. OTHER INFORMATION**Full text of H-Statements referred to under sections 2 and 3.**

| | |
|------------|--|
| Eye Irrit. | Eye irritation |
| Flam. | Liq. Flammable liquids |
| H225 | Highly flammable liquid and vapour. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| STOT SE | Specific target organ toxicity - single exposure |

HMIS Rating

| | |
|------------------------|---|
| Health hazard: | 2 |
| Chronic Health Hazard: | * |
| Flammability: | 3 |
| Physical Hazard: | 0 |

NFPA Rating

| | |
|--------------------|---|
| Health hazard: | 2 |
| Fire Hazard: | 3 |
| Reactivity Hazard: | 0 |

Further information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.