

# Material Safety Data Sheet

acc. to OSHA and ANSI

Nov. 01, 2007

## 1 Identification of substance:

- Product details:
- Trade name: Titanium oxide (Anatase) dispersion in 2-Propanol
- Stock number: 7011WJPA
- Manufacturer/Supplier:  
Nanostructured & Amorphous Materials, Inc.  
16840 Clay Road, Suite #113  
Houston, TX 77084, USA

## 2 Composition/Data on components:

Chemical characterization:

Description: (CAS#)

2-Propanol (CAS# 67-63-0), ~80wt%

Titanium Oxide: TiO<sub>2</sub>, CAS#: 1317-70-2, 20wt%

## 3 Hazards identification

Emergency Overview

OSHA Hazards

Flammable Liquid

Delayed target organ effects

Mild skin irritant

Moderate eye irritant

Target Organs

Gastrointestinal tract, Liver, Cardiovascular system., Kidney, Nerves.

HMIS Classification

Health Hazard: 2

Chronic Health Hazard: \*

Flammability: 3

Physical hazards: 0

NFPA Rating

Health Hazard: 2

Fire : 3

Reactivity Hazard: 0

Potential Health Effects

## 4 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.  
If swallowed  
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

## 5 Fire fighting measures

### **Flammable properties**

Flash point 12.0 °C (53.6 °F) - closed cup

Ignition temperature 425 °C (797 °F)

### **Suitable extinguishing media**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water. Carbon dioxide (CO<sub>2</sub>)

### **Special protective equipment for fire-fighters**

Wear self contained breathing apparatus for fire fighting if necessary.

### **Further information**

Use water spray to cool unopened containers.

## 6 Accidental release measures

### Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

### Environmental precautions

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

### Methods for cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

## 7 Handling and storage

### Handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

### Storage

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. Store in cool place.

## 8 Exposure controls and personal protection

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Propan-2-ol	67-63-0	TWA	200 ppm	2003-01-01	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004:Committees on Threshold Limit Values

					(TLVs ) and Biological Exposure Indices (BEIs)
Remarks	Refers to Appendix A -- Carcinogens. ACGIH 2003 Adoption				
		STEL	400 ppm	2003-01-01	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004:Committees on Threshold Limit Values (TLVs ) and Biological Exposure Indices (BEIs)
	ACGIH 2003 Adoption Refers to Appendix A -- Carcinogens.				
		TWA	400 ppm 980 mg/m3	1989-03-01	US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A
		STEL	500 ppm 1,225 mg/m3	1989-03-01	US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A
		TWA	400 ppm 980 mg/m3	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PEL) 29 CFR 1910.1000 Air Contaminants.

#### Personal protective equipment

##### 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).

##### Hand protection

Handle with gloves.

##### Eye protection

Safety glasses

##### Skin and body protection

impervious clothing, Choose body protection according to the amount and concentration of the dangerous substance at the work place.

##### Hygiene measures

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

#### 9 Physical and chemical properties:

- Form: Dispersion
- Color: Milky white

##### Value/Range Unit Method

- Ph: Not determined
- Change in condition
- Melting point -89.5 °C (-129.1 °F)
- Boiling point 81.0 - 83.0 °C (177.8 - 181.4 °F)
- Flash point 12.0 °C (53.6 °F) - closed cup
- Flammability (solid, gaseous) flammable.
- Ignition temperature 425 °C (797 °F)
- Lower explosion limit 2 %(V)
- Upper explosion limit 12.7 %(V)

- Vapour pressure 43.2 hPa (32.4 mmHg) at 20.0 °C (68.0 °F)  
58.7 hPa (44.0 mmHg) at 25.0 °C (77.0 °F)
- Water: soluble

## 10 Stability and reactivity

Storage stability  
Stable under recommended storage conditions.  
Conditions to avoid  
Heat, flames and sparks.  
Materials to avoid  
Oxidizing agents, acids, Acid anhydrides, Halogens, Aluminum  
Hazardous decomposition products  
Hazardous decomposition products formed under fire conditions.  
Carbon oxides  
Hazardous reactions  
Vapours may form explosive mixture with air.

## 11 Toxicological information

Acute toxicity  
LD50 Oral - rat - 5,045 mg/kg  
Remarks: Behavioral: Altered sleep time (including change in righting reflex). Behavioral: Somnolence (general depressed activity).  
LC50 Inhalation - rat - 8 h - 16000 ppm  
LD50 Dermal - rabbit - 12,800 mg/kg  
Irritation and corrosion  
Skin - rabbit - Mild skin irritation  
Eyes - rabbit - Eye irritation - 24 h  
Sensitization  
Remarks: no data available  
Chronic exposure  
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.  
Signs and Symptoms of Exposure  
Central nervous system depression, prolonged or repeated exposure can cause: Nausea, Headache, Vomiting, narcosis, Drowsiness, Overexposure may cause mild, reversible liver effects.

## 12 Ecological information:

Elimination information (persistence and degradability)  
Biodegradability Remarks: no data available  
Ecotoxicity effects  
Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 9,640.00 mg/l - 96 h  
Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 5,102.00 mg/l - 24 h, Immobilization EC50 - Daphnia magna (Water flea) - 6,851 mg/l - 24 h  
Toxicity to algae EC50 - Scenedesmus subspicatus - > 2,000.00 mg/l - 72 h, EC50 - No information available.  
-> 1,000.00 mg/l - 24 h  
Further information on ecology  
no data available

## 13 Disposal considerations

Product  
Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.  
Contaminated packaging  
Dispose of as unused product.  
Recommendation:  
Disposal must be made according to official regulations.

#### 14 Transport information

DOT (US)  
UN-No.: 1219 Class: 3 Packing group: II  
Proper shipping name: Isopropanol  
IMDG  
UN-No.: 1219 Class: 3 Packing group: II EMS-No: F-E, S-D  
Proper shipping name: ISOPROPANOL  
Marine pollutant: No  
IATA  
UN-No.: 1219 Class: 3 Packing group: II  
Proper shipping name: Isopropanol

#### 15 Regulations

OSHA Hazards  
Flammable Liquid, Delayed target organ effects, Mild skin irritant, Moderate eye irritant  
TSCA Status  
On TSCA Inventory  
DSL Status  
All components of this product are on the Canadian DSL list.  
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  
Propan-2-ol, CAS-No., 67-63-0, Revision Date: 1987-01-01  
SARA 311/312 Hazards  
Fire Hazard, Acute Health Hazard, Chronic Health Hazard  
This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

#### 16 Other information:

- Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement 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 Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.