

## Section 1: Product and Company Identification:

### 1.1 Product Identifier

Product Form:	Mixture
Identification of Substance:	Colloidal titanium dioxide in water
Product Name:	NYACOL <sup>®</sup> TiSol B30, TiSol B70, TiSol B120
Synonym:	None
CAS Number:	13463-67-7
Index Number:	Not available.
EINECS Number:	236-675-5
REACH Registration Number:	Not Registered.
Formula:	TiO <sub>2</sub>
Nanoform:	TiO <sub>2</sub> exists as a nanoform

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

Recommended Use:	Ceramics. Coatings. Catalysts.
Restrictions on Use:	For industrial use only, not for food, drug or home use.

### 1.3 Details of the supplier of the safety data sheet

Company Identification:	Nyacol Nano Technologies, Incorporated Megunko Road, P.O. Box 349, Ashland, MA 01721 U.S.A. +1 508-881-2220
Email Contact:	<a href="mailto:info@nyacol.com">info@nyacol.com</a>
Internet:	<a href="http://www.nyacol.com">www.nyacol.com</a>

### 1.4 Emergency telephone number

In Case of Emergency:	USA/Canada CHEMTREC: +1 (703) 527-3887 International CHEMTREC: +1 (703) 741-5970 24 Hours/Day: 7 Days/Week
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## Section 2: Hazard(s) Identification

### 2.1 Classification of the substance or mixture

#### GHS-US Classification (OSHA HCS)

Skin Irritant, Category 2, H315 – Causes skin irritation  
Eye Irritation, Category 2, H319 – Causes serious eye irritation

#### Classification according to Regulation (EC) No. 1272/2008 (CLP)

Skin Irritant, Category 2, H315 – Causes skin irritation  
Eye Irritation, Category 2, H319 – Causes serious eye irritation

### 2.2 Label Elements



Signal Word: Warning

Hazard determining components of labeling:	Organic base
Hazard Statement(s)	H302 – Harmful if swallowed H312 – Harmful in contact with skin H315 – Causes skin irritation H319 – Causes serious eye irritation

## Precautionary Statement(s):

P264 – Wash face, hands and any exposed skin thoroughly after handling.  
 P270 – Do not eat, drink or smoke when using this product.  
 P280 – Wear protective gloves/protective clothing/eye protection/face protection.  
 P301+P312+P330  
 P302+P352 – IF ON SKIN: Wash with plenty of soap and water.  
 P312 – Call a POISON CENTER or doctor/physician if you feel unwell.  
 P321 – See Section 4 for specific treatment.  
 P322 – See Section 4 for specific measures.  
 P332+P313 – If skin irritation occurs: Get medical advice/attention.  
 P362 – Take off contaminated clothing and wash before reuse.  
 P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P337+P313 – If eye irritation persists: Get medical advice/attention.  
 P363 – Wash contaminated clothing before reuse.  
 P501 – Dispose of contents/container to a landfill approved for chemical waste or approved waste disposal plant.

**2.3 Other Hazards**

Components do not meet the criteria for a PBT or vPvB substance.

**2.4 Unknown acute toxicity (GHS US)**

No data available.

**Section 3: Composition / Information on Ingredients**
**3.1 Chemical characterization: Mixtures**

Description: Mixture consisting of the following components.

Component Name:	Product Identifiers	GHS Classification	Percent By Weight	SCL, M-factor, ATE
Titanium dioxide:	CAS: 13463-67-7 EINECS: 236-675-5 Index: Not available	Not classified.	20	
Organic base:	Trade secret	Met. Corr. 1 Acute Tox. 4 Skin Corr. 1B Eye Dam. 1 STOT SE 1 STOT RE 1	<0.8	
Water:	CAS: 7732-18-5 EINECS: 231-791-2 Index: Not available	Not classified.	79	

Impurities:

Present at a level below that to be taken into account for classification.

Stabilizing Additives:

None

The supplier currently has no knowledge on additional ingredients that are classified and that contribute to the classification of this substance.

See Section 16 for a list of hazards if identified above.

Nanoform characteristics:

Name of nanoform: Titanium Dioxide		
		<u>Value</u>
Number based particle size distribution, nm	d10	5 – 50
	d50	8 – 75
	d90	15 – 110
Shape and aspect ratio		Spherical
Surface functionalization		None
Specific surface area, m <sup>2</sup> /g		20–140

## Section 4: First-Aid Measures

### 4.1 Description of first aid measures

Eye Contact:	Immediately flush eyes with large quantities of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of the eye and lids with water. Get medical attention immediately.
Skin Contact:	Immediately flush skin with plenty of water for several minutes. Remove contaminated clothing. Get medical attention immediately.
Inhalation:	If inhaled, remove to fresh air; remove person from exposure source. Get medical attention immediately.
Ingestion:	Rinse mouth with water. Do NOT induce vomiting unless directed by medical professional. Never give anything by mouth to an unconscious person. Get medical attention immediately.
First Aid Facilities:	Eye wash station, safety shower.
Advice to Physicians:	No further relevant information available.

### 4.2 Most important symptoms and effects, both acute and delayed

See Section 2.2

### 4.3 Indication of any immediate medical attention and special treatment needed.

No further relevant information available.

## Section 5: Fire-Fighting Measures

### 5.1 Extinguishing Media

Suitable Extinguishing Media:	Use fire fighting measures that suit the environment. Cool containers with water spray.
Unsuitable extinguishing media:	None known.

### 5.2 Special hazards arising from the substance or mixture

Flammability of the product: Material is not flammable. Containers can build pressure if exposed to heat or fire.

Special Hazard Arising from the Chemical:  
 Fire Hazard: Combustible products may include nitrogen oxides. Containers can build pressure if exposed to heat or fire.

Explosion Hazard: No further relevant information available.

Reactivity: No further relevant information available.

### 5.3 Advice for firefighters

Special Protective Equipment for Fire-fighters: Wear standard full firefighter turn-out gear (full bunker gear) and respiratory protection (SCBA).

## Section 6: Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Eye protection and impervious gloves. Avoid mist formation. An approved air-purifying respirator should be worn if mist is present.

#### 6.1.1 For non-emergency personnel

Wear protective equipment. Keep unprotected persons away. Avoid inhalation of mist, fumes, or vapors. Avoid contact with skin and eyes.

### 6.2 Environmental precautions

Prevent entry into sewers and waterways or onto the ground.

### 6.3 Methods and material for containment and cleaning up

Ventilate area. Avoid breathing mist, fumes, or vapors. Avoid contact with skin, eyes or clothing. Wear appropriate personal protective equipment, including appropriate respiratory protection. Recover for recycle or disposal. Put in appropriate container. Prevent entry into sewers and waterways.

### 6.4 Reference to other sections

For more information on exposure controls and personal protection or disposal considerations, check section 8 and 13 of this SDS.

## Section 7: Handling and Storage

### 7.1 Precautions for safe handling

Minimum feasible handling, and temperatures should be maintained. Avoid generating mist during use. Use only in well ventilated area. Do not breath mist, fumes, or vapors.

#### 7.1.1 Protective measures

Use only in well ventilated areas. As a precautionary measure, the wearing of standard work gear is suggested. Do not smoke. Protect from heat. Protect against electrostatic charges.

#### 7.1.2 Advice on general occupational hygiene

Avoid inhalation, ingestion and contact with eyes and skin. General occupational hygiene measures are required to ensure a safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no eating, drinking and smoking at the workplace and wearing standard working clothes and shoes unless otherwise stated. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep from freezing. Periods of exposure to high temperatures should be minimized. Provide sufficient ventilation in storage and workrooms. Store in a cool dry area. Keep containers tightly sealed.

### 7.3 Specific end use(s)

No additional information available. Refer to Section 1.2 of this SDS.

## Section 8: Exposure Controls / Personal Protection

## 8.1 Control Parameters

### 8.1.1 National Limit Values

Titanium Dioxide, CAS #13463-67-7

Country	Occupational exposure limit	Exposure time	Date	Title	Reference
USA	15 mg/m <sup>3</sup>	8h TWA	2003	Titanium Dioxide (Total Dust)	<a href="https://www.osha.gov/dts/chemicalsampling/data/CH_272100.html">https://www.osha.gov/dts/chemicalsampling/data/CH_272100.html</a>
UK	10 mg/m <sup>3</sup>	8h TWA	2011	Titanium Dioxide (total inhalable)	Health and Safety Executive – <a href="http://www.hse.gov.uk/pubns/priced/eh40.pdf">http://www.hse.gov.uk/pubns/priced/eh40.pdf</a>
Germany	Not established		2014		Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (MAK Commission): <a href="http://www.dfg.de/en/dfg_profile/statutory_bodies/senate/health_hazards/index.html">http://www.dfg.de/en/dfg_profile/statutory_bodies/senate/health_hazards/index.html</a>
France	10 mg/m <sup>3</sup>	8h TWA	2012	Titanium dioxide	Institut National de Recherche et de Sécurité – <a href="http://www.inrs.fr/accueil/produits/mediatheque/doc/publications.html?refINRS=ED%20984">http://www.inrs.fr/accueil/produits/mediatheque/doc/publications.html?refINRS=ED%20984</a>

## 8.2 Exposure Controls

Engineering Controls:

Ventilation adequate to meet occupational exposure limits.

Hygiene Measures:

Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Respiratory:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air-supplied respirators should always be worn when airborne concentrations of the contaminant or oxygen content is unknown.

Hands:

Wear impervious gloves such as neoprene.

Eyes:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin:

Wear clean body-covering clothing; impervious gloves such as neoprene. Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Environmental Exposure Controls:

Adverse effects of this material on the environment have not been evaluated. Proper disposal techniques to isolate and recover material should be implemented.

## Section 9: Physical and Chemical Properties

**9.1 Information on basic physical and chemical properties**

Physical State	Liquid
Color:	White
Odor:	Slightly sweet
Melting point/freezing point:	Not determined
Boiling point:	100°C (212° F) water
Flammability:	Not flammable
Lower and upper explosion limit:	Not applicable
Flash point:	Not applicable
Auto-ignition temperature:	Not applicable
Decomposition temperature:	Not determined
pH:	10
Kinematic viscosity, mm <sup>2</sup> /s	<20 cP
Solubility:	Fully miscible with water. Nanoform insoluble in water.
Partition coefficient, n-octanol/water (log value)	Not determined
Vapor pressure	Not determined
Relative density (specific gravity)	1.2
Relative vapor density	Not determined
Particle characteristics	See Section 3 for nanoform characteristics

**9.2 Other information**

Not applicable.

**Section 10: Stability and Reactivity****10.1 Reactivity**

There are no known reactivity hazards associated with this product.

**10.2 Chemical Stability**

Stable under normal ambient and anticipated storage and handling conditions.

**10.3 Possibility of hazardous reactions**

No further relevant information available.

**10.4 Conditions to avoid**

Fast neutralization with an acid.

**10.5 Incompatible materials**

Acidic liquids. Water reactive chemicals.

**10.6 Hazardous decomposition products**

Oxides of nitrogen.

**Section 11: Toxicological Information****11.1 Information on toxicological effects**

Acute toxicity:

LD50, Rat, Oral Values for classification:

Titanium dioxide, CAS 13463-67-7

>2000 mg/kg

Skin corrosion/irritation:

Irritating to skin. Avoid contact with skin.

Eye damage/irritation:

Irritating to eyes and may cause serious eye irritation. Avoid contact with eyes.

Inhalation:

No further relevant information available.

Sensitization:

No further relevant information available.

Chronic Effects:

No further relevant information available.

Carcinogenicity

No data indicating any concern for carcinogenicity.

## Section 12: Ecological Information

### 12.1 Toxicity

No further relevant information available.

### 12.2 Persistence and degradability

No further relevant information available.

### 12.3 Bioaccumulative potential

No further relevant information available.

### 12.4 Mobility in soil

No further relevant information available.

### 12.5 Results of PBT and vPvB Assessment

The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to this product.

### 12.6 Endocrine disrupting properties

No further relevant information available.

### 12.7 Other adverse effects

No further relevant information available.

## Section 13: Disposal Considerations

This information presented only applies to the materials as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Disposal Considerations: Solids should be put in a landfill approved for chemical waste.

United States: The product is not a RCRA hazardous waste.

## Section 14: Transport Information

The product is not restricted for transportation.

### Sections 14.1 – 14.4

#### Regulations

U.S. D.O.T.: Not regulated.

ICAO/IATA: Not regulated.

IMO/IMDG: Not regulated.

ADR: Not regulated.

### 14.5 Environmental hazards:

Not an environmental hazard for transport.

### 14.6 Special precautions for user

Not available.

### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable.

## Section 15: Regulatory Information

### 15.1 Safety, health and environmental regulations/legislation specific for substance or mixture:

#### Worldwide Chemical Inventories

EINECS (EU): All ingredients listed

TSCA (USA):	All ingredients listed
DSL (Canada):	All ingredients listed
AICS (Australia):	All ingredients listed
ENCS (Japan):	All ingredients listed
ECL (Korea):	All ingredients listed
PICCS (Philippines):	All ingredients listed
IECSC (China):	All ingredients listed
State Right-to-Know Laws:	Section 3 of this SDS lists all components of the product.
California Proposition 65:	No ingredients listed.
SARA Section 311/312 (29 CFR 1910.1200) Hazards:	Serious eye damage or irritation. Skin corrosion or irritation.
SARA 313, 304 and CERCLA 102 (A):	No ingredients listed.

**15.2 Chemical safety assessment:**

A Chemical Safety Assessment has not been carried out.

**Section 16: Other Information**

List of relevant phrases:

- H302 – Harmful if swallowed
- H312 – Harmful in contact with skin
- H315 – Causes skin irritation
- H319 – Causes serious eye irritation

National Fire Protection Association (U.S.A.) 704 HMIS <sup>®</sup> Hazard Rating:	Health–2, Flammability–0, Reactivity–0, Special–None Health–2, Flammability–0, Reactivity–0, Protective Equipment – G; Safety glasses, Gloves, Vapor respirator.
Recommended Use:	The product is recommended for use as in ceramics, coatings and catalysts. Other uses have not been investigated and may have other hazards. For industrial use only, not for food, drug or home use.
Work Alert:	Workers using the product should read and understand this SDS and be trained in the proper use of this material.
Other Special Considerations:	None known.
SDS Prepared By:	Andrew Guzelian Nyacol Nano Technologies, Incorporated Telephone: 508–881–2220 U.S.A.
Revision Date:	April 30, 2024
Supersedes:	None

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