

**Section 1: Product and Company Identification:****1.1 Product Identifier**

Product Form: Mixture  
Identification of Substance: Barium titanate  
Product Name: NYACOL® BT-SD  
Synonym: Barium titanium trioxide  
CAS Number: 12047-27-7  
Index Number: 056-002-00-7  
EINECS Number: 234-975-0  
REACH Registration Number: 05-2117294625-33-0000  
Formula: BaTiO<sub>3</sub>

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

Recommended Use: Electronics.  
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.  
508-881-2220  
Email Contact: [info@nyacol.com](mailto:info@nyacol.com)  
Internet: [www.nyacol.com](http://www.nyacol.com)

**1.4 Emergency telephone number**

In Case of Emergency: CHEMTREC: 1-800-424-9300  
International CHEMTREC: +1 (703) 527-3887  
24 Hours/Day: 7 Days/Week

**Section 2: Hazard(s) Identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute Tox. 4, Oral; H302 Harmful if swallowed.  
Acute Tox. 4, Inhalation; H332 Harmful if inhaled.

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

Acute Tox. 4, Oral; H302 Harmful if swallowed.  
Acute Tox. 4, Inhalation; H332 Harmful if inhaled.

**Classification according to Directive 67/548/EEC and 1999/45/EC (including amendments)**

Barium titanium oxide – not classified.

**2.2 Label Elements – Labelling according to Regulation (EC) No. 1272/2008**

Signal Word: Warning

Hazard determining components of labelling: Barium titanate, CAS #12047-27-7

Hazard Statement(s): H302 Harmful if swallowed.  
H332 Harmful if inhaled.

**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.  
 P301+P312 – IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.  
 P330 – Rinse mouth.  
 P501 – Dispose of contents/container in accordance with all federal, state, and local environmental regulations.  
 P261 – Avoid breathing dust/fume/gas/mist/vapor/spray.  
 P271 – Use only outdoors or in a well-ventilated area.  
 P304+P340 – IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  
 P312 – Call a POISON CENTER or doctor/physical if you feel unwell.

**2.3 Other Hazards**

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

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

No data available.

### Section 3: Composition / Information on Ingredients

Description: Mixture consisting of the following components.

Component Name:	Product Identifier	GHS Classification	Percent By Weight
Barium Titanate: REACH: 05-2117294625-33-0000	CAS: 12047-27-7 EINECS: 234-975-0 Index: 056-002-00-7	Acute Tox. 4, H302 Acute Tox. 4, H332	90-95
Polymer	Trade secret, not a hazardous substance	Not classified	<10

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.

### Section 4: First-Aid Measures

**4.1 Description of first aid measures**

**Eye Contact:** Immediately flush eyes with plenty 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.

**Skin Contact:** Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists. Remove contaminated clothing.

**Inhalation:** Remove person from exposure. Seek immediate medical care if respiratory irritation, dizziness, nausea or unconsciousness occurs. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult medical professional.

**Ingestion:** Seek immediate medical care. Do not induce vomiting. Never give anything by mouth to an unconscious person.

**First Aid Facilities:** Eye wash station.

**Advice to Physicians:** Material if aspirated into the lungs, may cause chemical pneumonitis.

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

Concentrations above recommended exposure levels are irritating to the eyes and respiratory tract, may cause headache, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects including death.

**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: Carbon dioxide, foam, dry chemical and water fog.  
 Unsuitable extinguishing media: No further relevant information available.

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

Flammability of the product: Material will not burn in a fire. Containers can build pressure if exposed to heat or fire.  
 Special Hazard Arising from the Chemical: No further relevant information available.  
 Fire Hazard: No further relevant information available.  
 Explosion Hazard: Product can accumulate static charge which may cause a fire or explosion.  
 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. Wear self-contained breathing apparatus and protective clothing.

##### 6.1.1 For non-emergency personnel

Wear protective equipment. Keep unprotected persons away.

#### 6.2 Environmental precautions

Prevent entry into sewers/surface and ground water.

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

Eliminate all ignition sources. Absorb and/or contain spill with inert materials such as sand, vermiculite. Not an RCRA hazardous waste. Ventilate area. Avoid breathing dust, aerosol, or vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection.

#### 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

Keep away from heat and flame and any other ignition source. Avoid contact with skin. Avoid generating mist or dust during use. Protect against electrostatic charges. Empty container may retain residue and can be dangerous. Do not cut, drill, grind or weld on or near container. Use only in well ventilated area.

##### 7.1.1 Protective measures

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

##### 7.1.2 Advice on general occupational hygiene

Avoid inhalation or ingestion. 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

Store in cool dry area. Water contamination should be avoided. Provide sufficient ventilation in storage and workrooms.

#### 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

Barium Titanate, CAS 12047-27-7

USA OSHA	OSHA PEL Ceiling (mg/M <sup>3</sup> )	0.5 mg/m <sup>3</sup> (as Ba)
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#### 8.2 Exposure Controls

Engineering Controls:	Exhaust ventilation to keep airborne concentrations below 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. When respiratory protection is required or concentrations are unknown, use an approved air-purifying respirator with organic vapor cartridge.
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

Appearance (Physical State, Color):	Solid, white powder.
Upper/lower flammability or explosive limits:	Not applicable.
Volatile by Volume:	1 – 5%
Odor:	Odorless
Vapor Pressure:	760 mm Hg @ 232° F.
Odor Threshold:	Not applicable.
Vapor Density:	Not determined.
pH:	Not determined.
Relative Density:	Not applicable.
Melting point/freezing point:	Not determined.
Solubility in Water:	Insoluble.
Initial boiling point and boiling range:	Not applicable.
Flashpoint:	Not applicable.
Evaporation Rate:	Not applicable.
Partition Coefficient:	Not available.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not determined.
Viscosity:	Not determined.
Specific Gravity:	Not determined.
Freezing Point:	Not determined.
Explosion Limits:	Not determined.
Oxidizing Properties:	Not determined.

#### 9.2 Other information

No further relevant information available.

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

Not determined.

**10.2 Chemical Stability**

Stable under normal ambient and anticipated storage and handling conditions.

**10.3 Possibility of hazardous reactions**

Hazardous polymerization will not occur.

**10.4 Conditions to avoid**

No recommendation.

**10.5 Incompatible materials**

Strong oxidants; strong acids.

**10.6 Hazardous decomposition products**

Burning may produce irritating or toxic fumes, carbon monoxide, carbon dioxide.

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

Acute toxicity:

LD50, Rat, Oral Values for classification:

Barium Titanate, 12047-27-7 >12000 mg/kg

Skin corrosion/irritation:

Avoid contact with skin. Prolonged/repeated contact may cause irritation and/or dermatitis.

Eye damage/irritation:

Avoid contact with eyes. Irritating to eyes.

Inhalation:

Not determined. Use breathing protection when dust, aerosol or mist is formed.

Aspiration:

No further relevant information available.

Sensitization:

No further relevant information available.

Chronic Effects:

No further relevant information available.

Carcinogenicity

No ingredients listed by NTP, IARC, or OSHA as carcinogen.

**Section 12: Ecological Information****12.1 Aquatic 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**

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

**12.6 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.

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

No further relevant information available.

### 14.6 Special precautions for users:

No further relevant information available.

### 14.7 Transport bulk according to Annex II of MARPOL73/78 and the IBC Code

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

California Proposition 65: No ingredients listed.

WHMIS: Not classified.

SARA Section 311/312: Acute health hazard; chronic health hazard.

SARA 313, 304 and CERCLA 102 (A): This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372:

<u>Chemical Name</u>	<u>CAS RN</u>	<u>Percent By Weight</u>
Barium Compound	N040	100%

State Right-to-Know Laws: Section 3 of this SDS lists all components of the product.

### 15.2 Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

Controlled Products Regulations: This SDS contains all the information items specified in Schedule 1, Column 3 of the Controlled Products Regulations in a 16-heading format.

## Section 16: Other Information

Full text of H statements referred to under sections 2 and 3:

H302 Harmful if swallowed.

H332 Harmful if inhaled.

National Fire Protection Association (U.S.A.) 704 Health-2, Flammability-0, Reactivity-0, Special-None

HMIS® Hazard Rating: Health-2, Flammability-0, Reactivity-0, Protective Equipment-E; Safety glasses, Gloves, Dust Respirator.

Recommended Use: The product is recommended for use in electronics. Other uses have not been investigated and may have other hazards. For industrial use only, not for food, drug or home use.



## SAFETY DATA SHEET

### NYACOL® BT-SD

REVISION: April 25 2017  
SUPERSEDES: September 19, 2012  
VERSION NO.: 1

**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:**

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**Revision Date:**

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**Supersedes:**

September 19, 2012

This SDS has been prepared with data from Nyacol Nano Technologies, Inc.'s laboratories, raw material suppliers, and government publications. Information herein is accurate to the best of our knowledge. Suggestions are made without warranty or guarantee of results. Before using, the user should determine the suitability of the products for the intended use, and the user assumes the risk and liability in connection therewith. We do not suggest violation of any existing patents or give permission to practice any patented invention without license.

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