R996

SECTION 1: Identification of the substance/mixture and of the company/undertaking

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

1.1 Product identifier
Product name: R-996
Product description: Titanium dioxide
Product type: Powder
CAS number: 13463-67-7
Synonyms: Titanium oxide (TiO2), Pigment White 6
Colour Index Number: 77891 1.2

Relevant identified uses of the substance or mixture and uses advised against
Product use: Pigment, opacifying agent.
Uses advised against: Do not use for cosmetics, food additives, drug additives, feed additives, or permanent implant applications.
Reason: Lack of related experience and/or data.

1.3 Details of the supplier of the safety data sheet
Supplier: BosTech Polymer LLC.FZ
Address: Office 332, European Business Centre, Dubai Investment Park 1, Dubai, United Arab Emirates
Telephone: +971 54 2943817
E-mail : info@bostechpolymer.com

SECTION 2: Hazards Identification

2.1 Classification of the substance or mixture

Product definition: Substance.
GHS Classification according 29
CFR 1910.1200: Not a hazardous substance or mixture.

2.2 Label elements
GHS Labelling elements: Not Applicable.

2.3 Other hazards

Other hazards that do not result in classification: Handling and/or processing this material may generate dust that can cause mechanical irritation of the eyes, skin, nose, and throat.

SECTION 3: Composition/information on ingredients
Substance /mixture : Mixture

Product/Ingredient Name	Identifiers	%	Classification	Type
Titanium dioxide	CAS: 13463-67-7	90–100%	Not classified [2]	–

No additional ingredients are present that, within the supplier's current knowledge and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.
Type
[1] Substances classified as health or environmental hazards.
[2] Substance with a workplace exposure limit. Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact: Rinse eyes thoroughly for at least 15 minutes with plenty of water, occasionally lifting the upper and lower eyelids. Get medical attention if irritation occurs.
Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
Skin contact: Wash skin with soap and water. If irritation occurs get medical attention.
Ingestion: Rinse out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur. Never give anything by mouth to an unconscious person.
Protection of firstaiders: No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed
Potential acute health effects

Eye contact: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.
Inhalation: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat, and lungs. Exposure to dust may aggravate pre-existing respiratory conditions.
Skin contact: The product is not irritating, but as with all fine powders, it can absorb moisture and natural oils from the surface of the skin during prolonged exposure.
Ingestion: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact: No significant irritation expected other than mechanical irritation.
Inhalation: Dust may induce mild and temporary upper respiratory irritation with cough and shortness of breath.
Skin contact: Individuals with sensitive skin may experience skin drying on prolonged or repeated exposure.
Ingestion: No specific data.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to physician: Treat symptomatically.
Specific treatment: No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media: Use an extinguishing agent suitable for the surrounding environment and circumstances.

Unsuitable extinguishing media: None Known.

5.2 Special hazards arising from the substance or mixture
Hazards from the substance or mixture: Product is inert, non-flammable and non-combustible. No specific fire or explosion hazard.

Hazardous combustion products Decomposition products may include the following materials: metal oxide/oxides. At high temperature decomposition products may include formaldehyde and ethyl acrolein as a result of decomposition of the organic component.

5.3 Advice for Firefighters

Hazards from the substance or mixture: If there is a fire, promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for firefighters: Firefighters should wear appropriate protective equipment and a self-contained breathing apparatus (SCBA) with a full facepiece operated in positive pressure mode. Clothing for firefighters (including helmets, protective boots, and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment, and emergency procedures

For non-emergency personnel:
No action shall be taken involving any personal risk or without suitable training. Avoid generation of dust. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing dust. Put on appropriate personal protective equipment.

For emergency responders:
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.

6.2 Environmental precautions
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up
Small spill: Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

Large spill: Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

Additional information: Even at low concentration, the product renders the discharge in liquid effluent highly visible.

6.4 Reference to other sections
See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment informatio

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance.

7.1 Precautions for safe handling
Protective measures: Wear appropriate personal protective equipment (see Section 8). Avoid breathing dust. Avoid generating dust. Ensure adequate ventilation. Local exhaust ventilation may be necessary. Adhere to manual handling guidelines when handling sacks. Assess each work environment to determine hazards.

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Advice on general occupational hygiene: Observe good industrial hygiene practice for chemical handling. When excessive or prolonged contact with the skin is likely, individuals with sensitive skin may find it beneficial to use a barrier cream or moisturizer. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in the original container in a dry, cool, and well-ventilated area, away from incompatible materials (see section 10), food, and drink. Keep the container tightly closed and sealed until ready for use. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s) Recommendations: Not applicable.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance.

8.1 Control parameters
Occupational exposure limits:

Product/Ingredient Name	Exposure Limit Values
Titanium dioxide	OSHA Z-1 (United States): TWA: 15 mg/m³ (8-hour TWA) – Form: Total dust

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

8.2 Exposure controls

Appropriate engineering controls: Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures: Wash hands, forearms, and face thoroughly after handling chemical products, before eating, smoking, using the lavatory, and at the end of the working period. Individuals with sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with the skin is likely. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, or dusts. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should always be worn when handling chemical products if a risk assessment indicates this is necessary.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved. It should also be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or air-fed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product, and the safe working limits of the selected respirator. If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Follow OSHA respirator regulations 29 CFR 1910.134. Use a NIOSH/MSHA-approved respirator.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters, or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state: Solid. [Powder.]
Colour: White.
Odour: Odourless.
Odour threshold: Not applicable. pH 6-8.5(10% slurry).
Melting point/freezing point; 1560 to 1850°C (approximately).
Initial boiling point and boiling range: 2500-3000°C.
Flash point: Does not flash.
Evaporation rate: Not applicable.
Flammability (solid, gas): The product is not flammable.
Burning time: Not applicable.
Upper/lower flammability or explosive limits: Not applicable.
Vapour pressure Not applicable.
Vapour density Not applicable.
Relative density Not applicable.
Solubility(ies) Not applicable.
Partition coefficient n-octanol/water Not applicable.
Auto-ignition temperature: Not applicable.
Decomposition temperature: Not applicable.
Viscosity: Not applicable.
Explosive properties: Not applicable.
Oxidising properties: Not applicable. 9.2

Other Information
Density: 3.5 to 4.2 g/cm3 [20°C (68°F)]

SECTION 10: Stability and reactivity

Reactivity: None reasonably foreseeable.
Conforms to Regulation No. 29 CFR 1910.1200
Chemical stability: The product is stable.
Possibility of hazardous reactions: None known.
Conditions to avoid: None known.
Incompatible materials: None known.
Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced. At high temperature, decomposition products could include Metal oxides. At high temperature decomposition products may include formaldehyde and ethyl acrolein as a result of decomposition of the organic component.

SECTION 11: Toxicological information

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

11.1 Information on toxicological effects
Acute toxicity

Product/Ingredient Name	Test	Species	Dose	Exposure
Titanium dioxide	LC50 Inhalation (dusts and mists)	Rat	>6.82 mg/L	4 hours
	OECD 425 Acute Oral Toxicity LD50	Rat	>5000 mg/kg bw	–
	LD50 Dermal	Rabbit	>10000 mg/kg	–

Irritation/corrosion

Product/Ingredient Name	Test	Species	Result
Titanium dioxide	OECD 404 Acute Dermal Irritation/Corrosion	Rabbit	Non-irritant
	OECD 405 Acute Eye Irritation/Corrosion	Rabbit	Non-irritant

Sensitization

Product/Ingredient Name	Test	Route of Exposure	Species	Result
Titanium dioxide	OECD 429 Skin Sensitisation: Local Lymph Node Assay	Skin	Mouse	Not sensitising
	OECD 406 Skin Sensitisation	Skin	Guinea Pig	Not sensitising
	Inhalation Sensitisation	Inhalation	Mouse	Not sensitizing

Mutagenicity

Conclusion/Summary: Titanium Dioxide Not mutagenic in a standard battery of genetic toxicological tests.

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Carcinogenicity

Conclusion/Summary: Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." but that: "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARC's overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."

No ingredients of this product present at levels greater than or equal to 0.1% are listed on OSHA's list of regulated carcinogens. No ingredients of this product present at levels greater than or equal to 0.1% are listed as known or anticipated carcinogens by NTP (14th edition).

Reproductive toxicity

Conclusion/Summary: Based on available data, the classification criteria are not met.

Teratogenicity

Product/Ingredient Name	Test	Species	Result
Titanium dioxide	OECD Guideline 414 Prenatal Developmental Toxicity Study (NOAEL)	Rat	NOAEL >1000 mg/kg bw/day

Conclusion/Summary: Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Product/Ingredient Name	Result	Route of Exposure
Titanium dioxide	Not classified	Inhalation
	Not classified	Oral

Specific target organ toxicity (repeated exposure)

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Product/Ingredient Name	Result	Route of Exposure
Titanium dioxide	Not classified	Inhalation
	Not classified	Oral
	Not classified	Dermal

Aspiration hazard

Product/Ingredient Name	Result
Titanium dioxide	Based on available data, the classification criteria are not met.

Information on the likely routes of exposure: Routes of exposure anticipated: Inhalation, oral, dermal.

Potential acute health effects

Inhalation: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat, and lungs. Dust exposure may also aggravate preexisting respiratory conditions.
Ingestion: No known significant effects or critical hazards.
Skin contact: The product is not irritant but as with all fine powders can absorb moisture and natural oils from the surface of the skin during prolonged exposure.
Eye contact: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes due to mechanical irritation.

Symptoms related to the physical, chemical, and toxicological characteristics

Inhalation: Dust may induce mild and temporary upper respiratory irritation with cough and shortness of breath.
Ingestion: No specific data
Skin contact: Individuals with sensitive skin may experience skin drying on prolonged or repeated exposure.
Eye contact: No significant irritation is expected other than mechanical irritation.

SECTION 12: Ecological information

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

12.1 Toxicity

Product/Ingredient Name	Test	Endpoint	Exposure	Species	Result
Titanium dioxide	OECD 203	Acute LC50	96 hours	Fish	>10000 mg/L
Titanium dioxide	OECD 203	Acute LC50	96 hours	Fish	>1000 mg/L
Titanium dioxide	OECD 202	Acute LC50	48 hours	Daphnia	>1000 mg/L
Titanium dioxide	OECD 201	EC50	–	Pseudokirchneriella subcapitata	61 mg/L
Titanium dioxide	OECD 209	EC50	3 hours	Activated sludge	>10000 mg/L

Conclusion/Summary: Based on available data, the classification criteria are not met.

12.2 Persistence and degradability

Conclusion/Summary: Not applicable, inorganic substance/preparation.

12.3 Bio accumulative potential

Product/Ingredient Name	LogPow	BCF	Potential
Titanium dioxide	–	–	Low

12.4 Mobility in soil

Soil/water partition coefficient: Not available.

Mobility: The product is insoluble in water and has low mobility in soil.

12.5 Results of PBT and vPvB assessment: Not classified as PBT substance / Not classified as vPvB substance

12.6 Other Adverse effects: No data available.

12.7 Additional Information: No data available.

SECTION 13: Disposal Considerations
The information in this section contains generic advice and guidance.

13.1 Waste treatment methods
Methods of disposal: The waste should be disposed of via a licensed disposal company in compliance with local and national regulations.

Special precautions: This material and its container must be disposed of safely. Empty containers or liners may retain some product residues. Avoid the disposal of spilt material and runoff into soil, waterways, drains, and sewers.

SECTION 14: Transport information

Mode of Transport	14.1 UN-Number	14.2 UN Proper Shipping Name	14.3 Transport Hazard Class
ADR/RID	Not regulated.	Not applicable.	Not applicable.
ADN/ADNR	Not regulated.	Not applicable.	Not applicable.
IMDG	Not regulated.	Not applicable.	Not applicable.
IATA	Not regulated.	Not applicable.	Not applicable.

SECTION 15: Regulatory information

Regulation	Details
EPCRA (SARA Title III) Section 302	This material does not contain any components listed as Extremely Hazardous Substances.
CERCLA	This material does not contain any components listed as Hazardous Substances.
EPCRA Section 313	This material does not contain any components listed as Toxic Chemicals.
CAA 112(r)	This material does not contain any components listed as Regulated Chemicals for Accidental Release Prevention.
Reference	Based on the EPA “List of Lists,” published March 2015.

US State Regulations

State	Substance	CAS Number	Details
Pennsylvania	Titanium Dioxide	13463-67-7	Listed under Right to Know
Pennsylvania	Aluminium Oxide	1344-28-1	Listed under Right to Know
California Prop 65	Titanium Dioxide (respirable size)	13463-67-7	Listed as causing cancer.

California Permissible Exposure Limits

Substance	CAS Number	Regulation	Limit
Titanium Dioxide	13463-67-7	Particulates not otherwise regulated	Total dust: 10 mg/m³
			Respirable fraction: 5 mg/m³

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