

G.J. CHEMICAL COMPANY, INC. SAFETY DATA SHEET

1. PRODUCT IDENTIFIER

1.1 PRODUCT NAME -----> **Titanium Dioxide** Rutile Grades

PRODUCT NUMBER(S)-----> 283900, USP/NF
284000, R003, ASTM D476 Type II & III
284100, R001, ASTM D476 Type II, NSF#14
284200, R210, ASTM D476 Type II & III
284300, R211, ASTM D476 Type II & III

TRADE NAMES AND SYNONYMS--> TiO₂, Titanium Dioxide

CAS-No: 13463-67-7

CHEMICAL FAMILY: Mineral Oxides

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

RECOMMENDED USE: Industrial: Use in sealants, Use in elastomers, Catalyst manufacture, Use in the paper industry, Use in powder coatings, Use in lubricants and greases, Use in grain processing, Use in insulation coating, Pigment for coatings, inks dyes, Production of erasers, Use in electronics , ceramics and glass, Use in plastics, Use in welding and soldering, Use in fillers, putties, plasters, modeling clays.

USES ADVISED AGAINST: No information available

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Company: **G.J. CHEMICAL CO., INC.**

Address: **40 VERONICA AVENUE
SOMERSET, NJ 08873**

Telephone: **1-973-589-1450**

Fax: **1-973-589-3072**

1.4 Emergency Telephone Number

Emergency Phone: **1-800-424-9300 (CHEMTREC)**

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

**GHS Classification in accordance with 29CFR 1910 (OSHA HCS)
Carcinogenicity (Category 2), H351**

**2.2 GHS Label elements, including precautionary statements
Not a hazardous substance or mixture.**



Pictogram

GHS08

Signal word: WARNING

**Hazard statement(s):
H351 Suspected of causing cancer.**

Precautionary statement(s):

Prevention:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

**2.3 Hazards not otherwise classified (HNOC) or not covered by GHS –
Contact with dust can cause mechanical irritation or drying of the skin. Dust
contact with the eyes can lead to mechanical irritation. May cause nose, throat,
and lung irritation.**

3. INGREDIENTS

3.1 SUBSTANCE:

Ingredient	CAS No.	% by WT. Range	CLASSIFICATION
Titanium Dioxide	13463-67-7 EC-No.236-675-5 Reg.-No. 01-2119489379-17-XXXX	90-100	Carcinogenicity (Category 2), H351

Aluminum Oxide R-001, R-003, R210, R-211	1344-28-1 EC-No.215-691-6 Reg.-No. 01-2119529248-35-XXXX	0-5.0	Not a hazardous substance or mixture.
Zirconium Oxide R-003	1314-23-4 EC-No.215-227-2 Reg.-No. 01-2119486976-14-XXXX	0-.5	Not a hazardous substance or mixture.
Silica Amorphous R-210, R-211	7631-86-9 EC-No. 231-545-4 Reg.-No. 01-2119379499-16-XXXX	0-2.0	STOT-RE (Category 1), H372

3.2 MIXTURE: Not applicable.

4. FIRST-AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES:

INHALATION: TITANIUM DIOXIDE

Remove from exposure, wash mouth and nasal passages with water repeatedly. If breathing difficulties persist seek medical attention. Keep warm and quiet.

EYES (Splash): TITANIUM DIOXIDE

Immediately flush eyes with water for 15 minutes, holding eyelids apart to ensure flushing. Remove contact lenses, if worn, after initial flush. Seek medical attention.

SKIN (Splash): TITANIUM DIOXIDE

Immediately wash affected area with soap and water. DO NOT attempt to neutralize with chemical agents. If irritation persists, seek medical attention.

INGESTION: TITANIUM DIOXIDE

Do not induce vomiting. Give large quantities of milk. Never give anything by mouth to an unconscious person. Immediately seek medical attention.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

Eyes: On contact may cause pain and irritation.

Skin: On contact may cause irritation and/or dermatitis.

Inhalation: Inhalation of dusts may cause irritation to upper respiratory tract and mucous membranes.

Ingestion: Irritating to digestive tract, may cause gastric distress and stomach pains.

Chronic: Long term exposure to this product may cause lung fibrosis.

Medical Conditions Aggravated by Exposure: Skin contact may aggravate an existing dermatitis.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Specific details on antidote: No recommendation given.

5. FIRE FIGHTING MEASURES

Flash Point: N/A

LEL %:N/A

Auto-ignition Temp: N/A

UEL %:N/A

5.1 SUITABLE EXTINGUISHING MEDIA: Foam--> x CO2--> x Dry Chemical--> x Water-fog--> x Other-->

Unsuitable extinguishing media: Do not use waterjet.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE: Not a fire or explosion hazard.

CONDITIONS OF FLAMMABILITY: Not flammable or combustible.

HAZARDOUS COMBUSTION PRODUCTS: Hazardous decomposition products formed under fire conditions. - Titanium/titanium oxides

5.3 ADVICE FOR FIREFIGHTERS: No special protective equipment required.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Avoid breathing dust. Avoid dust formation. Do not take internally.

6.2 ENVIRONMENTAL PRECAUTIONS:

Keep out of water sources, drains and sewers. Do not flush into surface water or sanitary sewer system.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

Methods for cleanup and containment:

Use proper personal protective equipment. (See Section VIII).

For small spills: Do not flush into surface water or to a sanitary sewer. For large spills: Recover and segregate clean product for reuse; shovel contaminated product into an approved container for disposal.

Methods for disposal:

Pick up and arrange disposal without creating dust. After cleaning, flush away traces with water. For spills: Use appropriate tools to put spilled solid in a convenient waste disposal container. Assure conformity with applicable government regulations.

6.4 REFERENCE TO OTHER SECTIONS: See Sections 8 and 13.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING: Avoid breathing dust. Avoid dust formation. Do not take internally. Wash hands before breaks and at the end of workday. Avoid work practices that may release dust in the atmosphere. Provide appropriate exhaust ventilation at places where dust is formed. Avoid contaminating soil or releasing material into sewage and drainage systems.

Advice on general occupational hygiene:

Wash hands before breaks and after work. Keep away from food, drink and animal feeding stuffs. When using do not smoke.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

Follow maximum allowed pile heights specified in the BOCA codes. Local permits may be required for storage in warehouse quantities. Store large quantities only in buildings designed to comply with OSHA 1910.106. Keep container closed when not in use; protect containers from abuse; store containers in cool, dry area. Keep this and other chemicals out of reach of children. This is a fully oxidized mineral product. As such it cannot support combustion or participate in a dust explosion. Storage class (TRGS 510): Non Combustible Solids

CONTAINER WARNINGS: Empty containers may release dust.

7.3 SPECIFIC END USES: Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROL (PERSONAL PROTECTION)

8.1 CONTROL PARAMETERS:

Ingredient	CAS No.	% by WT. Range	Exposure Limits
Titanium Dioxide Reg.-No. 01-2119489379-17-XXXX	13463-67-7 EC-No.236-675-5	90-100	2.5mg/m ³ TWA (NIOSH) (Respirable Dust) 10mg/m ³ TWA (ACGIH) 15mg/m ³ TWA (OSHA Z-1) (Total Dust)
Aluminum Oxide R-001, R-003, R-210, R-211 Reg.-No. 01-2119529248-35-XXXX	1344-28-1 EC-No.215-691-6	0-5.0	N.E.
Zirconium Oxide R-003 Reg.-No. 01-2119486976-14-XXXX	1314-23-4 EC-No.215-227-2	0-.5	N.E.
Silica Amorphous R-210, R-211 Reg.-No. 01-2119379499-16-XXXX	7631-86-9 EC-No. 231-545-4	0-2.0	10mg/kg TWA (ACGIH) 5mg/kg TWA (OSHA)

Key: (PEL) = Permissible Exposure Limit OSHA
(TLV) = Threshold Limit Value OSHA & ACGIH
(STEL) = Short Term Exposure Limit ACGIH
(WEEL) = USA. Workplace Environmental Exposure Levels
(TWA) = Time Weighted Average
CAS = Chemical Abstracts Registry Number
IDLH = Immediate Danger to Life and Health
N.E. =None Established

8.2 EXPOSURE CONTROLS

EXPOSURE GUIDELINES: Consider the potential hazards of this material (Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended.

ENGINEERING CONTROLS: Provide general dilution or local exhaust ventilation in volume and pattern to keep concentrations within permitted exposure limits. All areas should be ventilated in accordance with OSHA Regulation 29 CFR Part 1910. Explosion proof motors should be used in mechanical ventilation.

RESPIRATORY PROTECTION: The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA):

If exposure limits are exceeded; Respiratory Protection should be NIOSH/MSHA approved air purifying respirators with particulate filters.

BODY CLOTHING: Employee must wear appropriate protective (impervious)

clothing and equipment to prevent repeated or prolonged contact with this substance. Use chemical resistant apron or other impervious clothing. Remove and wash contaminated clothing before reuse.

SKIN PROTECTION: Employee must wear appropriate protective gloves to prevent contact with this substance.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

HYGIENE: Use good personal hygiene practices, wash hands before eating, drinking, smoking or using toilet facilities.

EYE/FACE PROTECTION: Use protective eyeglasses with side shields or chemical safety goggles.

Emergency shower and eyewash should be easily accessible to the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:

Titanium Dioxide 13463-67-7

APPEARANCE:	Crystalline solid
COLOR:	White
ODOR:	No odor
ODOR THRESHOLD:	No data available
pH:	No data available
MOLECULAR WEIGHT:	92.09 amu
MELTING POINT:	1843°C
BOILING POINT:	3000°C
SPECIFIC GRAVITY:	3.4-4.3
DENSITY (25°C):	No data available
VAPOR PRESSURE:	No data available
VAPOR DENSITY:	No data available
WATER SOLUBILITY:	Insoluble
PARTITION COEFFICIENT N- OCTANOL/WATER	No data available
FLASH POINT:	No data available
EVAPORATION RATE (BUTYL ACETATE=1):	No data available
UPPER FLAMMABILITY LIMIT:	No data available

LOWER FLAMMABILITY LIMIT:	No data available
AUTO IGNITION TEMPERATURE:	No data available
DECOMPOSITION TEMPERATURE:	No data available
VISCOSITY:	No data available
EXPLOSIVE PROPERTIES:	No data available
OXIDIZING PROPERTIES:	No data available
9.2 OTHER INFORMATION:	No data available

10. STABILITY AND REACTIVITY INFORMATION

10.1 REACTIVITY: No data available.

10.2 CHEMICAL STABILITY: Unstable () Stable (X)

10.3 POSSIBILITY OF HAZARDOUS REACTIONS: No data available.

HAZARDOUS POLYMERIZATION: May occur () Will not occur (X)

10.4 CONDITIONS TO AVOID: --> Avoid generating airborne dust.

10.5 INCOMPATIBLE MATERIALS --> Strong oxidizers, strong acids.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable

11. TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:

Routes of Entry: Inhalation--> x Skin--> x Ingestion--> x

ACUTE HEALTH EFFECTS:

Effects of overexposure:

Eyes> On contact may cause pain and irritation.

Skin> On contact may cause irritation and/or dermatitis.

Inhalation> Inhalation of dusts may cause irritation to upper respiratory tract and mucous membranes.

Ingestion> Irritating to digestive tract, may cause gastric distress and stomach pains.

Chronic: Long term exposure to this product may cause lung fibrosis.

Medical Conditions Aggravated by Exposure> Skin contact may aggravate an existing dermatitis.

ACUTE TOXICITY:

The effects of overexposure shown in Section II are based on acute toxicity profiles. Typical values are:

Ingredient	Oral LD50 (Rat)	Skin LD50 (Rabbit)	Inhalation LC50	
Titanium Dioxide	>10000mg/kg	>10000mg/kg	N.D.	

SKIN CORROSION/IRRITATION: Skin - Human Result: Mild skin irritation - 3 h

SERIOUS EYE DAMAGE/EYE IRRITATION: Eyes - Rabbit Result: No eye irritation

RESPIRATORY OR SKIN SENSITIZATION: Will not occur.

MUTAGENIC EFFECTS: Genotoxicity in vitro - Hamster - ovary
Micronucleus test; Genotoxicity in vitro - Hamster – Lungs DNA inhibition
Genotoxicity in vitro - Hamster – ovary; Sister chromatid exchange;
Genotoxicity in vivo - mouse – Intraperitoneal Micronucleus test

CARCINOGEN STATUS: In February 2006, IARC has re-evaluated Titanium dioxide as pertaining to Group 2B: "possibly carcinogenic to humans", based upon inadequate evidence in humans and sufficient evidence in experimental animals for the carcinogenicity of titanium dioxide. IARC evaluation guidelines consider the generation of tumors, in 2 different studies within the same animal species, to be adequate criteria for an assessment of sufficient evidence.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated 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 (STOT-SE) - single exposure (Globally Harmonized System): no data available

Specific target organ toxicity (STOT-RE) - repeated exposure (Globally Harmonized System): no data available

ASPIRATION HAZARD: Not applicable

11.2 ADDITIONAL INFORMATION: In lifetime inhalation studies rats were exposed for 2 years to respectively 10, 50 and 250 mg/m³ of respirable TiO₂. Slight lung fibrosis was observed at 50 and 250 mg/m³ levels. Microscopic lung tumors were also observed in 13 percent of the rats exposed to 250 mg/m³, an exposure level that caused lung overloading and impairment of rat lungs clearance mechanisms.

The conclusions of several epidemiology studies on more than 20000 TiO₂ industry workers in Europe and the USA did not suggest a carcinogenic effect of TiO₂ dust on the human lung. Mortality from other chronic diseases, including other respiratory diseases, was also not associated with exposure to TiO₂ dust.

12. ECOLOGICAL INFORMATION

12.1 AQUATIC TOXICITY:

Toxicity to fish:

LC50 - Pimephales promelas (fathead minnow): > 1,000 mg/l 96 h

Toxicity to algae:

EC50 - Pseudokirchneriella subcapitata (green algae): 61 mg/l 72 h

Toxicity to daphnia and other aquatic invertebrates::

EC50 - Daphnia magna (Water flea): > 1,000 mg/l 48 h

12.2 PERSISTANCE AND DEGRADABILITY: Pigments are practically not biodegradable.

Biological Oxygen Demand (BOD): No data available

12.3 BIOACCUMULATIVE POTENTIAL: Does not bio-accumulate.

12.4 MOBILITY IN SOIL: No data available

12.5 RESULTS OF PBT AND vPvB :

PBT assessment results: This substance is not classified as PBT or vPvB.

12.6 OTHER ADVERSE EFFECTS: No data available

13. DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS: Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly it is the responsibility of the user to determine the proper storage, transportation, treatment and or disposal methodologies for spent materials and residues at time of disposition. Dispose in accordance with all applicable disposal regulations. Incinerate under controlled conditions in a permitted facility.

CONTAMINATED PACKAGING: Dispose of as unused product.

14. TRANSPORT INFORMATION

Land Transport (DOT)

- 14.1 USDOT ID Number-----> N/A
- 14.2 USDOT Shipping Name-----> Not DOT Regulated
Not Dangerous Goods
- 14.3 USDOT Hazard Classification-----> N/A
USDOT Label Codes-----> N/A
- 14.4 USDOT Package Code-----> N/A
- 14.5 Environmental hazard-----> No
- 14.6 Special precautions for user-----> None

Sea Transport (IMDG)

- 14.1 UN Number:-----> N/A
- 14.2 Proper Shipping Name-----> Not Dangerous Goods
- 14.3 Hazard Class:-----> N/A
USDOT Label Codes-----> N/A
- 14.4 Packing Group:-----> N/A
- 14.5 Environmental hazard-----> No

Air Transport (IATA)

- 14.1 UN Number:-----> N/A
- 14.2 Proper Shipping Name:-----> Not Dangerous goods
- 14.3 Hazard Class:-----> N/A
USDOT Label Codes-----> N/A
- 14.4 Packing Group:-----> N/A
- 14.5 Environmental hazard-----> No

15. REGULATORY INFORMATION

**15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION
SPECIFIC FOR THE SUBSTANCE OR MIXTURE:**

SARA TITLE III (Superfund Amendment and Reauthorization Act)

SECTION 302 AND 304: Extremely Hazardous Substance List (40 CFR 355) - Not Listed

SECTION 313: Toxic Chemicals Listing (40 CFR 372.65) - Not Listed

SECTION 311/312: Hazard Categorization (40 CFR 370) - Chronic Health Hazard

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

SECTION 102(A) Hazardous Substances (40 CFR 302.4) - Not Listed

Reportable Quantity - None

SECTION 101(14) Reportable Quantity: None

Massachusetts Right to Know Components

Titanium dioxide, nanoparticles range in size from 1 to 150 nm

CAS-No.13463-67-7

Pennsylvania Right to Know Components

Titanium dioxide, nanoparticles range in size from 1 to 150 nm

CAS-No.13463-67-7

New Jersey Right to Know Components

Titanium dioxide, nanoparticles range in size from 1 to 150 nm

CAS-No.13463-67-7

California Prop. 65 Components**WARNING!** This product contains a chemical known to the State of California to cause cancer. Titanium dioxide, nanoparticles range in size from 1 to 150 nm

CAS-No.13463-67-7

TSCA (Toxic Substance Control Act)

Titanium dioxide, nanoparticles range in size from 1 to 150 nm

CAS-No.13463-67-7 is listed on the TSCA Inventory.

International Inventories:

<u>Country or Region</u>	<u>Inventory Name</u>	<u>On inventory yes/no</u>
<u>Australia</u>	Australian Inventory of Chemical Substances (AICS)	Yes
<u>Canada</u>	Domestic Substances List (DSL)	Yes
<u>Canada</u>	Non-Domestic Substances List (NDSL)	No
<u>China</u>	Inventory of Existing Chemical Substances in China (IECSC)	Yes
<u>Europe</u>	European Inventory of Existing Commercial Chemicals Substances (EINECS)	Yes
<u>Europe</u>	European List of Notified Chemical Substances (ELINCS)	No
<u>Japan</u>	Inventory of Existing and New Chemical Substances (ENCS)	Yes
<u>Japan</u>	Industrial Safety & Health Law Inventory (ISHL)	Yes
<u>Korea</u>	Existing Chemicals List (ECL)	Yes
<u>Mexico</u>	National Inventory of Chemical Substances (INSQ)	Yes
<u>New Zealand</u>	New Zealand Inventory	Yes
<u>Philippines</u>	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
<u>Switzerland</u>	Inventory of Notified New Substances (CHINV)	Yes
<u>Taiwan</u>	National Existing Chemical Inventory (NECI)	Yes
<u>United States & Puerto Rico</u>	Toxic Substances Control Act Inventory	Yes

15.2 CHEMICAL SAFETY ASSESSMENT: A chemical safety assessment has been carried out for this substance.**16. OTHER INFORMATION:****HMIS** (Hazardous Materials Identification System)**Hazard Rating:**

4-Extreme
3-High
2-Moderate
1-Slight
0-Insignificant

NFPA RATINGS (SCALE 0-4): Health=2 Fire=0 Reactivity=0
HMIS RATINGS (SCALE 0-4): Health=1 Fire=0 Reactivity=0 PPE=B

Hazard statement(s) from Section 2 and 3:
H351 Suspected of causing cancer.
H372 Causes damage to organs through prolonged or repeated exposure.

Date of preparation-----> February 24, 2005
Revision Number-----> 1.4
Revision Content-----> General update all sections
Revision Date-----> December 7, 2018
Prepared by-----> T. G Fenstermaker, Jr.

Acronyms:

ACGIH - American Conference of Governmental Industrial Hygienists
AIHA - American Industrial Hygiene Association
ANSI - American Nation Standards Institute
API - American Petroleum Institute
CERCLA - Comprehensive Emergency Response, Compensation, and Liability Act
DOT - U.S. Department of Transportation
EPA - U.S. Environmental Protection Agency
HMIS - Hazardous Materials Information System
IARC - International Agency For Research On Cancer
MSHA - Mine Safety and Health Administration
NFPA - National Fire Protection Association
NIOSH - National Institute of Occupational Safety and Health
NOIC - Notice of Intended Change (Proposed change to ACGIH TLV)
NTP - National Toxicology Program
OPA - Oil Pollution Act of 1990
OSHA - U.S. Occupational Safety & Health Administration
PEL - Permissible Exposure Limit (OSHA)
RCRA - Resource Conservation and Recovery Act
REL - Recommended Exposure Limit (NIOSH)
SARA - Superfund Amendments and Reauthorization Act of 1986 Title III
SCBA - Self-Contained Breathing Apparatus
STEL - Short-Term Exposure Limit (generally 15 minutes)
TLV - Threshold Limit Value
TSCA - Toxic Substances Control Act
TWA - Time Weighted Average (8hr.)
WHMIS - Canadian Workplace Hazardous Materials Information System

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