



Graver Technologies

MATERIAL SAFETY DATA SHEET

Emergency Phone: 800-533-6623
Information Phone: 800-533-6623
Fax Number: 973-690-5808

HAZARD RATING		
Toxicity	1	4=EXTREME
Fire	0	3=HIGH
Reactivity	0	2=MODERATE
Special	N/A	1=SLIGHT 0=INSIGNIFICANT

PRODUCT IDENTIFICATION

Product Name: RADEX[®] Sb-1000 (GX194)
Chemical Name: Granular Titanium Dioxide Product
MSDS Code: MS-RX-SB1000
Effective Date: 12/12/07

1. COMPONENT INFORMATION

<u>No.</u>	<u>CAS No.</u>	<u>AMT.(%)</u>
1) Titanium Dioxide	13463-67-7	30-90
2) Titanium Hydroxide	20338-08-3	0-30
3) Ethenol, Homopolymer	9002-89-5	0-10

2. PHYSICAL DATA

MELTING POINT: 1855 °C (3371 °F)
BOILING POINT: 2500 – 3000 °C (4532 -5432 °F)
VAPOR PRESSURE (mm Hg): Not applicable
VAPOR DENSITY (air=1): Not applicable
SOLUBILITY IN WATER: Insoluble
SPECIFIC GRAVITY (water=1): 4.26
EVAPORATION RATE (Butyl acetate=1): < 1 Water
PERCENT VOLATILITY: 0% @ 21 °C (70 °F)
pH (slurry) 6 – 7 (slurry)
APPEARANCE: Dry, white granules
ODOR: Odorless

3. EXPOSURE LIMIT INFORMATION

AIRBORNE EXPOSURE LIMITS:

Component 1: OSHA Permissible Exposure Limit (PEL) – 15 mg/m³ (TWA)

ACGIH Threshold Limit Value (TLV) – 10 mg/m³ (TWA)

A4 – Not classifiable as a human carcinogen.

Component 2: OSHA PEL and ACGIH TLV do not exist.

4. FIRE AND EXPLOSION HAZARD DATA

FIRE: Not considered to be a fire hazard.

EXPLOSION: Not considered to be an explosion hazard

FIRE FIGHTING EQUIPMENT: Wear full protective clothing and NIOSH approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

EXTINGUISHING AGENTS: Use any means suitable for extinguishing surrounding fire.

5. REACTIVITY DATA

STABILITY: Stable under normal handling and storage conditions.

INCOMPATIBILITY: For Titanium Dioxide: A violent reaction with lithium occurs around 200 °C (392 °F) with a flash of light; the temperature can reach 900 °C. Violent or incandescent reaction may also occur with other metals such as aluminum, calcium, magnesium, potassium, sodium, and zinc.

Conditions to Avoid: Dusting and incompatibles.

HAZARDOUS DECOMPOSITION PRODUCTS: No information found.

HAZARDOUS POLYMERIZATION: Will not occur

6. ENVIRONMENTAL AND DISPOSAL INFORMATION

ACTION TO TAKE FOR SPILLS/LEAKS: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. Ventilate area of leak or spill. Wear appropriate personal protective equipment.

6. ENVIRONMENTAL AND DISPOSAL INFORMATION (cont.)

DISPOSAL: Whatever cannot be saved for recovery or recycling should be sent to an appropriate and approved waste disposal facility. Processing, use, or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state, and local requirements.

7. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA: No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen and mutagen.

CARCINOGENICITY: Titanium Dioxide has been classified by the American Congress of Governmental Industrial Hygienists (ACGIH) as an A4 carcinogen as follows: Not Classifiable as a Human Carcinogen (1999 TLVs and BEIs," p. 67). It has been classified by the International Agency for Research on Cancer (IARC) as group 3 as follows: Not Classifiable as to its Carcinogenicity to Humans.

8. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE: No information found.

ENVIRONMENTAL TOXICITY: For Titanium Dioxide, 96 Hour LC50 for fathead minnows >1,000mg/l

9. HEALTH HAZARD DATA

EYE CONTACT: May mild eye irritation, possible reddening. Flush with water for a minimum of 15 minutes, lifting upper and lower eyelids occasionally. Consult a physician if irritation persists.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation and redness. If irritation occurs, wash affected area with soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Consult a physician if irritation persists.

SKIN ABSORPTION: Skin absorption is unlikely due to physical properties.

9. HEALTH HAZARD DATA (cont.)

INGESTION: Single dose oral LD50 has not been determined. Single dose oral toxicity is believed to be low. No hazards anticipated from ingestion incidental to industrial exposure. Not expected to require first aid measures. If large amounts are swallowed, give water to drink and call a physician.

INHALATION: Vapors are unlikely due to physical properties. Avoid breathing dust. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty.

CHRONIC EXPOSURE: Long-term exposure to titanium dioxide dust may result in mild fibrosis (scarring of the lungs).

PRE-EXISTING CONDITIONS: Persons with pre-existing lung disease may be more susceptible to the effects of this substance.

10. PERSONAL PROTECTION MEASURES

EXPOSURE GUIDELINES: None established.

VENTILATION: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

RESPIRATORY PROTECTION: If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lower. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator.

WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

EYE PROTECTION: Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible.

SKIN & HAND PROTECTION: Avoid skin contact. When using this substance, use skin protection (clean body-covering clothing) and protective gloves for the hands.

10. PERSONAL PROTECTION MEASURES (cont.)

OTHER PROTECTIVE EQUIPMENT: Facilities storing or utilizing this material should be equipped with an eyewash fountain or quick-drench facility.

11. STORAGE AND HANDLING INFORMATION

STORAGE CONDITIONS: Keep in a tightly closed container. Store in a cool, dry, ventilated area.

HANDLING PROCEDURES: Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

12. REGULATORY INFORMATION

WORKPLACE CLASSIFICATIONS: This product is considered non-hazardous under OSHA Hazard Communication Standard (29CFR 1910.1200).

This product is not a 'Controlled Product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).

TRANSPORTATION CLASSIFICATIONS: US DOT Hazard Class - Non-regulated

EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW (SARA TITLE 3):

Section 311/312 Categorizations (40CFR 370) Acute: Yes Chronic: Yes
Fire: No Pressure: No Reactivity: No (Pure/Solid)

Section 313 Information (40CFR 372) This product does not contain a chemical which is listed in Section 313 above de minimis concentrations.

CERCLA Information (40CFR 302.4) Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committee under the Superfund Amendments and Reauthorization Act (SARA Title III Section 304).

RCRA Information When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

12. REGULATORY INFORMATION (cont.)

Chemical Control Law Status All components of this product are listed or are excluded from listing on the U.S. Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

RADEX[®] is a trademark of Graver Technologies

Abbreviations:

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

TLV - Threshold limit Value

TWA - Time Weighted Average

The above information contained herein relates to the specific material identified. Graver Technologies believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, express or implied, is made as to the accuracy, reliability, or completeness of the information. Graver Technologies urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application. Consult Graver Technologies for further information.