MATERIAL SAFETY DATA SHEET

Pure Tech
P.O. Box 1950
Brewster, New York 10509-8950
845/279-0900

Emergency Phone Numbers:
CHEMTREC: 800/424-9300
POISON CENTER: 800/562-8236

Date of Last Revision: 8-14-96

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SECTION 1
PRODUCT IDENTIFICATION

CHEMICAL NAME(S) AND SYNONYM(S): Titanium
FORMULA: Ti

CHEMICAL FAMILY: Metal
CHEM. ABSTRACT NO.: 7440-32-6
TSCA: Product is listed.

CAL. MOLECULAR WEIGHT:

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SECTION 2
INGREDIENTS/SUMMARY OF HAZARDS

<table>
<thead>
<tr>
<th>INGREDIENT(S)</th>
<th>CAS #</th>
<th>%</th>
<th>TLV</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>7440-32-6</td>
<td>100</td>
<td>10mg/m³</td>
<td>15mg/m³</td>
</tr>
</tbody>
</table>

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SECTION 3
PHYSICAL DATA

BOILING POINT (°C): 3287
DENSITY (gm/cc): 4.5
VAPOR PRESSURE: 0
% VOLATILE BY VOLUME: 0
REACTION WITH WATER: None
EVAPORATION RATE: 0
SOLUBILITY WITH WATER: Insoluble
MELTING POINT (°C): 1660
APPEARANCE/ODOR: Silver-gray crystalline; odorless
OTHER:

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SECTION 4
FIRE AND EXPLOSION HAZARD DATA

FLASHPOINT METHOD: NA

AUTOIGNITION TEMP (°C): Cloud: 330C Layer: 510C

FLAMMABILITY: Flammable solid in powder form

EXTINGUISHING MEDIA: ( ) Water ( ) Foam (x) Class D Extinguisher

( ) Dry Chemical ( ) CO(2)

(x) Other (specify): Dry sand, Dry ground dolomite

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. DO NOT USE WATER!

UNUSUAL FIRE AND EXPLOSION HAZARDS: NA

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SECTION 5

HEALTH HAZARD DATA

TOXICITY DATA: No toxic effects known in this form

ROUTE(S) OF ENTRY: ( ) Inhalation ( ) Skin ( ) Ingestion

EFFECTS OF OVEREXPOSURE (acute and chronic)

INHALATION: May cause Respiratory Irritation, Pneumocystis

DERMAL/EYE CONTACT: May cause Conjunctivitis

OTHER (specify):

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known

CARCINOGENICITY: NTP: No IARC MONOGRAPHS: No OSHA REGULATED: No

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: No data available but one should seek medical attention.

INHALATION: Remove victim to fresh air. Administer oxygen. Seek medical attention.

SKIN: Brush material off skin. Wash affected area with soap and water.

EYES: Flush eyes with water for 15 mins. Seek medical attention.
SECTION 6
REACTIVITY DATA

STABILITY: (x) Stable ( ) Unstable

CONDITIONS CONTRIBUTING TO UNSTABILITY:

INCOMPATIBILITY (materials to avoid):
( ) Water ( ) Combustible materials ( ) Strong bases
( ) Reducing Agents (x) Strong oxidizing materials (x) Strong acids
(x) Other (specify): Stannous chloride, oxygen, potassium nitrate,
potassium chlorate, CuO, PbO halocarbons, halogens, metal carbonates.

HAZARDOUS DECOMPOSITION PRODUCTS: Titanium oxides

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

CONDITIONS TO AVOID: Hazardous Polymerization

SECTION 7
SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wearing full protective clothing, isolate the area and insure proper ventilation. Vacuum up spill and place in a container for proper disposal.

WASTE DISPOSAL METHOD: In accordance with regulations.

SECTION 8
SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION: (Specify type) NIOSH/MSHA approved respirator

VENTILATION: LOCAL EXHAUST: Laboratory fume hood
MECHANICAL (General):
SPECI AL:

PROTECTIVE GLOVES: Rubber

EYE PROTECTION: (x) Safety Glasses with Side Shields
( ) Chemical Workers Dust-Proof Goggles (under dusting conditions)
( ) Gas-Tight Goggles or Equivalent
( ) Other (specify):

OTHER PROTECTIVE EQUIPMENT: Maintain sink, safety shower and eyewash fountain in the work area. Wear full protective clothing at all times.

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SECTION 9

SPECIAL PRECAUTIONS AND TRANSPORTATION REGULATIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in tightly closed containers in a cool, dry place. Wash hands and face thoroughly.

TRANSPORTATION REQUIREMENTS: No specific D.O.T. requirements.

DOT CLASS:
UN NUMBER:
IMCO CLASS:
OTHER:

ND = No Data Found     NA = Not Applicable

MATERIAL SAFETY DATA SHEET

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