SECTION 1            PRODUCT AND COMPANY INFORMATION

PRODUCT NAME:        Zirconium (IV) t-Butoxide
PRODUCT NUMBER:      3906
CAS NUMBER:          2081-12-1
SYNONYMS:            Tetra-tert-butoxyzirconium, Tetra-tert-buytl zirconate, ZTB, Zirconium tert-butanolate, Zirconium t-butylate, t-butanol zirconium salt.

MANUFACTURER:
Prochem, Inc.
826 Roosevelt Road
Rockford, IL 61109

PHONE:                815-398-1788
FAX:                  815-398-1810
TOLL FREE:            800-795-8788

IN CASE OF TRANSPORTATION EMERGENCY CONTACT CHEM-TREC: 1-800-424-9300

SECTION 2           HAZARDS IDENTIFICATION

CLASSIFICATION OF SUBSTANCE OR MIXTURE

Pictogram

Signal Word

warning

Hazard Statements

H227  Combustible liquid.
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H335  May cause respiratory irritation.

Precautionary Phrases

P210  Keep away from heat/sparks/open flames/hot surface. No smoking.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P403+P235 Store in a well-ventilated place. Keep cool.
P501  Dispose of contents/container in accordance with local/regional/national/international regulations.

HMIS CLASSIFICATION:
Health: 2      Fire: 2      Reactivity Hazard: 0

NFPA RATING:
Health: 2      Flammability: 2      Reactivity Hazard: 0

EYE CONTACT: Causes serious eye irritation.
SKIN CONTACT: Causes skin irritation.
SECTION 2  HAZARDS IDENTIFICATION (Cont.)

INHALATION: May be irritating to the respiratory tract.

INGESTION: May be harmful if swallowed.

SECTION 3  COMPOSITION / INFORMATION ON INGREDIENTS

Formula: Zr(OC4H9)4

Molecular Weight: 383.68

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS#</th>
<th>%</th>
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<tr>
<td>Zirconium (IV) t-butoxide</td>
<td>2081-12-1</td>
<td>100</td>
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</table>

SECTION 4  FIRST AID MEASURES

EYE EXPOSURE: Immediately flush the eyes with copious amounts of water for at least 15 minutes. Assure flushing under eyelids. A victim may need assistance in keeping their eyelids open. Get immediate competent medical attention.

SKIN EXPOSURE: Wash affected area with water. Remove contaminated clothes if necessary. Seek medical assistance if irritation persists.

INHALATION: Remove to fresh air and keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if necessary.

INGESTION: Seek medical assistance immediately. Keep the victim calm. Give the victim water (only if conscious). Induce vomiting only if directed by medical personnel.

SECTION 5  FIREFIGHTING MEASURES

FLASH POINT: 85°C

AUTO IGNITION TEMPERATURE: Not available

EXPLOSION LIMITS: Not available

EXTINGUISHING MEDIUM: Use carbon dioxide, extinguishing powder, or water spray. Fight larger fires with water spray or alcohol resistant foam.

SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained, approved breathing apparatus and full protective clothing, including eye protection and boots.

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Carbon oxides and zirconium oxides.

SECTION 6  ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear all appropriate equipment when using this material. Ensure adequate ventilation. Keep unprotected persons away.

ENVIRONMENTAL PRECAUTIONS: Prevent spillage from entering drains or allowing to be released into the environment.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Absorb spill with liquid binding material (sand diatomite, acid binders, universal binders, sawdust) then sweep up and place in proper container for disposal.

SECTION 7  HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Wear appropriate personal protective equipment. Use with adequate ventilation. Avoid contact with skin and eyes. Keep away from sources of ignition- No smoking. Take measures to prevent the build up of electrostatic charge.

SECTION 8  EXPOSURE CONTROLS AND PERSONAL PROTECTION

EXPOSURE CONTROLS

<table>
<thead>
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<th>Component</th>
<th>Exposure Limits</th>
<th>Basis</th>
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<td>TLV</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td>10 mg/m³</td>
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<tr>
<td></td>
<td>10 mg/m³</td>
<td>STEL</td>
<td>NIOSH</td>
</tr>
</tbody>
</table>

TWA: Time Weighted Average over 8 hours of work.  
STEL: Short Term Exposure Limit during x minutes.  
TLV: Threshold Limit Value over 8 hours of work.  
PEL: Permissible Exposure Limit

EYE PROTECTION: Wear chemical safety glasses or goggles.  
SKIN PROTECTION: Wear nitrile or rubber gloves, apron, or lab coat.  
VENTILATION: Provide local exhaust, preferably mechanical.  
RESPIRATOR: Use an approved respirator.  
ADDITIONAL PROTECTION: Provide eyewash stations, quick-drench showers and washing facilities accessible to areas of use and handling.

SECTION 9  PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: Clear to yellow liquid  
ODOR: Not available  
MOLECULAR WEIGHT: 383.68  
BOILING POINT: 90°C  
MELTING POINT: Not available  
SPECIFIC GRAVITY: 0.985 gm/ml  
VAPOR DENSITY: No data available  
SOLUBILITY: Reacts with water

SECTION 10  STABILITY AND REACTIVITY

STABILITY: Stable  
HAZARDOUS POLYMERIZATION: Will not occur  
CONDITIONS TO AVOID: Heat, flames, sparks, moisture, and light.  
INCOMPATIBILITY: Strong oxidizing agents and halogens.  
DECOMPOSITION PRODUCTS: Carbon oxide and zirconium oxides.

SECTION 11  TOXICOLOGICAL DATA

ACUTE TOXICITY: No data available  
CARCINOGENIC EFFECTS: No components of this product present at levels greater than or equal to 0.1% is identified a carcinogen.  
MUTAGENIC EFFECTS: Not available  
TETRATOGENIC EFFECTS: Not available  
RTECS: No data  

To the best of our knowledge the toxicological effects of this compound have not been fully investigated.

SECTION 12  ECOLOGICAL DATA

No data available.

SECTION 13  DISPOSAL CONSIDERATIONS

Dispose of in according to local, state, and federal regulations.
SECTION 14  TRANSPORTATION DATA

Not a dangerous good.

SECTION 15  REGULATORY INFORMATION

TSCA: Listed in the TSCA inventory
SARA 302/304: Not Listed
SARA 311/312: Fire hazard, acute health hazard
SARA (TITLE 313): Not Listed
CALIFORNIA PROP. 65: Not Listed
PENNSYLVANIA RIGHT TO KNOW: Zirconium (IV) t-Butoxide
NEW JERSEY RIGHT TO KNOW: Zirconium (IV) t-Butoxide
WHMIS CANADA: Class B-3: Combustible liquid.

SECTION 16  OTHER INFORMATION

DISCLAIMER: The information herein is believed to be accurate and reliable as of the date compiled. However, Prochem, Inc. makes no representation, warranty, or guarantee of any kind with respect to the information in this document or any use of the product based on the information.
DATE PREPARED: 09/14