SAFETY DATA SHEET

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SECTION 1 PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: **Titanium (IV) Isopropoxide**

PRODUCT NUMBER: 3703

CAS NUMBER: 546-68-9

SYNONYMS: Isopropyl orthotitanate; Isopropytitanate (IV); Tetraisopropoxide Titanium. Tetraisopropyl orthotitanate

MANUFACTURER:

Prochem, Inc.
826 Roosevelt Road
Rockford, IL 61109

PHONE: 815-398-1788
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

Flammable liquid	Category – 3
Serious eye damage / eye irritation	Category – 2/2A

Pictogram



Signal Word **Warning**

Hazard Statements

H226	Flammable liquid and vapor.
H319	Causes serious eye irritation.

Precautionary Phrases

P210	Keep away from heat/sparks/open flames/hot surfaces. –No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340+P312	IF INHALED: Remove person to fresh air and keep comfortable (for breathing) Call POISION CENTER and or a DOCTOR if feeling well. I
P305+P351+P338	IF IN EYES: Rinse cautiously with waster for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P370+P378	IN case of FIRE: Use dry sand, dry chemical, or alcohol-resistant foam to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container to an approved waste disposal plant.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Formula: $Ti(OC_3H_7)_4$

Molecular Weight: 284.22

CHEMICAL NAME	CAS#	%
Titanium (IV) Isopropoxide	546-68-9	100

SECTION 4 FIRST AID MEASURES

EYE EXPOSURE: Immediately flush the eyes with copious amounts of water for at least 15 minutes. Be sure to rinse under the eyelids. Get medical aid immediately.
SKIN EXPOSURE: Flush the skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention.
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: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If conscious, wash out mouth with water. Get medical attention if necessary.

SECTION 5 FIREFIGHTING MEASURES

FLASH POINT: 46°C
AUTO IGNITION TEMPERATURE: Not available
EXPLOSION LIMITS: Not available
EXTINGUISHING MEDIUM: Carbon dioxide, extinguishing powder, water spray, or alcohol resistant foam. 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 titanium oxides

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Wear all appropriate equipment when using this material. Ensure adequate ventilation. Avoid breathing vapors, mist, or gas. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations.
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 inert material such as vermiculite, sand, or earth. Then place in a suitable container for proper 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. Avoid inhalation of mists or vapor. Flash-back possible over considerable distance. Container explosion may occur under fire conditions. Keep away from sources of ignition – No smoking. Take measures to prevent the build up of electrostatic charge.
CONDITIONS FOR SAFE STORAGE: Store in cool, dry, and well-ventilated area. Keep away from heat, sparks, and flame. Keep away from water. Store protected from moisture. Hydrolyses readily.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

EYE EXPOSURE / PROTECTION: May cause eye irritation. May cause chemical conjunctivitis and corneal damage. Wear chemical safety glasses or goggles.
SKIN EXPOSURE / PROTECTION: May cause irritation and dermatitis. May cause cyanosis of the extremities. Wear nitrile or rubber gloves .11 thickness or above apron, or lab coat.
INHALATION: may cause respiratory tract irritation. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. May cause burning sensation in chest.
VENTILATION: Provide local exhaust, preferably mechanical.
RESPIRATOR: Use an approved respirator.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: Colorless to pale-yellow liquid
ODOR: Not available.
MOLECULAR WEIGHT: 284.22
BOILING POINT: 232°C
MELTING POINT: 14-20°C
SPECIFIC GRAVITY: 0.955 gm/ml
VAPOR DENSITY: No data available
SOLUBILITY: Decomposes in water

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: Ignition sources, excess heat, exposure to moist air or water.
INCOMPATIBILITY: Strong oxidizing agents, water, moisture, strong acids, and anhydrous hydrazine
DECOMPOSITION PRODUCTS: Carbon oxides and titanium oxides

SECTION 11 TOXICOLOGICAL DATA

ACUTE TOXICITY: LD50 Oral – rat – 7,236 mg/kg. LC50 Inhaltion – rat – 4h – 7.78 mg/l. LD50 Dermal – rabbit - >15.5 g/kg. Draize Test Eye – Rabbit – 20mg/24h moderate irritation. Draize Test Skin – rabbit – 500mg/24h mild irritaiton
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
CHRONIC TOXICITY: Not available
RTECS: NT8060000

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

SECTION 12 ECOLOGICAL DATA

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 590 mg/l. End point: Immobilization
Exposure time: 48 h
Toxicity to algae/aquatic plant : ErC50 (Desmodesmus subspicatus (green algae)): >820 mg/l. Exposure time: 72 h
Test Type: static test
Toxicity to microorganisms : EC50 (Bacteria): 1,050 mg/l Exposure time: 16 h

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose of in according to local, state, and federal regulations.

SECTION 14 TRANSPORTATION DATA

UN2413
Tetrapropylorthotitanate
CLASS 3
PG III

Marine Pollutant: No

SECTION 15 REGULATORY INFORMATION

TSCA: Listed in the TSCA inventory
SARA 302/304: Not Listed
SARA 311/312: Fire Hazard, acute health hazard

SECTION 15 REGULATORY INFORMATION (Cont.)

SARA (TITLE 313): Not Listed
PENNSYLVANIA RIGHT TO KNOW: Titanium (IV) Isopropoxide
NEW JERSEY RIGHT TO KNOW: Titanium (IV) Isopropoxide
CALIFORNIA PROP. 65: Not Listed

SECTION 16 OTHER INFORMATION

HMIS CLASSIFICATION:
Health: 1 Fire: 2 Reactivity Hazard: 1
NFPA RATING:
Health: 1 Flammability: 2 Reactivity Hazard: 1

CAS #: Chemical Abstracts Service Number
LD50: Lethal Dose, 50%
LC50: Lethal Concentration, 50%.
EC50: Lethal Concentration, 50%
ERC50: Effective Concentration (Growth Rate), 50%
mg/kg: milligrams per kilogram
mg/l: milligrams per liter
UN: United Nations
PG: Packing Group
TSCA: Toxic Substances Control Act
SARA: Superfund Amendments and Reauthorization Act

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DATE REVISED: 07/26
REVISION SUMMARY: Fax number removed. Updated the following Sections - # 2 – updated categories and Precaution Phrases. Section # 12 – added updated data statement. All other details in the document about the product remain unchanged.

EHS / SDS DEPT