

MATERIAL SAFETY DATA SHEET

24 HR. EMERGENCY PHONE # CHEM-TREC 1-800-424-9300

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SECTION 1 Product Identification

CHEMICAL NAME: Hafnium (IV) t-butoxide
CAS #: 2172-02-3
FORMULA: Hf[OC(CH₃)₃]₄
SYNONYM: sodium t-butylate; t-butanol, sodium salt.

SECTION 2 Composition and Information on Ingredients

INGREDIENT:	CAS #	%	ACGIH (TWA)	OSHA (PEL)
Title Compound	2172-02-3	100	0.5mg/m ³ (as Hf)	0.5mg/m ³ (as Hf)

SECTION 3 Hazards Identification

EMERGENCY OVERVIEW: The liquid may irritate the skin, eyes, and respiratory system. Moisture will produce hafnium oxide powder and t-butanol vapor which may cause severe eye irritation and drowsiness.

PRIMARY ROUTES OF EXPOSURE: Inhalation, ingestion, contact with skin and eyes.

EYE CONTACT: If liquid contacts the eye, irritating hafnium oxide powder may form. t-Butanol vapor from hydrolyzed product may cause eye irritation.

SKIN CONTACT: Dehydrating agent. Liquid may cause mild irritation of the skin.

INHALATION: t-butanol vapor may be irritating to the respiratory tract and cause headache, dizziness, and drowsiness.

INGESTION: Ingestion may cause gastrointestinal distress, nausea, vomiting and headache.

CHRONIC HEALTH EFFECTS: No data is available for this product. In animal studies, t-butanol in high doses has acted as a reproductive effector.

ACUTE HEALTH EFFECTS: No data is available for this product. Hafnium oxide hydrolysis product exhibits low toxicity. t-Butanol causes severe eye irritation, drowsiness, and gastrointestinal distress.

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 the victim to fresh air. Closely monitor the victim for signs of respiratory problems, such as difficulty in breathing, coughing, wheezing, or pain. In such cases seek immediate medical assistance.

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: not applicable

AUTO IGNITION TEMPERATURE: no data

EXPLOSION LIMITS: no data

EXTINGUISHING MEDIUM: carbon dioxide, dry poser, or foam

SPECIAL FIREFIGHTING PROCEDURES: If involved in a fire, fire fighters should be equipped with a NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing.

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: If involved in a fire this material may emit toxic organic fumes.

UNUSUAL FIRE OR EXPLOSION HAZARDS: No unusual fire or explosion hazards.

SECTION 6 Accidental Release Measures

SPILL AND LEAK PROCEDURES: Avoid contact with water. Small spills may be adsorbed into diatomaceous earth, sand, or other suitable adsorbent, and swept up.

SECTION 7 Handling and Storage

HANDLING AND STORAGE: Store material in a tightly sealed container in a dry place. If container is left open, product may adsorb moisture and carbon dioxide from the atmosphere and release t-butanol vapor.

SECTION 8 Exposure Controls and Personal Protection

EYE PROTECTION: Always wear approved safety glasses w/side shields, or safety goggles, face shield when handling a chemicals substance in the laboratory.

SKIN PROTECTION: Chemical-resistant.

VENTILATION: If possible, handle the material in an efficient fume hood.

RESPIRATOR: If in form of fine dust and ventilation is not available a respirator should be worn. The use of respirators requires a Respirator Protection Program to be in compliance with 29 CFR 19-10.134.

SECTION 9 Physical and Chemical Properties

COLOR AND FORM: liq. (may contain small amount of white sediment)

MOLECULAR WEIGHT: 470.65

MELTING POINT (DEG. C.): no data

BOILING POINT: 90°/5 mm

VAPOR PRESSURE: no data

SPECIFIC GRAVITY: no data

SOLUBILITY IN WATER: reacts with water

SECTION 10 Stability and Reactivity

STABILITY: air and moisture sensitive solid.

HAZARDOUS POLYMERIZATION: no hazardous polymerization
CONDITIONS TO AVOID: contact with moisture
INCOMPATIBILITY: oxidizing agents and halogens
DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, organic vapors, and metal oxides and carbonates.

SECTION 11 Toxicological Information

RTECS DATA: No information available in the RTECS files. t-butanol, hydrolysis product: skin (rbt) draize: 500 ul/24h mild; eye (rbt) draize 100 u1/24h: severe; oral (rat) LD50: 2743 mg/kg; inhalation (rat) LC50: >10000 ppm/4h; intraperitoneal (mouse) LD50: 399 mg/kg. oral (rbt) LD50: 3559 mg/kg; inhalation (rat) TLo (reprod): 2000.
MUTAGENIC EFFECTS: no data
TETRATOGENIC EFFECTS: no data
CARCINOGENIC EFFECTS: no data

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

SECTION 12 Ecological Information

ECOLOGICAL INFORMATION: No information available

SECTION 13 Disposal Considerations

DISPOSAL: Dispose of in according to local state and federal regulations.

SECTION 14 Transportation Information

Non-hazardous

Non-hazardous

SECTION 15 Regulatory Information

TSCA: Not listed in the TSCA inventory
SARA (TITLE 313): Title compound not listed

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: 10/05