

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: **Tert-butylimido tris(ethylmethanimido) niobium**

FORMULA: $C_{13}H_{33}N_4Nb$

CAS NO: 864150-47-0

SYNONYMS: Tris(ethylmethanimido) tert-butylimido niobium;
Tert-butyliminotris(ethylmethanimino) niobium

Intended Use: For R&D use only.

MANUFACTURER:

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SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

GHS CLASSIFICATION:

Flammable liquids (category 2)

Substances which, in contact with water, emit flammable gases (category 2)

Eye irritation (Category 2A)

Specific target organ toxicity- single exposure (Category 3), respiratory system

Pictogram



Signal Word

Danger

SECTION 2 HAZARDS IDENTIFICATION (Cont.)

Hazard Statements

| | |
|------|--|
| H225 | Highly flammable liquid and vapor |
| H261 | In contact with water releases flammable gas |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

Precautionary Phrases

| | |
|--------------------|---|
| P210 | Keep away from heat/spark/open flame/ hot surfaces. No smoking |
| P223 | Keep away from any possible contact with water because of violent reaction and possible flash fire |
| P231 + P232 | Handle under inert gas, protect from moisture |
| P233 | Keep container tightly closed |
| P240 | Ground/bond container and receiving equipment |
| P241 | Use explosion proof electrical/ ventilating/ lighting/ equipment |
| P242 | Use only non-sparking tools |
| P243 | Take precautionary measures against static discharge |
| P261 | Avoid breathing dust/fume/gas/mist/vapors/spray |
| P264 | Wash skin thoroughly after handling |
| P271 | Use only outdoors or in a well-ventilated area |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection |
| P303 + P361 + P353 | IF ON SKIN: Remove immediately all contaminated clothing. Rinse skin with water/shower. |
| P304 + P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P305 + P351 + P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing |
| P312 | Call a POISON CENTER or doctor/physician if you feel unwell. |
| P335 + P334 | Brush off loose particles from skin. Immerse in cool water/ wrap in wet bandages |
| P337 + P313 | If eye irritation persists, Get medical attention |
| P370 + P378 | In case of fire: Use dry sand, dry chemical, or alcohol-resistant foam for extinction. |
| P402 + P404 | Store in a dry place. Store in a closed container. |
| P403 + P235 | Store in a well-ventilated place. Keep cool. |
| P405 | Store locked up. |
| P501 | Dispose of contents/ container to an approved waste disposal plant. |

OTHER HAZARDS

Reacts violently with water.

NFPA 704 RATINGS (SCALE 0-4):

Health: 2

Flammability: 3

Reactivity: 1

SPECIAL: WATER REACTIVE

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name: Tert-butylimido tris(ethylmethylamido) niobium

Synonyms: Tris(ethylmethylamido) tert-butylimido niobium; Tert-butylimino tris(ethylmethylamino) niobium

Formula: C₁₃H₃₃N₄Nb

CAS #: 864150-47-0

Molecular weight: 338.34 g/mol

SECTION 4 FIRST AID MEASURES

GENERAL ADVICE: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

EYE EXPOSURE: Rinse thoroughly with plenty of water for at least 15 minutes. A victim may need help keeping their eyelids open. Seek medical attention.

SKIN EXPOSURE: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Seek medical attention.

INHALATION: Move victim into fresh air. If not breathing, give artificial respiration. Seek medical attention.

INGESTION: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention.

Tert-butylimido tris(ethylmethylamido) niobium

SECTION 5 FIREFIGHTING MEASURES

EXTINGUISHING MEDIA:

Suitable Use dry chemical.
Unsuitable DO NOT USE WATER!

CONDITIONS OF FLAMMABILITY:

Flammable in the presence of a source of ignition when the temperature is above the flash point. May burn in presence of air, or emit a flammable gas in the presence of water or water vapor. Keep away from heat/sparks/open flame/hot surface/air/water. No smoking.

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS:

Carbon oxides, nitrogen oxides (NO_x), and Niobium oxides

ADVICE FOR FIRE FIGHTERS

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. For personal protection see section 8.

ENVIRONMENTAL PRECAUTIONS

Prevent further leakage or spillage if safe to do so. Do not allow material to enter drains or streams.

METHODS AND MATERIALS

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Do not flush with water.

SECTION 7 HANDLING AND STORAGE

PERSONAL PRECAUTIONS

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.
Use explosion-proof equipment. Keep away from sources of ignition – No smoking. Take measures to prevent the buildup of electrostatic charge.

CONDITIONS FOR SAFE STORAGE

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Never allow product to get in contact with water during storage. Handle and store under inert gas. Air sensitive.

INCOMPATIBILITIES:

Exposure to air, moisture.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

Contains no substances with occupational exposure limit values.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Wear chemical safety glasses, faceshield. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH or EN.

SKIN PROTECTION: Compatible chemical-resistant gloves. Inspect gloves before each use. Use proper glove removal technique to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

BODY PROTECTION: Complete suit protecting against chemicals, flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION (Cont.)

RESPIRATOR: Use respirators and components tested and approved under appropriate government shows air purifying respirators are appropriate use a full-face respirator with multi-purpose combination or type ABEK respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

ADDITIONAL PROTECTION: DANGER! Water/Moisture reactive. Avoid contact with skin, eyes, clothing, shoes. Do not inhale vapors. Use with adequate ventilation. Use in a controlled environment. Avoid contact with water, Moisture, friction, heat, flames and sparks. Eyewash and safety shower in area capable of sustained flushing. Do not eat, drink or smoke in area.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: Pale yellow liquid

FORMULA MASS: 338.34 g/mol

ODOR: No data available

ODOR THRESHOLD: No data available

pH: No data available

MELTING POINT/ FREEZING POINT: No data available

BOILING POINT: 86-87 °C @ 1.5 Torr

FLASH POINT: No data available

EVAPORATION RATE: No data available

UPPER/LOWER FLAMMABILITY/EXPLOSION LIMITS: No data available

VAPOR PRESSURE: 1 Torr @ 78°C

VAPOR DENSITY: No data available

SPECIFIC GRAVITY: No data available

SOLUBILITY IN WATER: Reacts violently

PARTITION COEFFICIENT: N-OCTANOL/WATER: No data available

AUTO-IGNITION TEMPERATURE: No data available

DECOMPOSITION: No data available

VISCOSITY: No data available

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions.

POSSIBILITY OF HAZARDOUS REACTION: Will not polymerize. Reacts violently with water. Vapors may form explosive mixture with air.

CONDITIONS TO AVOID: Heat, flame, and sparks. Extremes of temperature and direct sunlight. Exposure to moisture.

INCOMPATIBLE MATERIALS: Water, acids, alcohols, oxygen, polyethylene, polypropylene, carbon steel

HAZARDOUS DECOMPOSITION PRODUCTS: (formed under fire conditions) Carbon oxides, nitrogen oxides (NOx), and Niobium oxides

SECTION 11 TOXICOLOGICAL DATA

ACUTE TOXICITY: No data available.

SKIN CORROSIVE/IRRITANT: No data available

SERIOUS EYE DAMAGE/IRRITATION: No data available

RESPIRATORY OR SKIN SENSITIZATION: No data available **GERM**

CELL MUTAGENICITY: No data available **CARCINOGENICITY:**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

SECTION 11 TOXICOLOGICAL DATA (Cont.)

REPRODUCTIVE TOXICITY: No data available

STOT-Single Exposure: Inhalation – May cause respiratory irritation

STOT-Repeated Exposure: No data available

ASPIRATION HAZARD: No data available

ADDITIONAL INFORMATION: No data available

SECTION 12 ECOLOGICAL DATA

TOXICITY: No data available

PERSISTENCE AND DEGRADABILITY: No data available

BIOACCUMULATIVE POTENTIAL: No data available

MOBILITY IN SOIL: No data available

OTHER ADVERSE EFFECTS: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed waste disposal service to dispose of this material.

Dispose of contaminated packaging as unused product.

SECTION 14 TRANSPORTATION DATA

Organometallic substance, liquid, water-reactive, flammable (tert-butylimido tris(ethylmethylamido) niobium(V))

UN3399 Class 4.3(3) PG: II

Marine pollutant: No

Poison inhalation hazard: No

DOT, IATA, IMDG regulated.

SECTION 15 REGULATORY INFORMATION

OSHA Hazards:

Combustible liquid, water reactive, corrosive.

SARA 302/313 Components:

No chemicals in this material are subject to reporting requirements of SARA Title III, Section 302 or 313.

SARA 311/312 Hazards:

This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

Pennsylvania Right to Know/New Jersey Right to Know/Massachusetts Right to Know Components:

No components are subject to the Massachusetts Right to Know Act.

California Prop. 65 Components:

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16 OTHER INFORMATION

DISCLAIMER: The information herein is believed to be accurate and reliable as of the date compiled. However, Wonik Materials North America, LLC 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: 02/2019

SDS DEPT