SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Zirconium(IV) Propoxide Solution

Product Number: All applicable American Elements product codes, e.g. ZR-PROP-02-SOL , ZR-PROP-03-SOL , ZR-PROP-04-SOL , ZR-PROP-05-SOL

CAS #: 23519-77-9

Relevant identified uses of the substance: Scientific research and development

Supplier details:
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351

Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

OSHA Haz Com: CFR 1910.1200: Skin Corrosion/Irritation [Category 2]
Eye Damage/Irritation [Category 1]
Carcinogenicity [Category 2]
Toxic to Reproduction [Category 2]
Specific Target Organ Toxicity (Single Exposure) [Category 3]
Flammable Liquids [Category 3]
Signal word: Danger!
Hazard Statement(s): Causes serious eye damage
Causes skin irritation
Flammable liquid and vapor
Suspected of causing cancer
Suspected of damaging fertility or the unborn child
May cause respiratory irritation. May cause drowsiness or dizziness.



Pictogram(s) or Symbol(s):
Precautionary Statement(s):
[Prevention] Wash hands and face thoroughly after handling. Wear protective gloves. Wear eye

protection. Wear face
protection (full length face shield). Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing, eye protection
and face protection. Avoid breathing fume, mist, vapors or spray. Use only outdoors or in a well-ventilated
area. Keep away from heat, sparks, open flames or other hot surfaces. - No smoking. Keep container tightly closed. Ground or bond container and receiving equipment. Use explosion-proof electrical, ventilating, lighting, and equipment. Use only non-sparking tools. Take precautionary measures against
static discharge. Wear protective gloves, eye protection and face protection.
[Response] If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off
contaminated clothing and wash it before reuse. If in eyes: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or
doctor. If exposed or concerned: Get medical advice or attention. If exposed: Call a poison center or doctor. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or
doctor if you feel unwell. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with
water or shower. In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish.
[Storage] Store locked up. Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated
place. Keep cool.
[Disposal] Dispose of contents and container in accordance with US EPA guidelines for the classification and
determination of hazardous waste listed in 40 CFR 261.3. (See Section 13)
Hazards not otherwise classified: [HNOC] May be harmful if swallowed and enters airways. May be harmful if in contact with skin. May be harmful if
swallowed.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Mixture
Components: Zirconium(IV) Propoxide (ca. 70% in 1-Propanol)
Percent: ....
CAS Number: 23519-77-9
Molecular Weight: 327.58
Chemical Formula: C12H28O4Zr
Synonyms: Zirconium(IV) Tetrapropoxide (ca. 70% in 1-Propanol)

SECTION 4. FIRST AID MEASURES

Inhalation: Immediately call a poison center or doctor. Effects of exposure (inhalation) to substance may be delayed.
Inhalation of vapors or contact with substance will result in contamination and potential harmful effects. Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is

difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Skin contact: Immediately call a poison center or doctor. Effects of exposure (skin contact) to substance may be
delayed. Remove and wash contaminated clothing before re-use. Remove and isolate contaminated clothing and shoes. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Treat symptomatically and supportively. Ensure that medical personnel are aware of the
material(s) involved and take precautions to protect themselves.
Eye contact: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Eye contact
with vapors or substance may cause severe injury, burns, or death. Call emergency medical service. Move
victim to fresh air. Check for and remove any contact lenses. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical
personnel are aware of the material(s) involved and take precautions to protect themselves.
Ingestion: Do not induce vomiting with out medical advice. Effects of exposure (ingestion) to substance may be
delayed. Call a physician or Poison Control Center immediately. Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a oneway
valve or other proper respiratory medical device. Loosen tight clothing such as a collar, tie, belt or waistband. If a person vomits place them in the recovery position so that vomit will not reenter the mouth
and throat. Rinse mouth. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that
medical personnel are aware of the material(s) involved and take precautions to protect themselves.
Symptoms/effects:
Acute: Dizziness. Pain. Redness. Drowsiness.
Delayed: May have effects on the respiratory tract. Possibly carcinogenic to humans.
Immediate medical attention: WARNING: It might be hazardous to the person providing aid to give mouth-to-mouth respiration, because
the inhaled material is corrosive. CAUTION: Victim may be a source of contamination. For severe burns,
immediate medical attention is required. If breathing has stopped, perform artificial respiration. Use first aid
treatment according to the nature of the injury. Ensure that medical personnel are aware of the material(s)
involved and take precautions to protect themselves.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media: Dry chemical, CO2 or water spray. Consult with local fire authorities before attempting large scale fire
fighting operations.
Specific hazards arising from the chemical
Hazardous combustion products: These products include: Carbon oxides Metallic oxides
Other specific hazards: Closed containers may explode from heat of a fire.
Special precautions for fire-fighters:
Use water spray or fog; do not use straight streams. Dike fire-control water for later disposal; do not scatter the material. CAUTION: All these products
have a very low flash point: Use of water spray when fighting fire may be inefficient. Do not use

straight streams. Runoff to sewer may create fire or
explosion hazard. Containers may explode when heated. Move containers from fire area if you can do it without risk.
Special protective equipment for fire-fighters:
Wear positive pressure self-contained breathing apparatus (SCBA). Structural fire fighters' protective clothing provides limited protection in fire situations
ONLY; it may not be effective in spill situations. Wear chemical protective clothing which is specifically recommended by the manufacturer. It may
provide little or no thermal protection.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid contact with skin, eyes, and clothing. Keep people away from and upwind of spill/leak. Use sparkproof
tools and explosion-proof equipment. Remove all sources of ignition. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (Section 8). Warn unnecessary personnel to move away. Stop leak if you can do it without risk. Ensure adequate ventilation.
Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
Personal protective equipment: Wear eye protection (splash goggles) and face protection (full length face shield). Wear protective clothing
(chemical resistant suit and chemical resistant boots). Vapor respirator. Be sure to use a MSHA/NIOSH
approved respirator or equivalent. Wear protective gloves (nitrile).
Emergency procedures: Isolate area until gas has dispersed. Do not clean-up or dispose except under supervision of a specialist.
In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the area, and excercise
caution. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Warn personnel to move away. Prevent entry into sewers, basements or confined areas; dike if
needed.
Methods and materials for containment and cleaning up:
ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). All equipment used when handling the product must be
grounded. Stop leak if without risk. Ventilate the area. Absorb with an inert material and put the spilled material in an appropriate waste disposal
container. Use clean non-sparking tools to collect absorbed material.
Environmental precautions:
Keep away from living quarters. Do not let product enter drains. Prevent further leakage or spillage if safe to do so. Water runoff can cause
environmental damage. Prevent entry into sewers, basements or confined areas; dike if needed.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling: Do NOT breath gas, fumes, vapor, or spray. Manipulate under an adequate fume hood. Avoid contact with
skin and eyes. Avoid exposure - obtain special instructions before use. Avoid prolonged or repeated exposure. Normal measures for preventive fire protection. Avoid contact - obtain special instructions before
use. Keep away from heat and sources of ignition. Use explosion-proof equipment. Use only non-

sparking
hand tool when handling this product. Ground all equipment containing material. Take measures to prevent
build up of electrostatic charge. Good general ventilation should be sufficient to control airborne levels. Keep container dry. Handle and open container with care. Wear suitable protective clothing, gloves and
eye/face protection. When using do not eat, drink, or smoke. Keep away from sources of ignition. Conditions for safe storage: Store locked up. Keep containers tightly closed in a cool, well-ventilated place. Keep away from sources of
ignition. Store and use away from heat, sparks, open flame, or any other ignition source. Keep away from
incompatibles. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid prolonged storage periods. Store under inert gas (e.g. Argon). Moisture sensitive. Storage incompatibilities: Combustible substances, Store away from oxidizing agents

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits: No data available
Appropriate engineering controls:
Handle only in a fully enclosed system and equipment. Good general ventilation should be sufficient to control airborne levels. Ventilation is normally
required when handling or using this product. Eyewash fountains should be provided in areas where there is any possibility that workers could be
exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.
Personal protective equipment
Respiratory protection: Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Hand protection: Wear protective gloves.
Eye protection: Splash goggles.
Skin and body protection: Wear protective clothing (chemical resistant suit and chemical resistant boots).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C): Liquid
Form: Clear
Color: Very pale yellow - Yellow
Odor: No data available
Odor threshold: No data available

Melting point/freezing point: No data available
Boiling point/range: No data available
Decomposition temperature: No data available
Relative density: No data available
Kinematic Viscosity: No data available
Partition coefficient: No data available
n-octanol/water (log Pow)
Flash point: 28°C (82°F)
Flammability (solid, gas): No data available

pH: No data available

Vapor pressure: No data available
Vapor density: No data available
Dynamic Viscosity: No data available
Evaporation rate: No data available
(Butyl Acetate = 1)
Autoignition temperature: No data available
Flammability or explosive limits: No data available
Lower: No data available
Upper: No data available

Solubility(ies):
Soluble: Alcohols, Toluene

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not Available.
Chemical Stability: Moisture sensitive.
Possibility of Hazardous Reactions: In use, may form flammable/explosive vapor-air mixture.
Conditions to avoid: Exposure to moisture. Moisture sensitive.
Incompatible materials: Oxidizing agents
Hazardous Decomposition Products: No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Toxicity:
No data available
Skin corrosion/irritation:
No data available
Serious eye damage/irritation:
No data available
Respiratory or skin sensitization:
No data available
Germ cell mutagenicity:
No data available
Carcinogenicity:
No data available
IARC: No data available NTP: No data available OSHA: No data available
Reproductive toxicity:
No data available
Routes of Exposure: Inhalation, Eye contact, Ingestion, Skin contact.
Symptoms related to exposure:
Skin contact may result in inflammation; characterized by itching, scaling, reddening, or occasionally blistering. Skin contact may result in redness, pain
or dry skin. Eye contact can result in corneal damage or blindness. Inhalation causes irritation of the lungs and respiratory system. Overexposure may
result in serious illness or death.
Potential Health Effects:
Skin and eye contact may result in irritation. Inhalation causes irritation of the lungs and respiratory system. May be harmful if inhaled or ingested.
Overexposure may result in serious illness or death.
Aspiration hazard: May be harmful if swallowed and enters airways.
Target organ(s):

May cause respiratory irritation. May cause drowsiness or dizziness.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
Fish: No data available
Crustacea: No data available
Algae: No data available
Persistence and degradability: No data available
Bioaccumulative potential (BCF): No data available
Mobillity in soil: No data available
Partition coefficient:
n-octanol/water (log Pow)
No data available
Soil adsorption (Koc): No data available
Henry's Law:
constant (PaM3/mol)
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal of product: Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local
rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a
chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide
assistance but does not replace these laws, nor does compliance in accordance with this section ensure
regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous
Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains,
water ways, or the soil.
Disposal of container: Dispose of as unused product. Do not re-use empty containers.
Other considerations: Observe all federal, state and local regulations when disposing of the substance.

SECTION 14. TRANSPORT INFORMATION

DOT (US)
UN number:
UN1274
Proper Shipping Name:
n-Propanol
Class or Division:
3 Flammable liquid
Packing Group:
III
IATA

UN number:
UN1274
Proper Shipping Name:
n-Propanol
Class or Division:
3 Flammable liquid
Packing Group:
III
IMDG
UN number:
UN1274
Proper Shipping Name:
n-Propanol
Class or Division:
3 Flammable liquid
Packing Group:
III
EmS number: F-E, S-D

SECTION 15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA 8b.):
This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.
US Federal Regulations
CERCLA Hazardous substance and Reportable Quantity:
SARA 313: Not Listed
SARA 302: Not Listed
State Regulations
State Right-to-Know
Massachusetts Not Listed
New Jersey Not Listed
Pennsylvania Not Listed
California Proposition 65: Not Listed
Other Information
NFPA Rating:
Health: 2
Flammability: 3
Instability: 0
HMIS Classification:
Health: 2
Flammability: 3
Physical: 0
International Inventories
WHMIS hazard class: E: Corrosive material.
B2: Flammable Liquid.
D2B: Materials causing other toxic effects. (Toxic)
Canada: NDSL On NDSL
EC-No: 245-711-9

SECTION 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.