SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Tetrabutylammonium Fluoride Solution

Product Number: All applicable American Elements product codes, e.g. TBAM-F-01-SOL

CAS #: 429-41-4

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

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)
GHS02 Flame
Flam. Liq. 2
H225 Highly flammable liquid and vapor.
GHS08 Health hazard
Carc. 2
H351 Suspected of causing cancer.
GHS05 Corrosion
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
GHS07
Acute Tox. 4 H302 Harmful if swallowed.
STOT SE 3
H335 May cause respiratory irritation.
Hazards not otherwise classified
No data available.
GHS label elements
The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)
Hazard pictograms



GHS02 GHS05 GHS07 GHS08
Signal word
Danger
Hazard-determining components of labeling:
Tetra-n-butylammonium fluoride
Tetrahydrofuran
Hazard statements
H225 Highly flammable liquid and vapor.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H351 Suspected of causing cancer.
H335 May cause respiratory irritation.
Precautionary statements
P210
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260
Do not breathe dust/fume/gas/mist/vapors/spray.
P201
Obtain special instructions before use.
P261
Avoid breathing dust/fume/gas/mist/vapors/spray.
P280
Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P405
Store locked up.
P501
Dispose of contents/container in accordance with local/regional/national/international regulations.
WHMIS classification
B2 - Flammable liquid
D2B - Toxic material causing other toxic effects
E - Corrosive material
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)
Health (acute effects) = 3
Flammability = 3
Physical Hazard = 1
Other hazards
Results of PBT and vPvB assessment:
PBT:
N/A.
vPvB:
N/A.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization: Mixtures
Dangerous components:
109-99-9 Tetrahydrofuran
Flam. Liq. 2, H225; Carc. 2, H351; Eye Irrit. 2, H319; STOT SE 3, H335 74.0%
429-41-4 Tetra-n-butylammonium fluoride
Acute Tox. 3, H301; Skin Corr. 1B, H314; Eye Dam. 1, H318 26.0%
Additional information
Stabilized with:
BHT (CAS# 128-37-0)

SECTION 4. FIRST AID MEASURES

Description of first aid measures
General information
Immediately remove any clothing soiled by the product.
If inhaled:
Supply fresh air. If not breathing, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
In case of skin contact:
Immediately wash with soap and water; rinse thoroughly.
Seek immediate medical advice.
In case of eye contact:
Rinse opened eye for several minutes under running water. Consult a physician.
If swallowed:
Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Harmful if swallowed.
May cause respiratory irritation.
Suspected of causing cancer.
Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing media
Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Hydrogen fluoride (HF)
Nitrogen oxides (NOx)
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions:
Do not allow material to be released to the environment without official permits.
Methods and material for containment and cleanup:
Keep away from ignition sources.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Prevention of secondary hazards:
Keep away from ignition sources.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Handling
Precautions for safe handling
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure adequate ventilation.
Open and handle container with care.
Prevent formation of aerosols.
Information about protection against explosions and fires:
Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.
Keep ignition sources away.
Do not distill to dryness.
Explosive peroxides may form, handle container cautiously.
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles:
Store in a cool location.
Information about storage in one common storage facility:
Store away from strong bases.
Store away from water/moisture.
Store away from oxidizing agents.
Further information about storage conditions:
Store under dry inert gas.
This product is hygroscopic.
Store in cool, dry conditions in well-sealed containers.
Protect from humidity and water.
Avoid contact with air/oxygen (formation of peroxide).

Check container pressure periodically to prevent explosive peroxides.
Specific end use(s)
No information available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
Control parameters
Components with limit values that require monitoring at the workplace:
109-99-9 Tetrahydrofuran (74.0%)
PEL (USA)
Long-term value: 590 mg/m³, 200 ppm
REL (USA)
Short-term value: 735 mg/m³, 250 ppm
Long-term value: 590 mg/m³, 200 ppm
TLV (USA)
Short-term value: 295 mg/m³, 100 ppm
Long-term value: 147 mg/m³, 50 ppm
Skin
EL (Canada) Short-term value: 100 ppm
Long-term value: 50 ppm
Skin
EV (Canada) Short-term value: 100 ppm
Long-term value: 50 ppm
Skin
Ingredients with biological limit values:
109-99-9 Tetrahydrofuran (74.0%)
BEI (USA) 2 mg/L
Medium: urine
Time: end of shift
Parameter: Tetrahydrofuran
Additional information:
No data
Exposure controls
Personal protective equipment
Follow typical general protective and industrial hygiene measures for handling chemicals.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Breathing equipment:
Use suitable respirator when high concentrations are present.
Recommended filter device for short term use:
Use a respirator with multi-purpose combination (US) or type ABEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).
Protection of hands:
Impervious gloves
Inspect gloves prior to use.
Suitability of gloves should be determined both by material and quality, the latter of which may vary by

manufacturer.
Material of gloves
Butyl rubber, BR
Penetration time of glove material (in minutes)
No data available.
10
Glove thickness
0.3 mm
Eye protection:
Tightly sealed goggles
Full face protection
Body protection:
Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
Appearance:
Form: Liquid
Odor: No data available.
Odor threshold: No data available.
pH: No data available.
Melting point/range: No data available.
Boiling point/range: No data available.
Sublimation temperature / start: No data available.
Flash point: -17 °C (1 °F) (THF)
Flammability (solid, gas):
No data available.
Ignition temperature: 321 °C (610 °F)
Decomposition temperature: No data available.
Auto igniting: Product is not selfigniting.
Danger of explosion: May form explosive peroxides. Do not distill to dryness.
Explosion limits:
Lower: 2.0 Vol %
Upper: 11.8 Vol %
Vapor pressure at 20 °C (68 °F): 200 hPa (150 mm Hg)
Density at 20 °C (68 °F): 0.903 g/cm³ (7.536 lbs/gal)
Relative density
No data available.
Vapor density
No data available.
Evaporation rate
No data available.
Solubility in Water (H_2O): No data available.
Partition coefficient (n-octanol/water): No data available.
Viscosity:
Dynamic: No data available.
Kinematic: No data available.
Solvent content:
Organic solvents: 74.0 %
Solids content: 26.0 %
Other information
No information available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity
May form explosive peroxides.
Chemical stability
Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions
Reacts with strong oxidizing agents
May form explosive peroxides.
Conditions to avoid
No information available.
Incompatible materials:
Water/moisture
Oxidizing agents
Bases
Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Nitrogen oxides
Hydrogen fluoride

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
Harmful if swallowed.
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.
LD/LC50 values that are relevant for classification:
109-99-9 Tetrahydrofuran
Oral
LD50
1650 mg/kg (rat)
Inhalative LC50/2H 72000 mg/m3/2H (rat)
Skin irritation or corrosion:
Causes severe skin burns.
Eye irritation or corrosion:
Causes serious eye damage.
Sensitization:
No sensitizing effects known.
Germ cell mutagenicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.
Carcinogenicity:
Suspected of causing cancer.
EPA-S: Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential.
ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose,

by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemologic studies do not confirm an increased risk of cancer in exposed humans.
Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.
Reproductive toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for components in this product.
Specific target organ system toxicity - repeated exposure:
N/A
Specific target organ system toxicity - single exposure:
May cause respiratory irritation.
Aspiration hazard:
N/A
Subacute to chronic toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Corrosive
Irritant
Carcinogenic categories
OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Aquatic toxicity:
No information available.
Persistence and degradability:
No information available.
Bioaccumulative potential:
No information available.
Mobility in soil:
No information available.
Additional ecological information:
General notes:
Do not allow material to be released to the environment without official permits.
Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.
Avoid transfer into the environment.
Results of PBT and vPvB assessment:
PBT:
N/A.
vPvB:
N/A.
Other adverse effects

No information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Recommendation:
Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation:
Disposal must be made according to official regulations.

SECTION 14. TRANSPORT INFORMATION

UN-Number
DOT, IMDG, IATA
UN2924
UN proper shipping name
DOT
Flammable liquids, corrosive, n.o.s. (Tetrahydrofuran, Tetra-n-butylammonium fluoride)
IMDG, IATA
FLAMMABLE LIQUID, CORROSIVE, N.O.S. (TETRAHYDROFURAN, Tetra-n-butylammonium fluoride)
Transport hazard class(es)
DOT
Class
3 Flammable liquids.
Label
3+8
Class
3 (FC) Flammable liquids
Label
3+8
IMDG, IATA
Class
3 Flammable liquids.
Label
3+8
Packing group
DOT, IMDG, IATA
II
Environmental hazards:
Marine pollutant (IMDG):
No
Special precautions for user
Warning: Flammable liquids
EMS Number: F-E,S-C
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
N/A.
Transport/Additional information:
DOT
Marine Pollutant (DOT):

No
UN "Model Regulation":
UN2924, Flammable liquids, corrosive, n.o.s. (Tetrahydrofuran, Tetra-n-butylammonium fluoride), 3 (8), II

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
GHS label elements
The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)
Hazard pictograms
GHS02
GHS05
GHS07
GHS08
Signal word
Danger
Hazard-determining components of labeling:
Tetra-n-butylammonium fluoride
Tetrahydrofuran
Hazard statements
H225 Highly flammable liquid and vapor.
H302 Harmful if swallowed.
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P201
Obtain special instructions before use.
P261
Avoid breathing dust/fume/gas/mist/vapors/spray.
P280
Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P405
Store locked up.
P501
Dispose of contents/container in accordance with local/regional/national/international regulations.
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).
SARA Section 313 (specific toxic chemical listings)
109-99-9 Tetrahydrofuran
74.0%

California Proposition 65
Prop 65 - Chemicals known to cause cancer
None of the ingredients are listed.
Prop 65 - Developmental toxicity
None of the ingredients are listed.
Prop 65 - Developmental toxicity, female
None of the ingredients are listed.
Prop 65 - Developmental toxicity, male
None of the ingredients are listed.
Information about limitation of use:
For use only by technically qualified individuals.
Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
None of the ingredients are listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
None of the ingredients is listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use)
None of the ingredients is listed.
Chemical safety assessment:
A Chemical Safety Assessment has not been carried out.

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.