SECTION 1. IDENTIFICATION

Product Identifier: Cerium(IV) Nitrate Solution
Product Code: CE4-NAT-01-SOL
CAS Number: 13093-17-9
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

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
GHS03 flame over circle
Ox. Liq. 2
H272 May intensify fire; oxidiser.
GHS05 corrosion
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Other hazards that do not result in classification
No data available
Label elements
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labelled according to the CLP regulation.
Hazard pictograms

GHS03 GHS05
Signal word
Danger
Hazard statements
**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substances
(CAS#) Description:
Cerium (IV) nitrate (CAS# 13093-17-9); 28%
Water (CAS# 7732-18-5); 67%
Nitric acid (CAS# 7697-37-2); 5%

**SECTION 4. FIRST AID MEASURES**

Description of first aid measures
General information: Immediately remove any clothing soiled by the product. If inhaled:
Supply patient with 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 immediate medical advice.

**SECTION 5. FIREFIGHTING MEASURES**

Extinguishing media
Suitable extinguishing agents
Product is not flammable. Use fire fighting measures that suit the surrounding fire.
Special hazards arising from the substance or mixture
This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.
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
Use personal protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Environmental precautions:
Do not allow material to be released to the environment without official permits.
Methods and materials for containment and cleanup:
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Absorb with liquid-binding material.
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
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Information about protection against explosions and fires:
Substance/product can reduce the ignition temperature of flammable substances. This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.
The product is not flammable
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility:
Store away from flammable substances.
Store away from reducing agents.
Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic and inorganic chemicals.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well-sealed containers.

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:
Nitric acid
ppm
ACGIH TLV 2; 4-STEL
Austria MAK 2
Belgium TWA 2; 4-STEL
Denmark TWA 2
Finland TWA 2; 5-STEL (skin)
France VME 2; 5-VLE
Germany MAK 2
Hungary 5 mg/m3-STEL
Japan OEL 2
Korea TLV 2; 4-STEL
Norway TWA 2
Poland TWA 5 mg/m3; 10 mg/m3-STEL
Russia TWA 2; 2 mg/m3-STEL (skin)
Sweden NGV 2; 5-KTV
United Kingdom LTEL 2; 4-STEL
USA PEL 2
Additional information: No data

Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
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.
Protection of hands: Impervious gloves
Eye protection:
Safety glasses
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: Solution
Color: Colorless
Odor: Odorless
Odor threshold: No data available.
pH: No data available.
Melting point/Melting range: No data available
Boiling point/Boiling range: No data available
Sublimation temperature / start: No data available
Flash point: N/A
No data available
Flammability (solid, gas) N/A
Ignition temperature: No data available
Decomposition temperature: No data available
Autoignition: No data available.
Explosion limits:
SECTION 10. STABILITY AND REACTIVITY

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided:
Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions
Reacts with alkali metals.
Reacts with reducing agents
Reacts with flammable substances
Reacts with alkaline earth metals.
Incompatible materials:
Aqueous solutions are incompatible with alkali and alkaline earth metals and many reactive organic
and inorganic chemicals.
Hazardous decomposition products: Nitrogen oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
LD/LC50 values that are relevant for classification:
Oral: LDLo: 430 mg/kg (hum)(HNO3)
Unreported: LDLo: 110 mg/kg (man)(HNO3)
Primary irritant effect:
on the skin: Corrosive effect on skin and mucous membranes.
on the eye: Strong corrosive effect.
Sensitization: No sensitizing effects known.
Subacute to chronic toxicity:
Nitric acid is a corrosive oxidizing acid. The liquid causes burns on contact. Eye contact may cause
blindness. Vapors are irritating and cause upper respiratory irritation which may be severe. Corrosive
to the teeth and digestive tract on ingestion. Dilute solutions have reduced effects.
Cerium salts increase the blood coagulation rate. Exposure to cerium salts may increase sensitivity to
heat, itching and skin lesions. Large doses to experimental animals have caused writhing, ataxia,
lubed respiration, sedation, hypotension and death by cardiovascular collapse.
Additional toxicological information:
Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation
of esophagus and stomach. To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
Acquatic toxicity: No data available
Persistence and degradability No data available
Behavior in environmental systems:
Bioaccumulative potential No data available
Mobility in soil No data available
Additional ecological information:
Do not allow undiluted product or large quantities of it to reach groundwater, water courses, or sewage systems.
Do not allow material to be released to the environment without official permits.
Results of PBT and vPvB assessment
PBT: N/A
vPvB: N/A
Other adverse effects No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Recommendation Consult official regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

SECTION 14. TRANSPORT INFORMATION

DOT regulations:
Hazard class: 5.1
Identification number: UN3218
Packing group: III
Proper shipping name (technical name): NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.
Label 5.1
Land transport ADR/RID (cross-border)
ADR/RID class: 5.1 (O1) Oxidizing substances
Danger code (Kemler): 50
UN-Number: 3218
Packaging group: III
UN proper shipping name: 3218 NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.
(cerium (IV) nitrate solution)
Maritime transport IMDG:
IMDG Class: 5.1
UN Number: 3218
Label 5.1
Packaging group: III
Marine pollutant: No
Proper shipping name: NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.
Air transport ICAO-TI and IATA-DGR:
ICAO/IATA Class: 5.1
UN/ID Number: 3218
Label 5.1
Packaging group: III
Proper shipping name: NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.
UN "Model Regulation": UN3218, NITRATES, INORGANIC, AQUEOUS SOLUTION, N.O.S., 5.1, III
Special precautions for user Warning: Oxidizing substances
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code N/A

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
Product related hazard informations:
Hazard symbols:
C Corrosive
O Oxidizing
Risk phrases:
8 Contact with combustible material may cause fire.
34 Causes burns.
Safety phrases:
17 Keep away from combustible material.
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
45 In case of accident or if you feel unwell, seek medical advice immediately.
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 Non-Domestic Substances List (NDSL).
Information about limitation of use:
For use only by technically qualified individuals.
This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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 1997-2019 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.