

Section 1: Identification

MANUFACTURER: PACE Technologies
3601 E. 34th St.
Tucson, AZ 85713

INFORMATION PHONE: 520-882-6598

EMERGENCY PHONE: CHEMTREC 800-424-9300 (US) Day or night
Customer No. 16568

TRADE NAME: Beraha's Modified Reagent


CHEMICAL FAMILY: Flammable liquid, corrosive, n.o.s. (Ethanol, Hydrochloric Acid, Selenic Acid)

HMIS RATING: HEALTH: 3 FLAMMABILITY: 3 REACTIVITY: 1

HAZARD RATING:

LEAST: 0 SLIGHT: 1 MODERATE: 2 HIGH: 3 EXTREME: 4

Section 2: Hazard(s) Identification

| | |
|---|--|
| GHS Classification in accordance with 29 CFR 1910 (OSHA HCS) | Flammable liquids (Category 2), H225 May be corrosive to metals (Category 1), H290 Serious eye damage (Category 1), H318 Toxic if swallowed, H301 Toxic if inhaled, H331 Very toxic to aquatic life, H400 Very toxic to aquatic life with long-lasting effect, H400 Chronic aquatic toxicity (Category 2), H411 |
| PICTOGRAM(s): |  |
| SIGNAL WORD: | Danger |
| HAZARD STATEMENTS: | Hazard Statement(s): H225- Highly Flammable liquid and vapor H290- May be corrosive to metals H301- Toxic if swallowed (<i>due to the high toxicity of Selenic Acid</i>) H314- Causes severe skin burns and eye damage H318- Causes serious eye damage |

| | |
|----------------------------------|---|
| | <ul style="list-style-type: none">H331- Toxic if inhaled (<i>due to Selenic Acid and Hydrochloric Acid fumes</i>)H400- Very toxic to aquatic lifeH410- Very toxic to aquatic life with long-lasting effects |
| PRECAUTIONARY STATEMENTS: | <p>Precautionary Statement(s):</p> <p>Preventions: P210-Keep away from heat/sparks/open flames/hot surfaces. — No smoking. P233- Keep container tightly closed. P240- Ground/bond container and receiving equipment. P260- Do not breathe dust/fume/gas/mist/vapors/spray. P264- Wash skin thoroughly after handling. P270- Do not eat, drink or smoke when using this product. P271- Use only outdoors or in a well-ventilated area. P273- Avoid release to the environment. P280- Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>Response: P301+310- IF SWALLOWED: Immediately call a POISON CENTER or doctor. P301+P330+P331- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+ P361+P353- IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower. P304+P340- IF INHALED: Remove person to fresh air and keep 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. P363- Wash contaminated clothing before reuse. P391- Collect spillage. Hazardous to the aquatic environment</p> <p>Storage: P403+P235- Store in a well-ventilated place. Keep cool. P405- Store locked up.</p> <p>Disposal: P501- Dispose of contents/container to Federal, State and Local Regulations.</p> |

Emergency Overview

DANGER! POISON! Highly flammable liquid and vapor. Corrosive mixture causing severe skin burns and eye damage. Highly toxic if swallowed or inhaled. Severe aquatic hazard.

- Appearance:** Clear, colorless liquid with an alcohol/pungent odor.
- Immediate Hazards:** Vapor may cause flash fire. Contact causes immediate, irreversible tissue damage and blindness.
- Target Organs:** Respiratory system, eyes, skin, central nervous system, liver, kidneys. Contains selenium compound (selenic acid); chronic exposure can cause selenium poisoning (selenosis).

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Life and Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;
PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable) , White (Corrosive)

Potential Health Effects

Eye Contact

- Hazards: Severe corrosive irritant.
- Symptoms: Immediate burning pain, severe redness, tearing, and swelling.
- Damage: May cause irreversible corneal burns, permanent tissue destruction, and complete blindness.

Inhalation

- Hazards: Highly irritating and toxic to the respiratory tract.
- Symptoms: Burning sensation in the nose and throat, coughing, wheezing, choking, chest pain, and shortness of breath.
- Damage: High concentrations of acid vapors or mist may cause chemical pneumonitis and pulmonary edema (fluid buildup in the lungs), which can be fatal.

Skin Contact

- Hazards: Corrosive liquid.
- Symptoms: Immediate pain, redness, inflammation, and blistering.
- Damage: Causes severe chemical burns and deep tissue destruction. Ethanol content accelerates skin drying and can enhance the absorption rate of toxic selenic acid through the skin barrier.

Ingestion

- Hazards: Highly toxic and corrosive if swallowed.
- Symptoms: Immediate, severe burning pain in the mouth, throat, esophagus, and stomach. Nausea, vomiting, abdominal pain, diarrhea, and bloody stools.

- Damage: Can cause perforation of the esophagus and stomach, profound circulatory shock, and death. Systemic selenium poisoning occurs rapidly after ingestion.
-

Chronic (Long-Term) Effects

Systemic Selenium Poisoning (Selenosis)

- Cause: Repeated absorption or inhalation of selenic acid.
- Symptoms: A characteristic "garlic breath" odor, metallic taste in the mouth, nervousness, extreme fatigue, emotional instability, vomiting, and loss of hair and nails.
- Organ Damage: Chronic selenium exposure can cause severe liver damage (cirrhosis), kidney injury, and central nervous system disorders.

Respiratory Degradation

- Symptoms: Chronic cough, shortness of breath, and dental erosion.
- Damage: Repeated or prolonged exposure to hydrochloric acid vapors can cause permanent discoloration and erosion of tooth enamel, as well as chronic bronchitis or localized airway hypersensitivity.

Dermatitis

- Symptoms: Severe skin drying, cracking, itching, and scaling.
 - Damage: Repeated contact removes natural skin oils, increasing susceptibility to secondary chemical burns and localized infections.
-

Target Organs

- Respiratory System
 - Eyes & Skin
 - Central Nervous System
 - Liver & Kidneys
 - Gastrointestinal Tract
-

Section 3: Composition/Information on Ingredients

HAZARD INGREDIENTS

| CHEMICAL | CAS NUMBER | % PRESENT | Hazardous |
|-------------------|------------|-----------|-----------|
| Ethyl Alcohol | 64-17-5 | 97.5% | Yes |
| Selenic Acid | 7647-01-0 | 0.5% | Yes |
| Hydrogen Chloride | 7647-01-0 | 2.0% | Yes |

Section 4: First-Aid Measures

Inhalation: Remove to fresh air. Seek immediate medical attention.

Ingestion: Rinse mouth, do not induce vomiting. Seek immediate medical attention.

Skin/Eye Contact: Flush with water for 15 minutes, remove contact lenses, and seek medical attention.

Section 5: Fire-Fighting Measures

Extinguishing Media: Dry chemical, CO₂, or alcohol-resistant foam.

Hazards: Highly flammable. Produces toxic fumes including hydrogen chloride and selenium oxide.

Protection: Self-contained breathing apparatus (SCBA) required.

Section 6: Accidental Release Measures

Precautions: Eliminate ignition sources. Evacuate area.

Cleanup: Absorb with inert material (sand, silica gel) and place in chemical waste container.

Section 7: Handling and Storage

Handling: Use in a chemical fume hood. Ground/bond container to avoid static discharge.

Storage: Keep container tightly closed in a cool, well-ventilated, explosion-proof area.

Section 8: Exposure Controls/ Personal Protection

Exposure Limits: Ethanol: 1000 ppm TWA (OSHA); HCl: 2 ppm Ceiling (ACGIH); Selenic Acid (as Se): 0.2 mg/m³ TWA (OSHA).

Engineering: Use local exhaust ventilation.

PPE: Safety goggles, face shield, and chemical-resistant gloves (butyl/nitrile).

Section 9: Physical and Chemical Properties

Appearance: Clear, colorless liquid.

Flash Point: ~13°C (55.4°F).

Solubility: Miscible with water.

Section 10: Stability and Reactivity

Stability: Stable under recommended storage conditions.

Incompatibility: Strong oxidizers, alkali metals.

Hazardous Decomposition: Toxic fumes of selenium and HCl.

Section 11: Toxicological Information

Acute Effects: This mixture is corrosive and can cause severe chemical burns to all touched tissues. Selenium compounds are highly toxic; chronic exposure may lead to selenosis.

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

Section 12: Ecological Information

Ecotoxicity: This reagent is classified as highly toxic to aquatic organisms. Prevent leakage into waterways or sewage systems.

Section 13: Disposal Considerations

Waste Treatment: This material must be disposed of as hazardous waste. Consult with a licensed waste disposal professional. Follow all federal, state, and local environmental regulations for D001 (ignitable) and D002 (corrosive) waste streams.

Section 14: Transportation Information

UN Number: UN2924

Proper Shipping Name: Flammable liquid, corrosive, n.o.s. (Ethanol, Hydrochloric Acid, Selenic Acid)

Hazard Class: 3 (8)

Packing Group: II

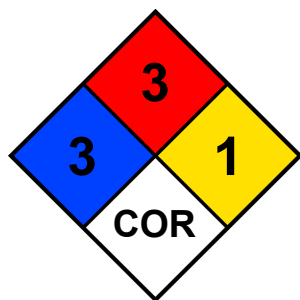
Section 15: Regulatory Information

Inventory Status: Components are listed on the TSCA inventory.

SARA 313: This product contains Selenic acid and Hydrochloric acid, which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act.

Section 16: Other Information

16.1 NFPA 704



Top, Flammability: 3 – Severe Hazard

Left, Health Hazard: 3 – Severe Hazard

Right, Reactivity: 1 – Slight Hazard

Bottom, Special Notice: COR- Corrosive

Disclaimer:

PACE Technologies, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. PACE TECHNOLOGIES, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, PACE TECHNOLOGIES, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

DATE REVISED: 5/28/2026 DZ