SAFETY DATA SHEET

Product code: E3490
Product Name: ETIDRONIC ACID

Other means of identification

Synonyms:
1-Hydroxy-1,1-diphosphonoethane
(1-Hydroxyethylene)diphosphonic acid
(1-Hydroxyethylidene)bis(phosphonic acid)
(1-Hydroxyethylidene)diphosphonic acid
(Hydroxyethylidene)diphosphonic acid
1,1,1-Ethanetriol diphosphonate
1-Hydroxyethane-1,1-bisphosphonic acid
1-Hydroxyethane-1,1-diphosphonate
1-Hydroxyethane-1,1-diphosphonic acid
1-Hydroxyethanediethylphosphonic acid
1-Hydroxyethylidene-1,1-bisphosphonate
1-Hydroxyethylidene-1,1-bisphosphonate
1-Hydroxyethylidene-1,1-diphosphonic acid
1000SL
Acetodiphosphonic acid
Acide etidronique [INN-French]
Acido etidronico [INN-Spanish]
Acidum etidronicum [INN-Latin]
Dequest 2010
Dequest 2015
Dequest Z 010
Diphosphonate (base)
EHDP
Ethane-1-hydroxy-1,1-diphosphonate
Ethane-1-hydroxy-1,1-diphosphonic acid
Etidronsaeure
Ferrofos 510
HEDP
Hydroxyethane-1,1-diphosphonic acid
Hydroxyethanediethylphosphonic acid
Oxyethylidenephosphonic acid
Phosphonic acid, (1-hydroxyethylidene)bis-
Phosphonic acid, (1-hydroxyethylidene)di-
Phosphonic acid, 1-hydroxy-1,1-ethanediyl ester
RP 61
Turpinal SL

CAS #: 2809-21-4
RTECS #: SZ8562100
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard statement</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>2A</td>
</tr>
<tr>
<td>Corrosive to metals</td>
<td>1</td>
</tr>
</tbody>
</table>

Label elements

Warning

Hazard statements
May be harmful if swallowed
Causes serious eye irritation
May be corrosive to metals

Absorb spillage to prevent material damage
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Precautionary Statements - Storage
Store in corrosive resistant/..? container with a resistant inner liner

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
</tr>
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<tbody>
<tr>
<td>Etidronic Acid</td>
<td>2809-21-4</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures
General Advice: Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126).
Skin Contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. Get medical attention.
Eye Contact: Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.
Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed
Symptoms Causes serious eye irritation. May cause skin irritation. Harmful if swallowed. Can cause lung irritation.

Indication of any immediate medical attention and special treatment needed
Notes to Physician: Treat symptomatically

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.
Specific hazards arising from the chemical
Hazardous Combustion Products: Carbon oxide
Specific hazards: May be combustible at high temperatures Slightly Flammable

Special Protective Actions for Firefighters
Specific Methods: No information available.

Product code: E3490
Product name: ETIDRONIC ACID

3 / 11
Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Use personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Remove all sources of ignition. Keep people away from and upwind of spill/leak. All equipment used when handling the product must be grounded.

Environmental precautions: Do not let product enter drains. Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment: Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container.

Methods for cleaning up: Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions: Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials. Remove all sources of ignition.

Safe Handling Advice: Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Do not breathe vapours/dust. Do not ingest. Do not smoke. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions: Keep away from heat and sources of ignition. Keep container tightly closed. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials: Oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid - 2809-21-4</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Canada

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid - 2809-21-4</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Product code: E3490  Product name: ETIDRONIC ACID
Appropriate engineering controls

Engineering measures to reduce exposure: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

- **Eye protection:** Goggles.
- **Skin and body protection:** Full Suit. Gloves.
- **Respiratory protection:** Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
- **Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>No information available</td>
</tr>
<tr>
<td>Formula</td>
<td>C2-H8-O7-P2</td>
</tr>
<tr>
<td>Flash Point Tested according to</td>
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</tr>
<tr>
<td>Autoignition Temperature (°C/°F)</td>
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</tr>
<tr>
<td>Boiling point/range(°C/°F)</td>
<td>105°C/ 221°F</td>
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<tr>
<td>Specific gravity</td>
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<tr>
<td>Evaporation rate</td>
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<td>Odor threshold (ppm)</td>
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<tr>
<td>Miscibility</td>
<td>No information available</td>
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<tr>
<td>Appearance</td>
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</tr>
<tr>
<td>Taste</td>
<td>No information available</td>
</tr>
<tr>
<td>Flashpoint (°C/°F)</td>
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</tr>
<tr>
<td>Flashpoint (°C/°F)</td>
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<tr>
<td>Decomposition temperature(°C/°F)</td>
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<td>pH</td>
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<tr>
<td>Density (g/cm3)</td>
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<tr>
<td>VOC content (g/L)</td>
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</tr>
<tr>
<td>Viscosity</td>
<td>No information available</td>
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<tr>
<td>Molecular/Formula weight</td>
<td>206.00 g/mol</td>
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<tr>
<td>Color</td>
<td>Colorless to pale yellow.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water):</td>
<td>-2.54</td>
</tr>
<tr>
<td>Miscibility</td>
<td>No information available</td>
</tr>
<tr>
<td>Solubility</td>
<td>No information available</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

Reactivity

**Product code:** E3490  **Product name:** ETIDRONIC ACID
10. STABILITY AND REACTIVITY

Reactive with oxidizing agents

Chemical stability
Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur


Incompatible Materials: Oxidizing agents.

Hazardous decomposition products: Carbon oxides. Phosphorus oxides.

Other Information
Corrosivity: Corrodes on contact with metals

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Skin. Eyes.

Acute Toxicity

Component Information

Etidronic Acid - 2809-21-4

LD50/oral/rat = 2400 mg/kg Oral LD50 Rat
LD50/oral/mouse = 1900 mg/kg Oral LD50 Mouse
LD50/dermal/rat = No information available
LD50/dermal/rabbit = 7940 mg/kg Dermal LD50 Rabbit
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat = VALUE - Acute Tox Oral = 2400mg/kg

LD50/oral/mouse = Value - Acute Tox Oral = 1900mg/kg

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = 7940mg/kg

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE - Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE - Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes skin irritation.
Eye Contact: Causes moderate to severe eye irritation.

Inhalation
Inhalation of mist or vapors may cause respiratory tract irritation and mucous membrane irritation.

Ingestion
May be harmful if swallowed. May cause digestive/gastrointestinal tract irritation.

Aspiration hazard
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity
No information available

Sensitization:
No information available

Mutagenic Effects:
No information available

Carcinogenic effects:
Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH - Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Reproductive toxicity
No data is available

Reproductive Effects: May cause adverse reproductive effects.
Developmental Effects: No information available
Teratogenic Effects: May cause birth defects (teratogenic effects)

Specific Target Organ Toxicity

STOT - single exposure
No information available
STOT - repeated exposure
No information available
Target Organs: Bones.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Harmful to aquatic organisms.
Persistence and degradability: No information available
Bioaccumulative potential: No information available
Mobility: No information available

### 13. DISPOSAL CONSIDERATIONS

**Disposal Methods**

**Waste from residues / unused products:** Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:** Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### 14. TRANSPORT INFORMATION

**DOT**

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: None
ERG No: No information available
Marine Pollutant: No data available
DOT RQ (lbs): No information available

**TDG (Canada)**

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

**ADR**

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

---

*Etidronic Acid - 2809-21-4*

**Freshwater Fish Species Data:** 360 mg/L LC50 Oncorhynchus mykiss 96 h static 1, 868 mg/L LC50 Lepomis macrochirus 96 h static 1

**Water Flea Data:** 527 mg/L EC50 Daphnia magna 48 h

**Product code:** E3490  
**Product name:** ETIDRONIC ACID
14. TRANSPORT INFORMATION

IMO / IMDG

- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Risk: No information available
- Packing Group: No information available
- Description: No information available
- IMDG Page: No information available
- Marine Pollutant: No information available
- MFAG: No information available
- Maximum Quantity: No information available

RID

- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Risk: No information available
- Packing Group: No information available
- Classification Code: No information available
- Description: No information available

ICAO

- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Risk: No information available
- Packing Group: No information available
- Description: No information available

IATA

- UN-No: Not Regulated
- Proper Shipping Name: No information available
- Hazard Class: No information available
- Subsidiary Risk: No information available
- Packing Group: No information available
- Description: No information available

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>Present</td>
<td>Present KE-20516</td>
<td>Present</td>
<td>Present (2)-2936 (2)-1866</td>
<td>Present</td>
<td>Present</td>
<td>Present 220-552-8</td>
</tr>
</tbody>
</table>

U.S. Regulations

Etidronic Acid

- FDA - Direct Food Additives 21 CFR 173.310 21 CFR 173.315


- Chemicals Known to the State of California to Cause Cancer:
  This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

- Chemicals Known to the State of California to Cause Reproductive Toxicity:
  This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Product code: E3490  Product name: ETIDRONE ACID
<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
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</tr>
</tbody>
</table>

**CERCLA/SARA**

<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<td>None</td>
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</table>

**U.S. TSCA**

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

**Canada**

**WHMIS hazard class:**
Non-controlled

**Canada Controlled Products Regulation:**
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

**Inventory**

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
</tr>
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<tbody>
<tr>
<td>Etidronic Acid</td>
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</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**EU Classification**

**R-phrase(s)**
R22 - Harmful if swallowed.
R41 - Risk of serious damage to eyes.
R37/38 - Irritating to respiratory system and skin.

**S -phrase(s)**
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S46 - If swallowed, seek medical advice immediately and show this container or label.
S37/39 - Wear suitable gloves and eye/face protection.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etidronic Acid</td>
<td></td>
<td>No information</td>
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</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

**Product code:** E3490  **Product name:** ETIDRONIC ACID
Indication of danger:
None.

16. OTHER INFORMATION

Revision Date: 04/14/2015
Prepared by: Sonia Owen

Disclaimer: All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet