1. IDENTIFICATION
   Product Identifier: Ceftibuten
   Product Number: C069
   Distributor Name: TOKU-E Company
   Distributor Address: 715 W Orchard Dr, Suite 3
                        Bellingham, WA 98225
   Phone Number: (360) 734-1789
   Emergency Phone Number (International): +1 (352) 323-3500
   Emergency Phone Number (US only): 1 (800) 535-5053
   Safety Data Sheet Issued by: TOKU-E USA
   CAS Number: [97519-39-6]
   EC/REACH Number: Not available
   Recommended Use: Third-generation cephalosporin antibiotic
   Restrictions on Use: Not for human or animal use

2. HAZARD(S) IDENTIFICATION
   GHS Classification: Not a hazardous mixture or substance
   GHS Label Elements, Including Precautionary statements: Not a hazardous mixture or substance
   Hazard Statements: None
   Precautionary Statements: None
   Hazards not otherwise classified (HNOC) by GHS: None

3. COMPOSITION/INFORMATION ON INGREDIENTS
   Synonyms: Ceftibuten;
               Antibiotic 7432S;
               cis-Ceftibuten;
               Cephalosporin 7432-S;
               Cephem;
               S 7432;
               Sch 39720;
               5-Thia-1-azabicyclo(4.2.0)oct-2-ene-2-carboxylic acid, 7-((2-(2-amino-4-thiazolyl)-4-carboxy-1-oxo-2-butenyl)amino)-8-oxo-,(6R-(6-alpha,7-beta(Z)))-
               Formula: \(C_{15}H_{14}N_4O_6S_2\)
   Molecular Weight: 410.42 g/mol
   CAS-No.: [97519-39-6]
EC No. Not available
Index-No. Not available
Hazardous components Not a hazardous mixture or substance

4. FIRST-AID MEASURES
General Advice Consult a physician. Show this Safety Data Sheet to the medical provider
If Inhaled If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a doctor
In Case of Skin Contact Wash thoroughly with plenty of soap and water. Consult a physician
In Case of Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes
If Swallowed Never give anything by mouth to an unconscious person. Consult a doctor. Rinse mouth with water.
Most important symptoms and effects, both acute and delayed Please see Section 2 and/or Section 11
Indication of any immediate medical attention and special treatment needed No data available

5. FIRE-FIGHTING MEASURES
Suitable Extinguishing Media Water spray, alcohol-resistant foam, dry chemical, carbon dioxide
Special Protective Equipment for Firefighters Wear self-contained breathing apparatus
Hazardous Combustion Products Formed under fire conditions: Carbon, Nitrogen, and Sulfur oxides

6. ACCIDENTAL RELEASE MEASURES
General Evacuate personnel to safe location
Personal Precautions Wear respiratory protection. Avoid dust formation and breathing vapors/mist/dust/gas. Ensure adequate ventilation
Environmental Precautions Prevent spillage, do not let product enter drains
Methods of Containment and Cleanup Place in suitable, closed containers for licensed disposal. Avoid dust formation

7. HANDLING AND STORAGE
Precautions for Safe Handling Avoid contact with skin and eyes. Provide exhaust ventilation in areas where dust if formed
Precautions for Safe Storage Keep container tightly closed and in a dry, well-ventilated place. Recommended storage temperature: -20°C
Incompatibilities None known

8. EXPOSURE CONTROLS/ PERSONAL
PROTECTION
Contains no substances with occupational exposure limit values

PPE: Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)

PPE: Hand Protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal techniques to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices, and wash and dry hands

PPE: Eye Protection
Use a face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU)

PPE: Skin and Body Protection
Handle with gloves. Wear protective clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place. When deemed needed according to the concentration and amount of this product, use a complete body suit

9. PHYSICAL/CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White to tan powder</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting Point/Freezing Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>No data available</td>
</tr>
<tr>
<td>Ignition Temperature</td>
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</tr>
<tr>
<td>Autoignition Temperature</td>
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</tr>
<tr>
<td>Lower Explosion Limit</td>
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</tr>
<tr>
<td>Upper Explosion Limit</td>
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</tr>
<tr>
<td>Vapor Pressure</td>
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</tr>
<tr>
<td>Density</td>
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</tr>
<tr>
<td>Water Solubility</td>
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</tr>
<tr>
<td>Solubility in Other Solvents</td>
<td>DMSO: Soluble</td>
</tr>
<tr>
<td>Partition Coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Optical Rotation</td>
<td>No data available</td>
</tr>
<tr>
<td>Absorbance (290nm, 5% in H₂O)</td>
<td>No data available</td>
</tr>
<tr>
<td>Water content (Karl Fisher)</td>
<td>No data available</td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY
Chemical Stability
Stable under recommended storage conditions
Possibility of Hazardous Reactions
No data available
Conditions to Avoid
No data available
Materials to Avoid
Strong oxidizing agents
Hazardous Decomposition Products
Carbon, Nitrogen, and Sulfur oxides formed under fire conditions

11. TOXICOLOGICAL INFORMATION
Oral TDLo
Rat: 35,000 mg/kg/35D-I
Remarks, Gastrointestinal: Other changes
Remarks, Kidney, Ureter, Bladder: Urine volume decreased
Remarks, Biochemical: Metabolism (Intermediary)-other proteins
Rat: 273,000 mg/kg/13W-I
Remarks, Gastrointestinal: Other changes
Remarks, Liver: Changes in liver weight
Remarks, Nutritional and Gross Metabolic: Weight loss or decreased weight gain
Rat: 54,600 mg/kg/26W-I
Remarks, Kidney, Ureter, Bladder: Urine volume decreased. Other changes in urine composition
Remarks, Blood: Changes in erythrocyte (RBC) count
Dog: 72,800 mg/kg/13W-I
Remarks, Gastrointestinal: Hypermotility, diarrhea. Nausea or vomiting.
Oral LD50
Rat: >10,000 mg/kg
Remarks, Behavioral: Muscle weakness
Remarks, Gastrointestinal: Hypermotility, diarrhea. Other changes
Dog: >5,000 mg/kg
Remarks, Gastrointestinal: Hypermotility, diarrhea. Nausea or vomiting

Inhalation LC50
Dermal LD50
No data available
Intraperitoneal LD50
No data available
Intravenous LD50
No data available
Subcutaneous LD50
No data available
Skin Corrosion/Irritation
No data available
Serious Eye Damage/ Eye Irritation
No data available
Respiratory or Skin Sensitization
β-lactams are a broad class of antibiotics and include penicillins and cephalosporins. Some individuals experience adverse immunological responses or allergic reactions to β-lactam antibiotics. Because of the similarity in
structure between penicillins and cephalosporins, those who are allergic to one class of agents may manifest cross-allergenicity when exposed to a member of another class.

TOKU-E Company assumes this chemical has the potential to induce an allergic reaction in some individuals. To the best of our knowledge, the correlation between this specific material and respiratory or skin sensitization has not been thoroughly investigated.

<table>
<thead>
<tr>
<th>Germ Cell Mutagenicity</th>
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</thead>
<tbody>
<tr>
<td>Carcinogenicity</td>
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</tr>
<tr>
<td>IARC: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by IARC</td>
<td></td>
</tr>
<tr>
<td>ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH</td>
<td></td>
</tr>
<tr>
<td>NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP</td>
<td></td>
</tr>
<tr>
<td>OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA</td>
<td></td>
</tr>
</tbody>
</table>

| Reproductive Toxicity  |                  |
| Oral TD_{Lo} Female Rat, 7-17 days after conception: 11,000 mg/kg |
| Remarks, Material Effects: Other effects |
| Remarks, Effects on Embryo or Fetus: Extra-embryonic structures (e.g. placenta, umbilical cord) |
| Remarks, Effects on Newborn: Growth statistics (e.g. %, reduced weight gain) |
| Oral TD_{Lo} Female Rat, 17-21 days after conception: 12,500 mg/kg |
| Remarks, Effects on Newborn: Growth statistics (e.g. %, reduced weight gain). Physical effects |

| Specific Target Organ Toxicity: Single Exposure (Globally Harmonized System) | No data available |
| Specific Target Organ Toxicity: Repeated Exposure (Globally Harmonized System) | No data available |
| Aspiration Hazard | No data available |
| Potential Health Effects | See Section 2, Hazard(s) Identification |
| Signs and Symptoms of Exposure | No data available |
| Synergistic Effects | No data available |
| Additional Information | RTECS: XI0367220 |

12. ECOLOGICAL INFORMATION
Toxicity  No data available
Persistence and Degradability  No data available
Bioaccumulative Potential  No data available
Mobility in Soil  No data available
PBT and vPvB Assessment  No data available
Harmful to aquatic life. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal

13. DISPOSAL CONSIDERATIONS
   Product  Dispose of product through a licensed disposal company
   Contaminated Packaging  Dispose of as unused product

14. TRANSPORTATION INFORMATION
   DOT (US)  Not Dangerous Goods
   IMDG  Not Dangerous Goods
   IATA  Not Dangerous Goods

15. REGULATORY INFORMATION
   SARA 302 Components  No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302
   SARA 313 Components  This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313
   SARA 311/312 Hazards  No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 311/312
   Massachusetts Right to Know Components  No components are subject to the Massachusetts Right to Know Act
   Pennsylvania Right to Know Components  Ceftibuten
   CAS-No. [97519-39-6]
   Revision Date: Not available
   New Jersey Right to Know Components  Ceftibuten
   CAS-No. [97519-39-6]
   Revision Date: Not available
   California Prop. 65 Components  This product does not contain any chemicals known to the State of California to cause birth defects, cancer, or any other reproductive harm
   EU Information  SDS in accordance with REACH 1907/2006
   A registration number is not available for this substance or its uses are exempted from registration, the annual tonnage does not require a registration, or the registration is envisaged for a later registration deadline.
   See GHS Information under Section 2, Hazard
Identification

16. OTHER INFORMATION
   Date of last revision: 2016-03-15

   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. TOKU-E Company shall not be held liable for any damage resulting from handling or from contact with the above product. Please see reverse side of invoice or packing slip for additional terms and conditions of sale.