1. Product and Company Identification

Material name: Eszopiclone
Catalog number: 1255850
Version #: 01
Revision date: 08-25-2011
Chemical name: (+)-(5S)-6-(5-Chloropyridin-2-yl)-7-oxo-6,7-dihydro-5H-pyrrolo[3,4-b]pyrazin-5-yl 4-methylpiperazine-1-carboxylate
CAS #: 138729-47-2
Synonym(s): (S)-Zopiclone
Manufacturer information: U. S. Pharmacopeia
12601 Twinbrook Parkway
Rockville, MD 20852-1790
RS Technical Services 301-816-8129

2. Hazards Identification

Adverse Effects: Adverse effects may include unpleasant taste, dry mouth, dizziness, drowsiness, headache, hallucinations, mood or behavior changes, memory problems, respiratory infection, nausea, and rash. Possible allergic reaction to material if inhaled, ingested, or in contact with skin.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eszopiclone</td>
<td>138729-47-2</td>
<td>90 - 100</td>
</tr>
</tbody>
</table>

4. First Aid Measures

First aid procedures:
- **Eye contact**: May cause irritation. Flush with copious quantities of water.
- **Skin contact**: May cause irritation. Flush with copious quantities of water.
- **Inhalation**: May cause irritation. Remove to fresh air.
- **Ingestion**: May cause irritation. Flush out mouth with water. This material is rapidly absorbed from the gastrointestinal tract.

Notes to physician: Treatment for overdose should be symptomatic and supportive and may include the following:
1. Administer activated charcoal as a slurry. Protect airway. Intubate if necessary.
2. For hypotension, administer intravenous fluids and place patient in a supine position.
3. For respiratory arrest, intubate and supply mechanical ventilation.
4. Flumazenil may reverse sedation. Do NOT use in patients with cardiac arrhythmias or seizure disorders.
5. Administer methylene blue intravenously for methemoglobinemia. [Meditext 2011]

General advice: Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

5. Fire Fighting Measures

Flammable properties: This material is assumed to be combustible. As with all dry powders, it is advisable to ground mechanical equipment in contact with dry material to dissipate the potential buildup of static electricity.

Extinguishing media: Suitable extinguishing media: Water spray, dry chemical, carbon dioxide, or foam as appropriate for surrounding fire and materials.
Fire fighting equipment/instructions
As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

6. Accidental Release Measures
Methods for cleaning up
Wear approved respiratory protection, chemically compatible gloves, and protective clothing. Wipe up spillage or collect spillage using a high-efficiency vacuum cleaner. Avoid breathing dust. Place spillage in appropriately labeled container for disposal. Wash spill site.

7. Handling and Storage
Handling
As a general rule, when handling USP Reference Standards, avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly.

Storage
Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

8. Exposure Controls / Personal Protection
Engineering controls
Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure. Local exhaust ventilation is generally preferred to general exhaust because it can control the contaminant at its source, preventing dispersion into the work area. An industrial hygiene survey involving air monitoring may be used to determine the effectiveness of engineering controls. Effectiveness of engineering controls intended for use with highly potent materials should be assessed by use of nontoxic surrogate materials. Local exhaust ventilation such as a laboratory fume hood or other vented enclosure is recommended, particularly for grinding, crushing, weighing, or other dust-generating procedures.

Personal protective equipment
Eye / face protection
Safety glasses with sideshields are recommended. Face shields or goggles may be required if splash potential exists or if corrosive materials are present. Approved eye protection (e.g., bearing the ANSI Z87 or CSA stamp) is preferred. Maintain eyewash facilities in the work area.

Hand protection
Chemically compatible gloves. For handling solutions, ensure that the glove material is protective against the solvent being used. Use handling practices that minimize direct hand contact. Employees who are sensitive to natural rubber (latex) should use nitrile or other synthetic nonlatex gloves. Use of powdered latex gloves should be avoided due to the risk of latex allergy.

Skin protection
For handling of laboratory scale quantities, a cloth lab coat is recommended. Where significant quantities are handled, work clothing may be necessary to prevent take-home contamination.

Respiratory protection
Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).

9. Physical & Chemical Properties
Physical state
Solid.
Appearance
White to light-yellow crystalline powder.
Form
Not available.
Color
Not available.
Odor
Not available.
Odor threshold
Not available.

pH
Not available.
Vapor pressure
Not available.
Vapor density
Not available.
Boiling point
Not available.
Melting point/ Freezing point
395.6 - 402.8 °F (202 - 206 °C)
Solubility (water)
Very slightly soluble
Other data
Solubility (other)
Slightly soluble in ethanol; soluble in phosphate buffer (pH 3.2).
Specific gravity
Not available.
Relative density
Not available.
Flash point Not available.
Flammability limits in air, upper, % by volume Not available.
Flammability limits in air, lower, % by volume Not available.
Auto-ignition temperature Not available.
Molecular weight 388.81
Molecular formula C17H17ClN6O3
Other data
   Chemical family Pyrrolopyrazine derivative of the cyclopyrrolone class

10. Chemical Stability & Reactivity Information

Chemical stability Stable at normal conditions.
Conditions to avoid Not available.
Incompatible materials Oxidizing agents, strong acids, strong bases.
Hazardous decomposition products When heated to decomposition, material emits toxic fumes of NOx and Cl-. Emits toxic fumes under fire conditions.
Possibility of hazardous reactions Will not occur.

11. Toxicological Information

Effects of exposure Overdose effects may include drowsiness or sluggishness, unsteadiness, severe headache, respiratory failure, and coma.
Medical conditions aggravated by exposure Hypersensitivity to material, liver impairment, depression or other psychiatric disorders, history of drug or alcohol abuse, and depressed respiratory function.
Sensitization Guinea pig Magnusson and Kligman maximization test: not sensitizing
Acute effects Possible eye, skin, gastrointestinal, and/or respiratory tract irritation.
Chronic effects Possible hypersensitization
Carcinogenicity In mice, daily oral doses up to 100 mg/kg for 104 weeks did not significantly increase tumors except for malignant uterine leiomyosarcomas in females at the high dose which were not considered to be drug related.
In rats, daily oral doses up to 16 mg/kg for 97 to 104 weeks did not increase the incidence of tumors of any type. A bioassay in p53 transgenic mice using doses up to 300 mg/kg/day for 26 weeks did not show an increased frequency of tumors.

Mutagenicity Eszopiclone tested positive in the mouse lymphoma chromosomal aberration assay, and results were equivocal in the Chinese hamster ovary cell chromosomal aberration assay. It was not mutagenic or clastogenic in the bacterial Ames gene mutation assay, in an unscheduled DNA synthesis assay, or in an in vivo mouse bone marrow micronucleus test.
Reproductive effects Eszopiclone was not teratogenic in pregnant rats and rabbits given oral doses up to 250 and 16 mg/kg/day, respectively, during organogenesis. In the rats, doses of 125 and 250 mg/kg/day were maternotoxic and fetotoxic (caused developmental delay and slight reduction in fetal weight). Rats given eszopiclone throughout gestation in doses up to 180 mg/kg/day had increased postimplantation loss.

Symptoms and target organs Central nervous system

12. Ecological Information

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Dispose of waste in accordance with all applicable Federal, State, and local laws. Additionally, because this is a controlled substance, notify local DEA office for appropriate disposal procedures.

14. Transport Information

IATA Not regulated as dangerous goods.
Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations
DEA Schedule IV Controlled Substance

CERCLA (Superfund) reportable quantity
None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance
No

Section 311 hazardous chemical
No

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
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<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>No</td>
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<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
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<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
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<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
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<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
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<td>European List of Notified Chemical Substances (ELINCS)</td>
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<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
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<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
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<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
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<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
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</tbody>
</table>

* A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

16. Other Information

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