Section 1. Identification of the Substance/Mixture and of the

1.1 Product Code: 11353
Product Name: Zearalenone
Synonyms: (3S,11E)-3,4,5,6,9,10-hexahydro-14,16-dihydroxy-3-methyl-1H-2-benzoazacyclotetradecin-1,7(8H)-dione; FES; Mycotoxin F2; Toxin F2; Zenone;

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet
Company Name: Cayman Chemical Company
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
Alternate Emergency Contact: CHEMTREC Outside USA and Canada: +1 (703)527-3887
Information: Cayman Chemical Company +1 (734)971-3335
Web site address: www.caymanchem.com

Section 2. Hazards Identification

<table>
<thead>
<tr>
<th>GHS Classification</th>
<th>Placard</th>
<th>Key word</th>
<th>GHS hazard phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Corrosion/Irritation, Category 1B</td>
<td>Corrosive</td>
<td>Danger</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>Toxic To Reproduction, Category 2</td>
<td>Health hazard</td>
<td>Warning</td>
<td>Suspected of damaging fertility or the unborn child</td>
</tr>
</tbody>
</table>

GHS Hazard Phrases:
H314: Causes severe skin burns and eye damage.
H361: Suspected of damaging fertility or the unborn child.

GHS Precaution Phrases:
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/clothing and eye/face protection as specified by the manufacturer/supplier or the competent authority.
P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.

GHS Response Phrases:
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P363: Wash contaminated clothing before reuse.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310: Immediately call a POISON CENTER or doctor/physician.
P308+313: IF exposed or concerned: Get medical attention/advice.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Effects and Symptoms:
Causes severe skin burns and eye damage.
Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
Suspected of damaging fertility or the unborn child.
To the best of our knowledge, the toxicological properties have not been thoroughly investigated.
SAFETY DATA SHEET
Zearalenone

Target Organs: Reproductive system.
LD 50 / LC 50: Please refer to Section 11.
Medical Conditions Generally Aggravated By Exposure: No data available.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Concentration</th>
<th>EC#</th>
<th>Risk Phrases</th>
<th>RTECS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zearalenone</td>
<td>17924-92-4</td>
<td>100.0 %</td>
<td>241-864-0</td>
<td>R34-62-63</td>
<td>DM2550000</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:
4.1.1 In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
4.1.2 In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.
4.1.3 In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
4.1.4 In Case of Ingestion: Exposure may cause: coughing, dizziness, shortness of breath, headache, nausea, and vomiting. Skin contact may result in erythema (redness) and edema (raised skin).

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.
Unsuitable Extinguishing Media: A solid water stream may be inefficient.
5.2 Flammable Properties and Hazards: No data available.
Flash Pt: No data.
Autoignition Pt: No data available.
Explosive Limits: LEL: No data. UEL: No data.
Hazardous Combustion Products: No data available.
5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: Avoid raising and breathing dust, and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).
6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.
6.3 Methods and Material For Containment and Cleaning Up: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.
7.2 Precautions To Be Taken in Storing: Keep container tightly closed. Store in accordance with information listed on the product insert.

Hazard Label Information: Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation. Wash thoroughly after handling.

Section 8. Exposure Controls.Personal Protection

Hazardous Components (Chemical Name) | CAS #   | OSHA PEL | ACGIH TLV | Other Limits |
---------------------------------------|---------|----------|-----------|--------------|

Hazardous Components (Chemical Name) | CAS #   | France EH40 | Britain EH40 | Europe |
-----------------------------------|---------|--------------|--------------|--------|

Protective Equipment Summary - Hazard Label Information: Compatible chemical-resistant gloves Eye wash station in work area Lab coat Safety glasses Safety shower in work area Vent Hood

Engineering Controls (Ventilation etc.): Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Protective Clothing: Lab coat

Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices: Do not take internally. Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower. Wash thoroughly after handling.

Environmental Exposure Controls: No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [ ] Gas [ ] Liquid [X] Solid

Appearance and Odor: A crystalline solid

Melting Point: No data.

Boiling Point: No data.

Flash Pt: No data.

Evaporation Rate: No data.

Vapor Pressure (vs. Air or mm Hg): No data.

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Solubility Notes: ~0.12 mg/ml in 1:7 DMSO:PBS (pH 7.2); ~20 mg/ml in EtOH, DMF, & DMSO;

Autoignition Pt: No data.

Explosive Properties: No data available.

Oxidizing Properties: No data available.

9.2 Other Information

Percent Volatile: No data.

Formula: C18H22O5

Molecular Weight: 318.40
Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: Unstable [    ]       Stable [ X ]
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.
10.4 Conditions To Avoid: No data available.
10.5 Incompatibility - Materials To Avoid: strong oxidizing agents
10.6 Hazardous Decomposition Or Polymerization:
   strong oxidizing agents
10.6 Hazardous Decomposition Or Byproducts:
   carbon dioxide
   carbon monoxide

Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

Zearalenone - Toxicity Data: Oral LD50 (rat): >16,000 mg/kg;
Zearalenone - Irritation Data: Skin (guinea pig): 50 mg (24h) severe;

Chronic Toxicological Effects: Zearalenone - Investigated as a mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.
Zearalenone RTECS Number: DM2550000

Carcinogenicity/Other Information: IARC: Group 3: Not classifiable as to its carcinogenicity to humans (Zearalenone)

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Zearalenone</td>
<td>17924-92-4</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT)
   DOT Proper Shipping Name: Corrosive solid, acidic, organic, n.o.s. (Zearalenone)
   DOT Hazard Class: 8
   DOT Hazard Label: CORROSIVE
   UN/NA Number: 3261
   Packing Group: II

14.1 LAND TRANSPORT (European ADR/RID)
   ADR/RID Shipping Name: Corrosive solid, acidic, organic, n.o.s. (Zearalenone)
   UN Number: 3261
   Hazard Class: 8 - CORROSIVE
   Packing Group: II

14.3 AIR TRANSPORT (ICAO/IATA)
   ICAO/IATA Shipping Name: Corrosive solid, acidic, organic, n.o.s. (Zearalenone)
   UN Number: 3261
   Hazard Class: 8 - CORROSIVE
Section 15. Regulatory Information

European Community Hazard Symbol codes
C: Corrosive; Xn: Harmful; Reproductive Hazard: 3

European Community Risk and Safety Phrases
- R34: Causes burns.
- R62: Risk of impaired fertility.
- R63: Possible risk of harm to the unborn child.
- S22: Do not breathe dust.
- S24/25: Avoid contact with skin and eyes.
- S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.
- S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

US EPA SARA Title III
Hazardous Components (Chemical Name) | CAS # | Sec.302 (EHS) | Sec.304 RQ | Sec.313 (TRI) | Sec.110 |
--- | --- | --- | --- | --- | --- |
1. Zearalenone | 17924-92-4 | No | No | No | No |

Other US EPA or State Lists
Hazardous Components (Chemical Name) | CAS # | CAA HAP,ODC | CWA NPDES | TSCA | CA PROP.65 |
--- | --- | --- | --- | --- | --- |
1. Zearalenone | 17924-92-4 | No | No | Inventory | No |

Regulatory Information Statement: This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 05/31/2013

Company Policy or Disclaimer

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required