

# MATERIAL SAFETY DATA SHEET

## CLINOPTILOLITE

Last Revised March 2008

| 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY |  |
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| <b>Trade Name:</b>   | Clinoptilolite, Natural Zeolite.   |
| <b>Usage:</b>  | Remediation, turf improvement, odour absorption, fertiliser manufacture. |
| <b>Supplier:</b>   | RS Minerals  |
| <b>Address:</b>  | 23 Allerston Way<br>Guisborough,<br>Cleveland<br>TS14 6GA                |
| <b>Phone Number:</b>   | 01287 631530   |
| <b>Fax Number:</b>   | 01287 637274   |

| 2. COMPOSITION/INFORMATION ON INGREDIENTS   |            |    |            |
|---|------------|----|------------|
| A natural crystalline aluminosilicate mineral with approximate empirical formula:<br>(Ca, Fe, K, Mg, Na) <sub>3-6</sub> Si <sub>30</sub> Al <sub>6</sub> O <sub>72</sub> .24H <sub>2</sub> O.<br>Typical mineralogical composition: 95% Clinoptilolite, minor amounts of feldspar and smectite. |            |    |            |
| <b>CAS No</b>   | 12173-10-3 |    |            |
| TYPICAL ANALYSIS:   |            |    |            |
| SiO <sub>2</sub>  | 71.0%      | As | 5.8 ppm    |
| Al <sub>2</sub> O <sub>3</sub>  | 11.8%      | Cd | < 0.15 ppm |
| TiO <sub>2</sub>  | 0.10%      | Co | < 10 ppm   |
| Fe <sub>2</sub> O <sub>3</sub>  | 1.7%       | Cr | 12 ppm     |
| Na <sub>2</sub> O   | 0.4%       | Cu | < 10 ppm   |
| K <sub>2</sub> O  | 2.4%       | Hg | < 0.05 ppm |
| CaO   | 3.4%       | Mo | < 5 ppm    |
| MgO   | 1.4%       | Ni | < 10 ppm   |
|   |            | Pb | < 16 ppm   |
|   |            | Se | < 50 ppm   |

| 3. HAZARD IDENTIFICATION  |
|---|
| <p>Clinoptilolite is not flammable, combustible or explosive, and has no known adverse environmental effects. However it should be noted that this product may contain traces of cristobalite (CAS 14464-46-1) (a form of crystalline silica) which is injurious to the lungs.</p> <p><b>Inhalation:</b> Respirable crystalline silica can cause chronic silicosis, a fibrosis of the lungs.</p> <p><b>Eye Contact:</b> May cause abrasion of the cornea.</p> <p><b>Skin Contact:</b> May cause abrasion to skin.</p> <p><b>Ingestion:</b> No known health effect.</p> <p><b>Medical Conditions Aggravated by Exposure:</b> The condition of individuals with lung disease (eg bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure.</p> |

| <b>4. FIRST-AID MEASURES</b> |  |
|------------------------------|--|
| <b>Eyes:</b>                 | May cause mechanical irritation which can result in redness, itching and lachrymation. If contact with the eye occurs, wash with copious amounts of water for approximately 15 minutes.  |
| <b>Skin:</b>                 | May cause mechanical irritation in contact with the skin. Wash thoroughly with water. Wash clothes before re-use.  |
| <b>Ingestion:</b>            | Material is biologically inert. It is however highly adsorbent and could have a dehydrating effect if ingested in large amounts. Wash out mouth with water, and then give plenty of water to drink. Seek medical attention if irritation or other symptoms develop.  |
| <b>Inhalation:</b>           | May cause irritation of mucous membranes and upper airways. Symptoms may include sneezing, coughing and breathing difficulties. Move victim to fresh air and have the victim blow nose to remove excess dust. Ensure airways are clear. If breathing is difficult, a qualified person should give oxygen via a face mask. If irritation develops and persists, seek medical attention. Silicosis may result from excessive inhalation over an extended period. |

| <b>5. FIRE-FIGHTING MEASURES</b>               |   |
|--|---|
| <b>Extinguishing Media:</b>                    | Use appropriate media to surrounding fire. Clinoptilolite is compatible with all extinguishing media. |
| <b>Special Exposure Hazards:</b>               | None  |
| <b>Protective Equipment for Fire Fighting:</b> | Wear Self-Contained Breathing Apparatus (SCBA) and full protective clothing.                          |
| <b>Hazardous Combustion Products:</b>          | None  |

| <b>6. ACCIDENTAL RELEASE MEASURES</b> |   |
|---------------------------------------|---|
| <b>Personal Precautions:</b>          | Use personal protection appropriate to the situation and quantity handled. The use of a dust mask, nitrile gloves and either goggles or safety glasses is recommended. If large amounts of dust are likely to be generated, use a respirator. |
| <b>Environmental Precautions:</b>     | No known adverse environmental effects.   |
| <b>Spillages:</b>                     | Scoop up spillages and place in a container. Avoid creating dusts. Wear appropriate respiratory protection, safety glasses and overalls as a precaution. When used to absorb a hazardous substance, handle as per that substance.             |

| <b>7. HANDLING AND STORAGE</b> |   |
|--------------------------------|---|
| <b>Handling:</b>               | Irritation to the skin or eyes is likely to be of a mechanical nature. No known toxicology due to accidental ingestion. Where dust is generated, the use of a mechanical exhaust ventilation system is recommended. |
| <b>Storage:</b>                | Store in original packs/containers.   |

| <b>8. EXPOSURE CONTROLS/PERSONAL PROTECTION</b> |   |
|---|---|
| <b>Occupational Exposure Standards:</b>         | None assigned.  |
| <b>Respiratory Protection:</b>                  | The use of a dust mask is recommended. If large amounts of dust are likely to be generated, use a respirator. |
| <b>Hand Protection:</b>                         | Nitrile gloves should be worn.  |
| <b>Eye Protection:</b>                          | Goggles or safety glasses should be worn.   |

| <b>9. PHYSICAL AND CHEMICAL PROPERTIES</b> |  |
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| <b>Physical State:</b>                     | Granular or powdered solid   |
| <b>Colour:</b>                             | Off-white or Ivory   |
| <b>Odour:</b>                              | Slight earth-like odour  |
| <b>Hardness:</b>                           | 2 to 3 Mohs  |
| <b>Porosity:</b>                           | 49.3%  |
| <b>Melting Point (°C):</b>                 | Approx. 1300   |
| <b>Solubility in Water:</b>                | Virtually insoluble  |
| <b>Water Absorption (%):</b>               | 46.5%  |
| <b>Cation Exchange Capacity:</b>           | 1.5 to 1.8 meq/g   |
| <b>Bulk Density:</b>                       | 1-3mm = 0.85 MT/m <sup>3</sup> ; 0.5-1mm = 0.75MT/m <sup>3</sup> ; <100 microns = 0.65 MT/m <sup>3</sup><br>(Bulk density data is approximate) |
| <b>Specific Weight:</b>                    | 2000 – 2400 Kg/m <sup>3</sup>  |
| <b>Explosion Limits (%):</b>               | No known explosion hazards   |
| <b>Flammability:</b>                       | Non-flammable  |

| <b>10. STABILITY AND REACTIVITY</b> |   |
|-------------------------------------|---|
| <b>Stability:</b>                   | Stable                                      |
| <b>Materials to Avoid:</b>          | Strong Oxidising Agents, Hydrofluoric Acid. |

| <b>11. TOXICOLOGICAL INFORMATION</b> |   |
|--------------------------------------|---|
| <b>Inhalation:</b>                   | Silicosis of the lung may result from excessive inhalation over an extended period. |
| <b>Skin and Eye Contact:</b>         | Irritation to the skin or eyes is likely to be of a mechanical nature.              |
| <b>Ingestion:</b>                    | No known toxicology due to accidental ingestion.                                    |

| <b>12. ECOLOGICAL INFORMATION</b>      |  |
|--|--|
| No known adverse environmental effects |  |

| <b>13. DISPOSAL CONSIDERATIONS</b> |   |
|------------------------------------|---|
| <b>Product Disposal:</b>           | Disposal should be via landfill. Care should be taken to ensure that product is covered to stop any dust particles becoming airborne. It should be noted that contamination may occur during use and it is the responsibility of the user to assess an appropriate disposal method in this situation. |

**14. TRANSPORT INFORMATION**

Clinoptilolite is not a hazardous material for purposes of transportation.

**15. REGULATORY INFORMATION**

|                              |                            |
|------------------------------|----------------------------|
| <b>Risk symbol</b>           | <b>None</b>                |
| <b>Hazard Classification</b> | <b>Non-Hazardous</b>       |
| <b>R phrases (risk)</b>      | <b>R48 / 20</b>            |
| <b>S phrases (safety)</b>    | <b>S22, S38</b>            |
| <b>Precautions</b>           | <b>Avoid inhaling dust</b> |

**16. OTHER INFORMATION**

**RS Minerals 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 handling of the product by a properly trained person. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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