



## PRODUCT INFORMATION SHEET

### GENERAL INFORMATION

|                                |  |                   |            |
|--------------------------------|--|-------------------|------------|
| <b>Chemical Name:</b>          | Calcium, Potassium, Sodium Aluminosilicate         | <b>CAS No:</b>    | 12173-10-3 |
| <b>Chemical Family:</b>        | Natural Zeolite                                    | <b>EINECS No:</b> | 215-283-8  |
| <b>Chemical Abstract Name:</b> | Clinoptilolite                                     |                   |            |
| <b>Chemical Formula:</b>       | $(Ca,K_2,Na_2,Mg)_4Al_8Si_{40}O_{96} \cdot 24H_2O$ |                   |            |

### MINERAL COMPOSITION \*

|                |           |              |         |          |         |
|----------------|-----------|--------------|---------|----------|---------|
| Clinoptilolite | 90 - 95 % | Cristobalite | 0 - 5 % | Tridymit | 0 - 5 % |
|----------------|-----------|--------------|---------|----------|---------|

\* Semi-Quantitative whole rock analysis (bulk mineralogy) has been done using powder X-ray Diffraction Method

### CHEMICAL COMPOSITION \*\*

|                                |             |                                |             |  |               |
|--------------------------------|-------------|--------------------------------|-------------|--|---------------|
| SiO <sub>2</sub>               | 65 - 72 %   | Fe <sub>2</sub> O <sub>3</sub> | 0,7 - 1,9 % | MnO  | 0 - 0,08 %    |
| Al <sub>2</sub> O <sub>3</sub> | 10 - 12 %   | MgO                            | 0,9 - 1,2 % | Cr <sub>2</sub> O <sub>3</sub>                   | 0 - 0,01 %    |
| CaO                            | 2,4 - 3,7 % | Na <sub>2</sub> O              | 0,1 - 0,5 % | P <sub>2</sub> O <sub>5</sub>                    | 0,02 - 0,03 % |
| K <sub>2</sub> O               | 2,5 - 3,8 % | LOI***                         | 9 - 14 %    | SiO <sub>2</sub> /Al <sub>2</sub> O <sub>3</sub> | 5,4 - 7,2 %   |

\*\*\* Loss of Ignition

\*\* Analysed by XRF Spectrometer

### PHYSICAL PROPERTIES

|                         |             |                                    |                      |                        |                          |
|-------------------------|-------------|------------------------------------|----------------------|------------------------|--------------------------|
| <b>Appearance</b>       | Ivory white | <b>Oil Absorption (ml/100g)</b>    | 57                   | <b>Solubility</b>      | None                     |
| <b>Smell</b>            | None        | <b>Abrasion (mg/100g)</b>          | 87                   | <b>pH</b>              | 7,0 - 8,0                |
| <b>Porosity</b>         | 45 - 50 %   | <b>Single Point Surface Area</b>   | 39 m <sup>2</sup> /g | <b>Softening Point</b> | 1150 oC                  |
| <b>Hardness</b>         | 2 - 3 Mohs  | <b>Micropore Area</b>              | 11 m <sup>2</sup> /g | <b>Melting Point</b>   | 1300 oC                  |
| <b>Mudding Down</b>     | None        | <b>Mesopore Area</b>               | 29 m <sup>2</sup> /g | <b>Bulk Density</b>    | 0,6-0,8g/cm <sup>3</sup> |
| <b>Water Absorption</b> | 42 - 50 %   | <b>Effective Diameter of Pores</b> | 4 angstrom           | <b>Real Density</b>    | 2,2-2,4g/cm <sup>3</sup> |
| <b>Plasticity</b>       | Minor       |                                    |                      |                        |                          |

### CATION EXCHANGE CAPACITY (CEC)†

**Total CEC:** 1,5 - 2,1 meq/g † Methylene Blue Chloride Method

#### Major Exchangeable Cations

Rb, Li, K, Cs, NH<sub>4</sub>, Na, Ca, Ag, Cd, Pb, Zn, Ba, Sr, Cu, Hg, Mg, Fe, Co, Al, Cr.

(selectivity of above cations is a function of hydrated molecular size and relative concentrations).

#### Selectivity

Cs<sup>+</sup> > NH<sub>4</sub><sup>+</sup> > Pb<sup>2+</sup> > K<sup>+</sup> > Na<sup>+</sup> > Ca<sup>2+</sup> > Mg<sup>2+</sup> > Ba<sup>2+</sup> > Cu<sup>2+</sup>, Zn<sup>2+</sup>

#### Primary Adsorbing Gases

CO, CO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, HCHO, Ar, O<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub>O, He, H<sub>2</sub>, Kr, Xe, CH<sub>2</sub>OH.

Information herein is accurate to the best of our knowledge, but may be subject to change without notice. Suggestions are made without warranty or guarantee of results. Before using, user should determine the suitability of the product for its intended use and user assumes the risk and liability in connection herewith.

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