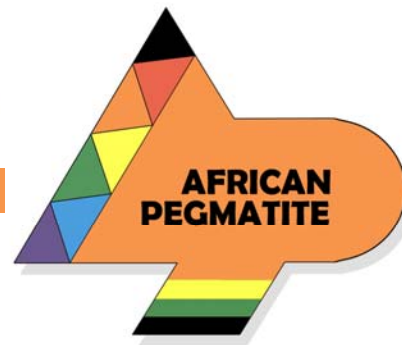


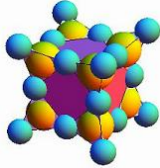
African Pegmatite (Pty) Ltd  
 27 Van Der Bijl Street,  
 PO Box 598, Meyerton 1960  
 Gauteng, South Africa  
 Email: wenger@pegmatite.co.za  
 reception@pegmatite.co.za  
 Website: www.mineralmilling.com

Tel: +27 016 362 0600/1/2/3/4  
 Int: +27 16 362 0600  
 Fax: 016 362 1239

**MILLERS & PROCESSORS OF BASE MINERALS**



**Data Sheet**



**Product: NATURAL ZEOLITE  
 ZEOLITE 500**

**CHEMICAL ANALYSIS %**

Chemical Formula:

Clinoptilolite has the following formula:  
 $(MgCaNa_2K^2)_4 \text{ }_6(AlO_2)_7 (SiO_2) \times 21H_2O$

The idealised chemical formula of Clinoptilolite is:

Note: The relatively high silica content-  
 Silica – Alumina ration 5.9.1

$Ca Na_2_5(SiO_2)_{30}24H_2O$

- |                                |                       |
|--------------------------------|-----------------------|
| 1. Element analysis:           |                       |
| Element                        | %                     |
| SiO <sub>2</sub>               | 71.52                 |
| Al <sub>2</sub> O <sub>3</sub> | 12.10                 |
| Na <sub>2</sub> O              | 1.40                  |
| K <sub>2</sub> O               | 3.85                  |
| MgO                            | 0.66                  |
| CaO                            | 1.53                  |
| Fe <sub>2</sub> O <sub>3</sub> | 1.21                  |
| TiO <sub>2</sub>               | 0.13 Total water 7.30 |
| MnO                            | 0.07                  |
2. Cation Exchange Capacity (CEC)-  
 Practical MAXIMUM CEC is 1.8 meq/g. Very little change in CEC is given by Clinoptilolite below 1.0mm in size but, CEC rapidly decreases when size is increased above 1.0mm. Typical CEC's vary from 1.2 – 1.5 meq.g i.e. 22 – 27 grms of Ammonium Ion per kg of Clinoptilolite.
3. Gases absorbed – (@25°C)  
 NH<sub>3</sub>: Clinoptilolite 7.8g/100g                      SO<sub>2</sub>: 15.3g/100g
- It also absorbs CO<sub>2</sub>, AR, N<sub>2</sub>, H<sub>2</sub>S, SO<sub>4</sub>
4. Major Exchangeable Ions-  
 The selectivity series for ions is:  
 Pb,<sup>+</sup>>Cs>Rb>NH<sub>4</sub>>Ba>Sr>Zn>Cu>Co>Ni>Hg>NO<sub>3</sub>>NO<sub>2</sub>>Ca>Fe>Al>Mg>U.
5. Desiccant Ability -  
 Clinoptilolite absorbs 39 grms of water per 100g of Zeolite 500.

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**MILLERS & PROCESSORS OF BASE MINERALS**



## PHYSICAL PROPERTIES:

- |     |   |  |
|-----|---|--|
| 6.  | A MSDS is available on request but Clinoptilolite is a non hazardous material.<br>Main phase: | 80 – 85% Clinoptilolite (XRD, BET & analysis)  |
|     | Main impurities:  | Opaline Cristobalite, K-Feldspar & trace of Sanidine<br>(Montmorillonite and Quartz).                  |
|     | Refractive index:   | 1.484  |
|     | Dry Bulk density: (Tapped)  | 920 Kgs/Cube M <sup>3</sup>  |
| 7.  | pH Stability  | 1 – 13 Clinoptilolite is stable  |
| 8.  | Colour -  | Reflective whiteness: 80%  |
| 9.  | Hardness  | Hardness is 3.5 – 4 MOH.   |
| 10. | Pore size   | 3.5 anagstroms (3.5 Å)   |
| 11. | Pore volume -   | Approximately 10 – 12%, the bulk density of the rock as determined by immersion in mercury is 1.92g/m. |
| 12. | Ammonia Ion Exchange –  | Kieldahi distillation method. Ammonia Chloride: 1.2 – 1.5meq/g.  |
| 13. | Method of Regeneration –  | 5 – 10% Solution NaCl (common salt)– 10 Hours soak at Ambient temperature.                             |
| 14. | Sodium exchanged/Calcium exchanged.   | Size – 4mm + 2mm.  |
| 15. | Primary absorbed gases.   | H <sub>2</sub> S, CO <sub>2</sub> , NH <sub>4</sub> , N, H <sub>2</sub> O                              |

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