
CERTIFICATE OF ANALYSIS

Customer: **Product:** Zeobrite® 1430 Filter Media
P.O. Number: **Lot Number(s):**
Customer Product Number: **BOL Number:**

Material: Natural Zeolite (Clinoptilolite)

Material Composition: Potassium-Calcium-Sodium Aluminosilicate

CHEMICAL ANALYSIS

(K₂, Ca₂, Na₂) O-Al₂O₃-10SiO₂-8H₂O Approximate weight percent for major oxides:

| | | | | | |
|------------------------------------|------|------------------------------------|-----|------------------------|-----|
| <i>Silicate</i> | 64.7 | <i>CaO</i> | 3.3 | <i>MnO</i> | 0.1 |
| <i>Al₂O₃</i> | 12.6 | <i>MgO</i> | 1.0 | <i>TiO</i> | 0.2 |
| <i>K₂O</i> | 3.3 | <i>Fe₂O₃</i> | 1.8 | <i>Na₂O</i> | 0.9 |

(Source: Bowie and Barker, NM Bureau of Mines, 1986)

Chemical Composition for selected elements by x-ray fluorescence (in ppm, unless wt. % as noted)

| | | | | | | | |
|-----------|------|-----------|------|-----------|-----|-----------|------|
| K | 2.0% | Cu | 30 | Zr | 190 | Nd | 15 |
| Ca | 2.7% | Zn | 70 | Y | 30 | La | 40 |
| Fe | 0.9% | Rb | 70 | Nb | 20 | Ba | 1030 |
| | | Sr | 1720 | Ce | 90 | Pb | 40 |

Cation Exchange Capacity: 0.5-1.50meq/gm

Product Purity: Analysis by x-ray diffraction at the New Mexico Institute of Mining and Technology and other tests suggests 74% - 80% clinoptilolite content with the remaining material primarily inert volcanic ash and sediments. Clay and other mineral varieties are detectable only in minute quantities. Toxicology testing to ANSI/NSF Standard 61 for Drinking Water passed. No fibrous silicates have been detected and crystalline silica is present in quantities of less than 0.01%.

PHYSICAL PROPERTIES

| | |
|---|---|
| Acid Stability | 0-7 (ph) |
| Alkali Stability | 7-13 (ph) |
| Bulk Density (In Place, dried) | 87 lbs/ft³ (1,390 kg/m³) |
| Bulk Density (Aggregate, dried) 14 x 30 mesh | 48 – 52 lbs/ft³ |
| Cation Exchange Capacity (CEC) | 0.5 - 1.5 meq/gm |
| Color | White (85 optical reflectance) |
| Crushing Strength | 2500 lbs/in³ (176 kg/m³) |
| Hardness | 3.5-4.0 Mohs |
| LA Wear (Abrasion Index) | 24 |
| Molecular Ratio | 5.1 (Si/Al) |
| Other | non-soluble, non-slaking, free flowing |
| pH (natural) | 8.0 (approx.) |
| Pore Size (diameter) | 4.0 Angstroms |
| Resistivity | 9,000 (approx.) ohms/cm |
| Specific Gravity | 2.2-2.4 |
| Surface Area | 1357 yd²/oz (40 m²/gm) |
| Swelling Index | nil |
| Thermal Stability | 1202 F (650 C) |

This is to certify that the material furnished is in
accordance with our standard process controls and specifications.

Stephen L. Peterson CPG/VP Operations

Date:
