



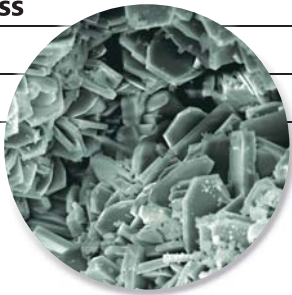
CLINOPTILOLITE (Na, K, Ca)₂₋₃Al₃(Al, Si)₂Si₁₃O₁₂H₂O (Clīnō-tē-ō-līte)

“Zeolite” refers to a group of approximately 40 minerals that are basically hydrated calcium potassium sodium aluminosilicates, in which the water is held in cavities in the lattice. Bear River Zeolite is a clinoptilolite zeolite and has the ability to exchange one cation for another, known as “cation-exchange capacity” or “CEC”. Cation exchange capacity is a measure of the number of cations per unit weight available for exchange, usually expressed as milliequivalents per 100 grams of material.

Clinoptilolite lattices are negatively charged and they loosely hold cations such as calcium, sodium, ammonium, and potassium; and also water.

CHEMICAL COMPOSITION

Mineral Component	85-95% Clinoptilolite, balance opaline silica	
CEC (Cation Exchange Capacity)	190 to 220 meq/100 gram (as ammonium N)	
Water Retention (maximum)	>55 WT %	
Overall Surface Area	24.9 square meters / gram	
Bulk Density	Approximately 55-60 pounds per cubic foot	
Hardness	Mohs No. 4	
pH	8.64	Major Cation Range
Color	Pale green	Potassium 2.93-3.47%
		Calcium 1.60-2.02%
		Sodium <0.5 %



TYPICAL ELEMENTAL ANALYSIS BY ICP-4A/M-ICPMS-4A

Ca (Calcium)	20200 ppm	Mo (Molybdenum)	<2.00 ppm
Co (Cobalt)	<2.00 ppm	Na (Sodium)	2910 ppm
Cr (Chromium)	7.85 ppm	Na (Soluble Sodium)	450 ppm
Cu (Copper)	7.98 ppm	P (Phosphorus)	231 ppm
Fe (Iron)	15900 ppm	S (Sulfur)	273 ppm
K (Potassium)	29300 ppm	Se (Selenium)	<1.00 ppm
Mg (Magnesium)	3450 ppm	Zn (Zinc)	53.4 ppm
Mn (Manganese)	314 ppm	Cl (Chlorine)	<0.01%

BEAR RIVER ZEOLITE Co., Inc.

Mine: 4005 East Glendale Road, Preston, ID 83263
Office: PO Box 643, 47 Cox Gulch Road, Thompson Falls, MT 59873
406-827-3523 • FAX: 406-827-3543
www.bearriverzeolite.com • tfl3543@blackfoot.net

Revised 01252017



Agriculture



Feed



Livestock



Compost



Industry

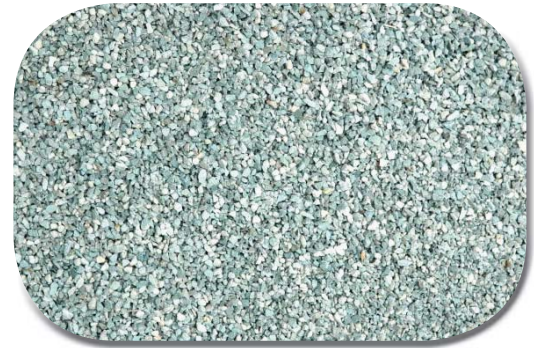


Air & Water



ROCK ANALYSIS

SiO₂	67.40%	TiO₂	0.27%
MgO	0.45%	Fe₂O₃	1.70%
K₂O	4.19%	Na₂O	0.59%
MnO	<0.01%	P₂O₅	0.10%
Al₂O₃	10.60%	LOI @ 925°	11.40%
CaO	2.23%		



REGISTRATIONS AND CERTIFICATIONS

GRAS (generally regarded as safe) anti-caking agent, CFR Title 21, Sec. 182.2729*
CFIA (Canadian Animal Feed Inspection Agency), Registration No. 99063*
OMRI NOP: Minerals - Feed, Livestock feed ingredients, Product No.: ber-7707
OMRI COR: Minerals, trace minerals, elements, non-synthetic - Livestock feed ingredients, Product No.: ber-7708
OMRI NOP: Mined minerals- unprocessed, Crop fertilizers and soil amendments, Product No.: ber-3083
ANSI/NSF Standard 61 - Drinking Water System Components (ChemSorb® Filter Granules)
ANSI/NSF Standard 60 - Drinking Water Treatment (ChemSorb® Sorbent Powder)
ANSI/NSF Standard 50 - Equipment for Pools, Spas, Hot Tubs (ZeoSand® Natural Zeolite Filter Media)
DOT Class 50: Non-hazardous

*Bear River Zeolite BRZ™ is approved by the FDA and CFIA for use as a flow/anti-caking agent in feed at up to 2% inclusion in the ration

DEPOSIT

The clinoptilolite deposit includes an 800 foot mountain. The current pit covers more than 4 acres. Within the pit, the zeolite is remarkably homogeneous.

PRODUCTION

The mine is capable of producing 120 tons per hour.



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