GENERAL INFORMATION

Chemical Name:	Calcium, Potassium, Sodium Aluminosilicate
Chemical Family:	Natural Zeolite
Chemical Abstract Name:	Clinoptilolite
Chemical Formula:	$(Ca,K_2,Na_2,Mg)_4Al_8Si_{40}O_{96}.24H_2O$

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_2	65 - 72 %	**Fe_2O_3**	0,7 - 1,9 %	**MnO**	0 - 0,08 %
Al_2O_3	10 - 12 %	**MgO**	0,9 - 1,2 %	**Cr_2O_3**	0 - 0,01 %
CaO	2,4 - 3,7 %	**Na_2O**	0,1 - 0,5 %	**P_2O_5**	0,02 - 0,03 %
K_2O	2,5 - 3,8 %	**LOI*** **	9 - 14 %	**SiO_2/Al_2O_3**	5,4 - 7,2 %

*** Analysed by XRF Spectrometer* **** Loss of Ignition*

PHYSICAL PROPERTIES

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

CATION EXCHANGE CAPACITY (CEC) †

Total CEC: 1,5 - 2,1 meq/g

† *Methylene Blue Chloride Method*

Major Exchangeable Cations

Rb, Li, K, Cs, NH4, 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

$Cs^+ > NH^{4+} > Pb^{2+} > K^+ > Na^+ > Ca^{2+} > Mg^{2+} > Ba^{2+} > Cu^{2+}, Zn^{2+}$

Primary Adsorbing Gases

CO, CO2, SO2, H2S, NH3, HCHO, Ar, O2, N2, H2O, He, H2, Kr, Xe, Ch2OH.

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