



Charge 20150056

## Product description

### Natural clinoptilolite zeolite ultrafine powder

#### MATERIAL DESIGNATIONS

Type of mineral	Clinoptilolite
Chemical type	Molecular sieve
Chemical formula	(Na, K) <sub>4</sub> Ca Al <sub>6</sub> Si <sub>30</sub> O <sub>72</sub> x 24 H <sub>2</sub> O
Structural formula	M <sub>x/n</sub> [(AlO <sub>2</sub> ) <sub>x</sub> (SiO <sub>2</sub> ) <sub>y</sub> ] z H <sub>2</sub> O

#### CHEMICAL COMPOSITION

SiO <sub>2</sub>	68,31 %
Al <sub>2</sub> O <sub>3</sub>	11,73 %
K <sub>2</sub> O	3,29 %
CaO	2,56 %
Fe <sub>2</sub> O <sub>3</sub>	1,631 %
MgO	0,56 %
Na <sub>2</sub> O	0,77 %
TiO <sub>2</sub>	0,177 %
P <sub>2</sub> O <sub>5</sub>	0,02 %
SrO	0,035 %
MnO	0,026 %
ZrO <sub>2</sub>	0,015 %
Ba	0,078 %

SM mg/kg (TS)	Pb < 15 ppm	Pharm Eur. 1388
	As < 3 ppm	Pharm Eur. 1388
	Heavy metal < 50 ppm	Pharm Eur. 0467

#### IMPORTANT PROPERTIES

Colour	light grey	
Form	powder	
Specific weight	2,4 g/cm <sup>3</sup>	
Bulk density	0,9 – 1,1 g/cm <sup>3</sup>	
Specific surface area	50 – 65 m <sup>2</sup> /g	
Porosity	44 %	
Water content	< 7 %	
Thermal stability	up to 700°C	
Thermal resistance	up to 700°C	
Solubility	insoluble in water	
Stable against acids and alkalis		
Microbiological contamination	TAMC:	2,7 x 10 <sup>1</sup> KBE/g
	TYMC:	5 KBE/g
Specific activities of natural radionuclides	Iod-131	< 3 Bq/kg
	Cäsium-134	< 3 Bq/kg
	Cäsium-137	< 3 Bq/kg
Binding capacity to histamine	74,7 %	

#### CATION EXCHANGE CAPACITY CEC

Total Cation Exchange Capacity CEC	16,0 mmol*z/100g DIN ISO 13536
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#### INGREDIENTS

Clinoptilolite	87 ± 3 %
Cristobalite, Mica,	10 – 13 %
Feldspar, Quartz	

#### SELECTIVITY SEQUENCE

Cs>Rb>K>NH<sub>4</sub>>Pb>Ag>Ba>Na>Sr>Ca>Li>Cd>Cu>Zn  
(by Veretenina et. Al. 2003)

H<sub>2</sub>O=Fe=Pb>Co>Cu>Ag>Cd>Zn>NH<sub>4</sub>  
(by Goronkhov et. al. 1982)

#### PARTICLE SIZE DISTRIBUTION

90 %	< 19 µm
50 %	ca. 7 µm

Our clinoptilolite-zeolite powder is a 100% pure natural mineral without any additives and is mined in the Carpathian Mountains, east of the well-known repository in Košice (Slovakia). It is micronized and activated, whereby the natural crystal lattice structure of the minerals remains unchanged. It does not contain nanoparticles. Our zeolite powder is tested in German accredited laboratories for its identity, purity and pharmaceutical quality. It complies with the quality criteria of the European and British Pharmacopoeia. It is not toxic, explosive, or flammable.

In the EU, zeolite is solely an additive in animal feed for all animal species (1g568) in the additive category “technological additives” as a “binding agent” as well as a “release agent” and not approved for human intake. In the USA, zeolite is registered under the code (CFR 21) 182.2727 and aluminium silicate under (CFR 21) 182.2227 by the FDA (Food and Drug Administration) as safe for humans.

This information has been collected through laboratory analyses and statements from the manufacturers/suppliers available to us. It corresponds to our current knowledge and experience and represents average values. Since we have no influence on the processing and use of our products, the user must determine their suitability independently. Existing rights, regulations and laws must be observed.

As of 03/2016