

# Zeolite

- *Zeolite Clinoptilolite for waste management*



# About Zeolite

Zeolites are rare natural minerals of volcanic origin, arising out of four elements: earth, fire, water and air. They are a product of several millennia of chemical process and natural reaction between volcanic ash condensate and ocean water in specific geological conditions. Zeolites are minerals which have started to appear 100 million years ago, when volcanoes emerged from the seas, splitting continents, creating mountains and forming present-day appearance of the planet Earth. During the eruption of volcanoes, liquid lava and thick ash, in contact with sea water formed hard aluminosilicate lava, from which, thousands of years later, zeolite formed. Variations of temperature, geographical locations and other conditions had effect on millennia long chemical reactions between volcanic ash, lava, water and air, which made many zeolites have numerous differences in composition. There are many subgroups of zeolite, which is used in different purposes in science, industry, agriculture and building because of its characteristic properties of strong ion exchange. Subgroup called clinoptilolite, which has crystal molecular lattice was traditionally used as natural cure in human medicine. Zeolite clinoptilolite has cage-like structure with strong negative charge, which attracts and adsorbs heavy metals, dangerous carcinogenic toxins, organic poisons and other harmful substances. The beginning of zeolite medical application was based on its exceptional biophysical properties and ion exchange property, which enable simultaneous process of remineralization and efficient natural detoxication. For contemporary medical use zeolite clinoptilolite is subject to a unique process of tribomechanical micronization and activation which multiplies its medicinal properties. Zeolite is 100% natural mineral that the human body recognizes as its own substance. It is absolutely safe and non-toxic, no lethal or toxic dose, no adverse contraindications, side effects or interactions with other pharmacological or phytopharmacologic substances. Zeolite is not addictive, does not settle in organs and is fully eliminated from the body.

# Waste treatment

Zeolite has to be evenly separated across the surface for its maximum results.

Here are examples for different sizes of grains for the best result on m<sup>2</sup> of surface :

The different grain sizes (bottom place roughest 2.5 - 5 mm)

approx. m<sup>2</sup> / 1kg 2.5 - 5 mm

1 kg m<sup>2</sup> / 0.2 to 0.5 mm



# **Characteristics**

- It would have the effect of cleaning the groundwater
- It carries ammonia itself and emits minerals back and enhances the formation of microorganisms and humus
- It neutralize waste garbage smell immediately after covering surface
- High temperatures do not bother him (boiling point 800 degrees Celsius)
- It freezes to -12 degrees Celsius

- Neutralizes: Ammonia, heavy metals, pesticides, herbicides, dioxins (All will neutralize)
- Addition of Zeolite accelerates the degradation of the waste substances
- Automatically reduces the volume of garbage ( it can be reduced by the 70-80%)
- Further processing would provide good humus
- It needs to be placed in an amount to cover the entire surface until it is white in full

# Documents and certificates

- All those test and results in this presentation were tested with Zeolite who's purity was 80-85% .
- Our product have 96% of purity
- Our product was tested by professional institutions which we can claim with our certification of Zeolite purity



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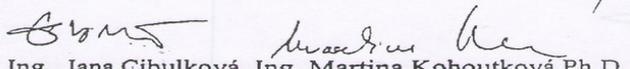
**Report of XRD analysis of clinoptilolite in the sample of Clinoptilolite of sedimentary origin (1g568) – batch M 211216-2**

**Requirement:** quantitative analysis of clinoptilolite in the sample of **Clinoptilolite of sedimentary origin (1g568) – batch M 211216-2**

**Methodology:** XRD analysis was performed at XRD diffractometer PANalytical X'Pert<sup>3</sup> Powder with Cu anode in the range 7 – 31 °2 Theta. External standard method was used for the quantitative analysis. The standard with the 84% content of clinoptilolite, guaranteed by the Institut für Geowissenschaften, Montanuniversität Leoben, was provided by the client. The standard sample as well as the analysed sample was measured for three times. The content of clinoptilolite in the analysed sample was calculated by averaging integral intensity values of the six selected diffraction lines.

**The estimated concentration of clinoptilolite in the sample of Clinoptilolite of sedimentary origin (1g568) – batch M 211216-2 was 96%.**

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