



GROUND ULEXITE

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Sodium-Calcium Pentaborate Octahydrate ($\text{Na}_2\text{O} \cdot 0.2\text{CaO} \cdot 0.5\text{B}_2\text{O}_3 \cdot 16\text{H}_2\text{O}$)

CAS Number: 1319-33-1

Technical Grade: Powder

Packaging: 25 kg, 1000 kg, 1200 kg
[with or without pallet]



General Information:

B_2O_3 content is $37.00 \pm 1.00\%$. Pure ulexite dissolves slowly in water and rapidly in acidic medium. In Turkey, it is commonly found in Bigadiç/Balıkesir.

The ore is enriched in concentrator plant to obtain concentrated product. The concentrated product is passed through crushing and grinding processes respectively to obtain milled product. It is then packaged in a packaging unit and ready for sale.

Usage and Benefits:

Heat and sound insulation: It is used in the production of insulation material in the construction and automotive industries. It creates a fire retardant/proof effect in cellulosic materials and heat resistant fabrics. B_2O_3 is present in the chemical composition of glass wool at a

rate of approximately 5%. The boron compound is added to the raw material as ulexite or colemanite. Glass wool is classified as "Grade A fireproof material" up to 250°C. Furthermore, it has a high sound absorption capacity and is therefore classified as an "acoustic material".

Glass and ceramics: It is used as an agent to lower the fusing point and to increase resistance against thermal shocks and the thermal expansion coefficient in glass production. Moreover, it is used in ceramic and enamel glaze formulations. Most glazes containing lead also contain 3-24% colemanite. It is used for enhancing the mechanical and chemical properties of the end product in the glaze and enamel industries. Chemicals similar to ulexite which are used as a boron source in the production of glass and ceramics:

- Reduce the fusing, formation and fluidization temperatures of glass as flux.
- Enable the coating to form at lower temperatures by increasing the wetting properties of the coating material.
- Enable the thermal expansion of the glaze to match the ceramic.
- Enable the glass formation to start at the early stages of fusing.
- Enhance the appearance of the glaze by increasing the refractive index and glossiness thereof.
- Facilitate the maturation of the glaze by reducing viscosity and surface tension.
- Increase the mechanical strength and scratch resistance of the coating.
- Increase resistance against the effects of chemicals and water.
- Provide a basis for the coloring additive.

Boric acid and borax: Ground ulexite is used in the production of borax decahydrate, borax pentahydrate, anhydrous borax and boric acid.

Fertilizer: Because of its low solubility, ground ulexite is preferred for fertilizers produced for sandy soils in fertilizer industry.

Miscellaneous: Ground ulexite is used in the gold refinery industry, as a part of the slag formulation in order to dissolve metal oxides.

Physical Properties:

| | |
|----------------------------------|---|
| Specific weight ^a | : 2.13 g/cm ³ |
| Pour (bulk) density ^a | : 0.735 g/cm ³ |
| Molecular weight | : 405.21 g/mol |
| Heat capacity | : 25.1 J/g°C |
| Thermal conductivity | : 0.482 W/mK |
| Specific surface area | : <1 m ² /g |
| Surface tension | : 68.64 mN/m [1.0% aqueous solution by weight] |
| Colorimetry test | : 91.97 [average L value] |

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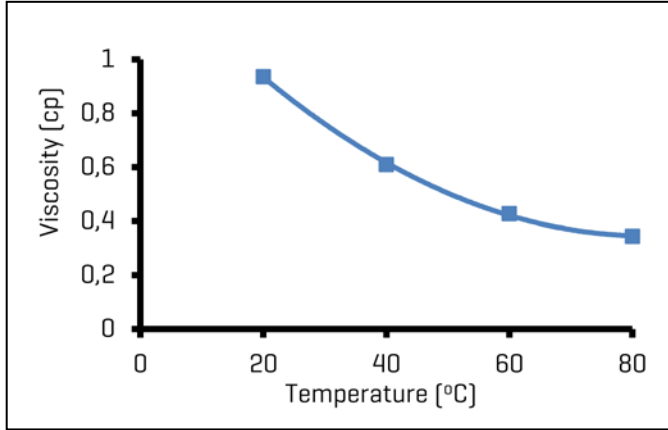
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^a Applies to a representative sample.

Solubility:

It is moderately soluble in water.

Solution viscosity values:



| Temp. [°C] | Conc. [%] | Viscosity [cp] |
|------------|-----------|----------------|
| 20 | 0.05 | 0.94 |
| 40 | 0.05 | 0.61 |
| 60 | 0.05 | 0.43 |
| 80 | 0.05 | 0.34 |

Chemical Content:

| Component | Content | |
|--------------------------------|-----------------------------|-----------------------------|
| | -45 Micron | -75 Micron |
| B ₂ O ₃ | 37.00 ± 1.00 % | 37.00 ± 1.00 % |
| CaO | 19.00% | 19.00% |
| SiO ₂ | 4.00% max | 4.00% max |
| SO ₄ | 0.25% max | 0.25% max |
| As | 40 ppm max | 40 ppm max |
| Fe ₂ O ₃ | 0.04% max | 0.04% max |
| Al ₂ O ₃ | 0.25% max | 0.25% max |
| MgO | 2.50% max | 2.50% max |
| SrO | 1.00% max | 1.00% max |
| Na ₂ O | 3.50% max | 3.50% max |
| Humidity | 1.00% max | 1.00% max |
| Bulk Density | 1.00 ton/m ³ max | 1.00 ton/m ³ max |

Heavy metal content:

| Component | Content (mg/kg) |
|-----------|-----------------|
| As | 40 max |
| Cd | <0.005 |
| Pb | <0.010 |
| Cr | <0.005 |
| Hg | <0.010 |

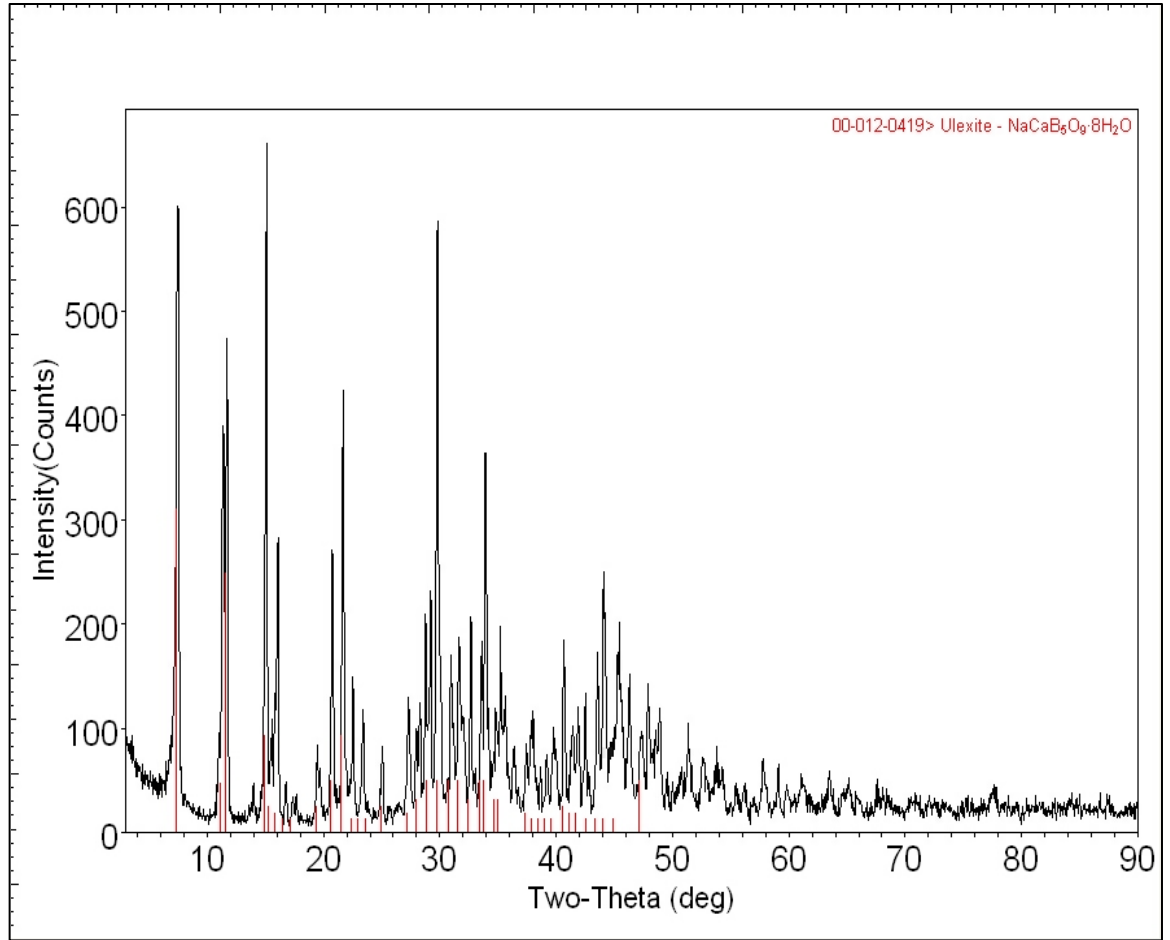
Particle size:

| Size | Content | |
|---------|------------|------------|
| | -45 Micron | -75 Micron |
| +150 µm | 0.25% max | 0.50% max |
| -45 µm | 75% min | 82% min |

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X-Ray Diffraction Analysis:



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