

The deposit is located 100 km to the east of the city of Cherkassy. A single track 55 km long connects the deposit with the double track railway station. The area of the deposit has a well-developed highway network.

The Dashukovske deposit is a minable part of the Cherkaske commercial deposit with probable reserves about 10 billion tons.

The deposit confined to a basin in a crystalline basement consists of horizontal clay beds of Miocene age.

Minaible rock mass comprising 5 layers is underlain by quartz and glauconite-quartz sands and is overlain by red-grey polymineral Pliocene clays and Quaternary loams.

The sequence of the minable area is as follows (downwards).

The 1st layer, polymineral dark-grey clay, has a heightened irregular content of carbonate.

The 2nd layer is principal minable rock mass varying in thickness from 0.2 to 12.7 m (7.5 m on the average). The content of alkaline-earth montmorillonite is about 90—99%, that of clay, accessory minerals, quartz and carbonate is small. Chemical composition is as follows (in percent): SiO_2 — 53-60; Al_2O_3 — 11-19; $\text{Fe}_2\text{O}_3 + \text{FeO}$ — 6-8; $\text{K}_2\text{O} + \text{Na}_2\text{O}$ — 0.1-0.40; $\text{CaO} + \text{MgO}$ — 2-5. The cation exchange total $\text{Ca}^{2+} + \text{Mg}^{2+}$ is 80-97 mg — equiv. per 100 g of dry clay, $\text{Na}^+ + \text{K}^+$ — 0.2-0.3 mg-equiv.

Dry compressive mechanical strength ranges from 0.45 to 1.0 MPa, wet compressive strength is about 0.35-0.55 MPa.

The 3rd layer, finely dispersed light-grey palygorskite clay 0.4-5.1 m thick (2.7 m on the average), is of monotonous composition. The bed incorporates palygorskite (95% of attapulgitite) with montmorillonite impurities and small content of quartz, accessory minerals and carbonates.

Chemical composition (in percent): SiO_2 — 51-60; Al_2O_3 — 9-14; $\text{CaO} + \text{MgO}$ — 5-10; Fe_2O_3 — 5-8.

The 4th layer is finely dispersed light-brown wax-like montmorillonite (palygorskite clay) 0.2-3.0 m thick (1.2 m on the average). At places the layer has a greenish tint. The bed consists of a montmorillonite (60—70%) and palygorskite (30—40%) mixture.

Chemical composition (in percent): SiO_2 — 50-66; Al_2O_3 — 10-12; Fe_2O_3 — 4-10; $\text{CaO} + \text{MgO}$ — 5-10; $\text{K}_2\text{O} + \text{Na}_2\text{O}$ — 1.5—3.0.

The 5th layer is dark-greenish-grey polymineral clay 0.6-3.7 m thick (2.0 m on the average). Mineral composition (in percent): montmorillonite (40—50), palygorskite (20—30), hydromica (20—30), carbonate and quartz impurities from 2. to 20.

Chemical composition (in percent): SiO_2 — 55-60; Al_2O_3 — 11-16; Fe_2O_3 — 4-10; $\text{CaO} + \text{MgO}$ — 2-5; $\text{K}_2\text{O} + \text{Na}_2\text{O}$ — 3-5.

Commercial minerals are bentonite, palygorskite and **biminer**al (palygorskite-montmorillonite) clays of the 2nd, 3rd and 4th layers with an average total thickness of 11.4 m.

Clay and foam of stripping rocks are not used commercially but mined for recultivation of the quarry. The stripping thickness varies from 0.3 m to 48.0 m, 26.7 m on the average.

The deposit has been mined since 1960 with recent annual output of 400 thousand tons. The remainder of reserves estimated by January 1, 1991 makes 53.9 million tons, including 10 million tons of palygorskite and bentonite-palygorskite **clays**.

Bentonite clays of the second layer are commercially minable. Packaged natural clay and bentonite powder are delivered to 200 Ukrainian and foreign engineering industry plants, oil and gas producing companies and geological enterprises.

Annual output of the 3rd layer palygorskite may well reach 45-50 thousand tons. Eventually, there have been mined and sold only about **10—15** thousand tons annually. This clay is used in production of salt-resistant drilling muds retaining their properties of a finely divided colloid even with electrolytes.

Clays of the 4th layer have not been mined. Mineral composition of clays from the 3rd and 4th layers as well as engineering tests show that these clays may be widely used in petroleum chemistry.

They may be used:

- a) in purification of oil, wine and juice;
- b) as filling agents in pharmacology and perfumery;
- c) for making granular fertilizers and stabilization of liquid ones;
- d) for producing polymers, adhesives, paints and fire-extinguishing mixtures.

Depending on market requirements palygorskite, biminer**al** (palygorskite—montmorillonite) clay and bentonite may well be commercially minable. The reserves of bentonite may be extended if needed.

Deserve attention tests with clays from all the three layers mixed with other Ukrainian natural adsorbents (zeolite, **glauco**-nite, diatomite, saponite clay).

The deposit extends over farm **lands**. The local administration gives permit for the deposit exploitation provided the return of recultivated land surface is guaranteed.

Hydrogeology of the deposit is simple. Rock water yield does not exceed $25 \text{ m}^3/\text{h}$.

High-quality economic minerals, simple geological and mining conditions of the pit, its favourable location, and **well**-founded ground to extend output guarantee success and business competitiveness of the joint venture.