



SONEK

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OUR COMPANY

SONEK Ltd. is a company whose goal is to organize the mining of secondary kaolin in the Balashivske deposit and to organise sales of high-quality products.

The company is developing one of Ukraine's most promising kaolin deposits. The entire work cycle is carried out using the Company's own equipment and specialists.

The products are mined using the open-pit mining technique. Transportation of products is carried out by road to the storage facility adjacent to the railway line with subsequent shipment to consumers.

Based on the results of works completed by SONEK Ltd, the reserves – secondary kaolins and co-occurring sandy-and-clay rocks and mortar sands – have been approved by the State Reserves Committee of Ukraine (Protocol No.1757 of 29 May 2009).

Special permit for the use of mineral resources No.5260 was issued on 27 December 2010 for a period of 20 years.

Non-Radioactivity Certificate of 26 May 2014. Raw Materials Radiation Quality Certificate No.158 of 26 May 2014. Permit for the supply of raw materials to end-users dated 26.05.2014.



The company operates on the basis of the following permits:

- Special permission for the use of subsoil No. 5260 dated 12.27.2010 is valid until 12.27.2030
- Special permit for the use of subsoil No. 449 dated 20.11.2023 for geological study, including research and industrial development of mineral deposits of national importance is valid until 20.11.2028
- Act on the granting of a mining right-of-way dated February 11, 2011 #1785 is valid until December 27, 2030 - the area of the mining right-of-way projection is 78.3 hectares
- Agreement on the conditions of subsoil use for the purpose of extracting minerals from 10.30.2015.
- Adjustment of the working project for the development of the western deposit of the Balashiv deposit of secondary kaolins, sand and sandy-clay rocks of the Kropyvnytskyi district of the Kirovohrad region - 2021
- Land plot lease agreement, cadastral number 3522585800:02:000:8006, area 8 hectares, valid 12/27/2030
- Land lease agreement, cadastral number 3522585800:02:000:8108, area 10.1339 hectares, valid 12.27.2030
- Land lease agreement, cadastral number 3522585800:02:000:9139, area 11,314 hectares, valid 12/27/2030
- The plan for mining operations has been approved for 2024 "SONEK" LLC is included in the state register of objects that have or can have a harmful effect on human health and the state of the atmospheric air, types and volumes of pollutants emitted into the atmospheric air Permit No. 3522585801-313 for emissions of pollutants into atmospheric air by stationary sources, validity period: 10.01.2018-10.01.2028
- Special water use permit No. 106/kd/49d-21, valid until September 14, 2024
- The permit for removal and transfer of soil cover (fertile soil layer) of land plot No. 0007 dated 02.22.2019 is valid until 12.27.2030
- License for the right to store fuel (exclusively for the needs of own consumption or industrial processing, validity period: 04.14.2020-04.14.2025.
- Permits for high-risk works No. 036.21.35 dated 05/24/2021 and No. 037.21.35 dated 05/24/2021 are valid until 05/24/2026

THE DEPOSIT



Balashivske Deposit of secondary kaolin is located on the right bank of the Dnieper Plateau. Is represented by two separate blocks – Western and Eastern. The latter consists of two sections (North and South).

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Western deposit:

Secondary kaolin - 5658 thousand tons.

Sandy-clay rock - 3221 thousand m³

Sand - 5287 thousand m³

Eastern deposit:

Secondary kaolin - 3251 thousand tons.

Sand - 4599 thousand m³

The Deposit is located in Kropyvnytskyi District of Kirovohrad Region, 3 kilometres northwest of the city of Kropyvnytskyi (former Kirovohrad). Paved road leading to the city passes between the northwest and southeast sections of the Deposit. The total area of the Deposit is 1.2 square kilometres. The seaport is located in Mykolaiv, 195 km from the deposit. The nearest railway station Lelekivka is 3 km away.

The operations area is essentially a hilly plateau intersected by ravines and gullies.

Absolute heights range from 140 to 190 m.

The climate of the deposit area is moderately continental, with dry hot summers and dry winters. The average annual precipitation varies from 450 to 520 mm. The deposit zone is not earthquake endangered.



GEOLOGICAL STRUCTURE OF THE DEPOSIT

The geological structure of the deposit is dominated by Precambrian crystalline base rocks and loose sedimentary rocks of the platform cover. The crystalline base rocks are represented by granites and migmatites of various structures of the Kirovohrad-Zhitomir complex. The platform mantle rocks are represented by the Paleogene, Neogene, and Quaternary systems.

The productive stratum is associated with to the Buchak Stage sediments of the Paleogene. At Balashivske and other deposits of refractory raw materials located within the Shestakovka depression, the secondary kaolins are associated with its main part and adjacent slopes, forming a block divided by crystalline basement high into two (northwest and southeast) sections within the Balashivske Deposit.

The southeast section is a continuous, almost horizontal layer of secondary kaolins stretching from north to south. Its length is 1.1 km, with a width varying between 300 and 700 m.

The stratum has wavy contours; its thickness varies from 1 to 19.5 m, with the average of 11.5 m. In the central part of the section, the secondary kaolins form a single stratum with thin occasional lenticular sands.

The northwest section is isometric. Its length is 0.8 km with a maximum width of 0.6 km. Minerals, which are represented by grey kaolins, make a flat-lying formation. Their thickness varies from 1 to 15.9 m, with an average of 7.5 m. Overburden rocks are represented by Neogene sand-and-clay formations, red-brown clays, sands and Quaternary loams.



QUALITATY OF MINERALS

The productive stratum of the Balashivske Deposit is made up by secondary kaolins. 330 samples of secondary kaolins were taken from the Deposit and analysed; based on the study of analyses results, the qualitative characterisation of raw materials and estimation of reserves have been performed.

Secondary kaolins are rocks of light grey, grey, dark grey, very rarely brownish or reddish colour, sometimes with glass sand particles or small carbon-bearing inclusions. The most common secondary kaolins in the deposit – light-grey and grey – are free from quartz and iron-rich admixtures.

The main source mineral of secondary kaolin is kaolinite (85-95%).

The following clay minerals are identified as admixtures:

- hydrated micas: up to 5-10%,
- Halloysite: up to 5%,
- Gibbsite: up to 10%.

Other admixtures include: quartz - 5-25%, feldspar - 2-5%, muscovite, nitrites, marcasite, iron hydroxides, as well as organic admixture.

By their average elemental composition indicators, the secondary kaolins of the Balashivske Deposit are close to pure kaolinite, which fact increases their commercial value.

Since the secondary kaolins have a fairly uniform chemical and mineral composition, and are made up essentially of kaolinite, their refractory properties are very good.



Physicochemical properties of secondary kaolins

Type	KB-0	KB-1	KB-2	KB-3
Mass fraction of Al_2O_3 on a dry-matter basis, min. (%)	44	42	39	36
Fe_2O_3 content, max. (%)	1.2	1.3	1.8	1.8
Loss on ignition, max. (%)	16	16	-	-
Refractoriness value, min. ($^{\circ}\text{C}$)	1770	1750	1730	1710
Moisture content, max. (%)	24	24	24	24
#0.063 Mesh Residue, max. (%)	0.9	5	9	13
Silica Si_2O content (%)		40.2 to 72.2		
Titanium dioxide Ti_2O content (%)		0.8 to 1.3		

Physicomechanical properties of kaolin

Moulding-moisture content (%)	22 to 25
Air shrinkage (%)	3.0 to 5.0
Total shrinkage (%)	9.0 to 19.0
Water absorbability (%)	3.0 to 18.0
Bulk density (g/cm ³)	1.3 to 2.4



Our Products

Commodity production of the Balashivske deposit is kaolin that meets the requirements of TU 322-7-00190503-127-97.

The high content of alumina in high grades is more than 44%, the insignificant amount of harmful impurities makes it possible to use them as high-quality raw materials in the refractory industry, as well as in many other directions, including for porcelain and earthenware and sanitary production.

Thus, the secondary kaolin of the Balashivske deposit may be suitable for production:

- fireclay articles;
- electrotechnical porcelain;
- products of sanitary semi-porcelain and faience;
- ceramic tiles for interior wall lining;
- ceramic tiles for floors, facade glazed and unglazed.
- sewer pipes;
- products of chemically resistant (brick, tile, etc.);
- kaolin marks KB-2 and KB-3 are used for the production of cement.



2. **Concomitant deposits of minerals** that correspond to DSTU B V.2.7-32-95 "Dense natural sand for building materials, products, structures and works":

2.1 **sandy-clay rocks**, which are used for laying the produced space of underground workings.

2.2 white, yellow, green, gray sand.

Sands are also divided by grain size module:

fine, medium, coarse.

Sands are used:

- in the construction of highways and railways;
- in the production of silicate building materials;
- in the manufacture of coarse ceramic products;
- in the production of cement;
- in foundry production;
- for brick and concrete production; - for cement screed and masonry;
- as a filler for dyes and grouts;
- when installing drainage.



Production and Quality Policy



The annual design capacity of the quarry is 300 000 tons of kaolin. Two separate storage facilities for the shipping of mortar sand have been constructed on the quarry. The railroad storage facility for the shipping of kaolin is located 5 km from the deposit.

In order to supply electric power to the quarry, the 10 kV power line with a total length of 4 km from the Nova substation was installed.

High-performance HITACHI ZAXIS-330 LC-3 and ZAXIS-450-3 Japanese excavators are used for the loading of overburden rocks into dump trucks in the quarry. These excavators are capable of loading more than 6 thousand cubic meters of overburden rocks per shift.

For the transportation of overburden rocks to the dumping sites, the following dump trucks of domestic and foreign manufacture are used in the quarry:

- KrAZ dumper trucks
- FOTON
- FAW
- SuperMAZ

The quality control of mined products is performed on a constant basis using our own high-performance laboratory. In addition, we consult and exchange experience with the well-known international manufacturers in the industry with the purpose of finding new uses for kaolin.

The basic principle of our Company's activity is to ensure that the quality of our products meets our customers' requirements.



Contacts



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