



CRM of Ukraine Database Supplements

Mineral target:	Lemnenske deposit
Commodity:	Titanium ores

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Location: Zhytomyr region, Korostenskiy and Zhytomyrskiy districts, 10 km south of the Nova Borova railway station, 2 km southeast of the Lisovshchyna village.

Research: Geological exploration work on the deposit was carried out in 1953-1958. As a result of the work carried out, the sand reserves were approved by the decision of the State Committee of the USSR (protocol dated August 8, 1959 No. 2757).

Geological characteristics: Lemnenske deposit belongs to the Irshanska group of placer deposits.

In terms of geomorphology, the deposit belongs to the mid-Cretaceous paleo-network, which is partially connected with the modern course of the Lemna River - the left tributary of the Irsha River.

The field has several sections, of which the second (II) and third (III) sections represent the greatest industrial value. Placer III is confined to the "central" descended valley, and placer II to the right lateral inflow.

Deposits of the Irshanska group are mainly ilmenite monomineral, less bimineral (ilmenite-apatite). Industrial concentrations contain ilmenite and its weathering products - leucoxenized ilmenite.

In terms of geological structure, lithological and mineral composition, the Lemnenske deposit does not differ significantly from the Mezhyrichne deposit.

The rocks of the lower structural floor are involved in the geological structure of the deposit area - the main rocks of the gabbro-anorthosite formation, the weathered crust of the Meso-Cenozoic age and the formation of the upper structural floor - sedimentary deposits of the Meso-Cenozoic age.

In terms of age, the alluvial formations of the Irshanskiy Ore District are lower, middle, upper Pleistocene and modern (Holocene) deposits.

The geological structure of the deposit includes continental and marine sediments of different ages, which lie on the kaolin crust of the weathering of the main rocks, and in the cities of its erosion - directly on the bedrock. Alluvial-deluvial deposits of the Upper Jurassic and Lower Cretaceous form industrial ilmenite placers and are confined to valley-like dips in the relief of the crystalline basement.

The productive deposits of the Lemnenske deposit are represented by weathering crust and alluvial formations with a total thickness of 5–10 m, extending in a strip 10 km long and 2.5 km wide.

Mineralogical composition of ore sands: the main minerals are quartz (45-62%), clay-hydromica formations and feldspars, which are present in a small amount from signs to the first percent.

The main ore mineral containing titanium is ilmenite, the content of which varies widely, and according to technological tests, it ranges from 4.69 to 8.96%. The granulometric content of ilmenite is characterized by the predominant fraction 1-0.25 mm (70%). The hardness of ilmenite is 5-6, the specific gravity is 4.7 to 4.14.

The content of ilmenite in weathered crust reaches 26.9–41.0 kg/m³, in alluvial sands – 35–105 kg/m³.

The productive rocks are underlain by the weathering crust, which is represented by primary kaolins and chert. Their thickness rarely exceeds 6-10 m with an equal ratio of kaolins and gruss.

Overburden is mainly represented by Upper Cretaceous marine sands, Paleogene-Neogene alluvial sands, and Quaternary sands and sandstones. The thickness of overburden varies from 3.0 m to 27.0 m, in some areas from 5 to 20 m.

The final product of the primary enrichment of ore sands of the deposit is crude ilmenite concentrate. It contains at least 50% ilmenite, 35 to 45% quartz, and 2 to 10% kaolinized feldspar.

There are no toxic substances in the rocks.

Hydrogeological conditions are characterized by the presence of the following aquifers: in Quaternary alluvial and upper glacial deposits; in Tertiary deposits; in Upper Jurassic and Lower Cretaceous deposits; in the flooded zone of the crystalline foundation.

The industrial ilmenite deposit is located below the groundwater level. Submarine hydroglacial sands and even-grained gravel sands of the Upper Jurassic - Lower Cretaceous are the most saturated with water.

Information about mineral resources and reserves is confidential.