



CRM of Ukraine Database Supplements

Mineral target:	Trostryanetske deposit
Commodity:	Titanium, vanadium, scandium

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Location: Khoroshiv district, Zhytomyr region, between the villages of Emilivka, Novi Saly, and Dobryn.

Research: the deposit was discovered during prospecting and evaluation works in 1987-1991. In 1992-1998, preliminary exploration of the Trostyanetske deposit was carried out by the Zhytomyrska GRE of the "Pivnichgeologiya" PDRSP in accordance with the technical task of the Irshanskiy GZK, and in 1998-2005, the "Pivnichgeologiya" PDGRP conducted a detailed exploration. According to the results of the works of the "Pivnichgeologiya" PDGRP technical and economic justifications of permanent conditions for the calculation of reserves of the Trostyanetske deposit were prepared, which were approved by the DKZ of Ukraine (protocol dated 04/03/2008, No. 1478). According to the results of geological prospecting and approved permanent conditions, a calculation of placer ilmenite ore reserves was made.

Area: up to 6.1 km².

Geological characteristics. From a geological and structural point of view, the Trostyanetske deposit is confined to the central part of the Volodarsk-Volynskiy massif of the mafic rocks of the Korostenskiy pluton. The main rocks of the Lower Proterozoic and the products of their physical and chemical weathering, sedimentary rocks of the Meso-Cenozoic age take part in the geological structure. Rocks of the mafic composition of the Korostenskiy pluton are the main source of erosion (accumulation) of ilmenite for residual (eluvial) and alluvial placer deposits of Volyn. The ore body of the Trostyanetske deposit fills the valley-like depression of the basement (south-eastern side), within which the Mezhirichne deposit (in the west) and the Selyshchanskiy placer (in the north) have been explored. There are ore-bearing rocks in the deposit alluvial sands of the Mesozoic-Cenozoic, which make up the upper layer and eluvial weathering crusts of the main rocks (gabbroids). The composition of the ore-bearing sequence: alluvial sands of the Middle-Lower Cretaceous, Paleogene-Neogene and Lower Quaternary - 25%, secondary kaolins - 25%, primary kaolins (weathering crust - eluvium) - 45%, shale - 5%. The total average thickness of the ore deposit (alluvium and weathering crust) is 7.3 m, the average content of ilmenite in alluvial ores is 142 kg/m³, in the weathering crust - 76.7 kg/m³, in the total layer - 113.5 kg/m³. The thickness of the productive bodies varies from 2.0-4.0 m on the sides to 20 m - in the central part, in the depressions of the basement. The distribution of the main ore mineral ilmenite is uneven, jump-like, especially in the sedimentary pile. A characteristic feature of the ore deposit is a natural decrease in the content of ore components from top to bottom along the column from balance to off-balance ores, as well as the presence of higher concentrations of ilmenite towards the central part of the valley. The content of ilmenite in the alluvial part of the placer varies from 71.4 kg/m³ to 194 kg/m³, the average is 130 kg/m³. High concentrations of ilmenite are characteristic of secondary kaolins (100-200 kg/m³), in sands they are slightly lower; the average size of ilmenite grains is 0.44 mm. In addition to ilmenite, the following are present (kg/m³): zircon - 0.44, rutile - up to 0.09, apatite - 0.2, magnetite - up to 0.03. The content of ilmenite in the weathering crust varies from the first kilograms to 100-200 kg/m³. Ilmenite is slightly altered, the average content of TiO₂ in ilmenite is 51.88%, the average grain size of ilmenite is 0.53 mm. In addition to ilmenite, leucosene, apatite, zircon, pyrite, siderite, and limonite were found. Increased siderite contents (70-206 kg/m³) were noted in the weathering crust. The Trostyanetske deposit is characterized by uneven quantitative and qualitative parameters of the deposits, uneven often nested distribution of the useful component, the absence of clear boundaries between the body of the useful mineral and the host rocks, as well as the presence of a large number of weakly mineralized samples of rocks. Overburden rocks are represented by lower-mid-Quaternary alluvial-deluvial sands, loams, sandy loams, with a thickness of 4.90 to 15.2 m (average - 8.3 m). According to the results of technological studies, it was established that two technological types of ores are distinguished at the Trostyanetske deposit: ilmenite ores with siderite content, which affects

the beneficiation scheme, and with a high ilmenite content in the +1.25 mm class, and ilmenite ores with siderite content, which does not affect the scheme of beneficiation and low content of ilmenite in the class +1.25 mm (alluvial ores). The developed technological beneficiation scheme is similar to the schemes at the active beneficiation factories of Irshanskiy GZK, but needs to be included in the beneficiation technological scheme of the process of electrostatic separation to purify the ilmenite concentrate from a significant amount of siderite. According to the recommended scheme, the extraction of ilmenite in the concentrate reaches 83.2%, the content of harmful impurities is P_2O_5 - 0.053-0.272% (allowable 0.25%); Cr_2O_3 – from 0 to 0.05% (tolerance 0.1%). Ilmenite in the concentrate is slightly altered (the average content of TiO_2 is 53.49%) and is suitable for processing into titanium dioxide by the sulfuric acid method.

The total specific radioactivity of ore ilmenite sands of the Trostyanetske deposit varies from 45 to 174 Bq/kg, in ilmenite concentrates of the Trostyanetske deposit - 185 Bq/kg, which does not exceed the limit of the first class and makes it possible to use mineral raw materials without restrictions.

The Trostyanetske deposit is classified as a deposit of a complex geological structure with an uneven distribution of useful components (group 2) in accordance with the Classification of Mineral Reserves and Resources of the State Subsoil Fund and is recognized as prepared for industrial development.

Information about mineral resources and reserves is confidential.