

AUCTION 26.05.23

Kuybyshevskoye deposits in Turkestan region

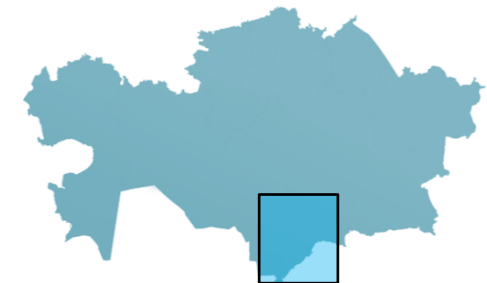


Location: Kuibyshevskoye quartzite deposit is located in the Tulkubas district of South Kazakhstan region, 7 km northeast of the village Turar Ryskulov.

Brief geological description: The deposit is confined to the siliceous bundle of the Kokbulak formation, one of the layers of which, at a thickness of 35-45 m, can be traced to 840 m, the fall of the layer to the north at angles of 38-45°. The useful thickness has been explored to a depth of 40-50 m. The chemical composition of quartzites is aged, average contents (%): SiO₂ – 86.98; Fe₂O₃ – 4.21; Al₂O₃ – 4.21; TiO₂ – 0.92; CaO – 0.17; MgO – 0.42. The bulk mass of quartzites is 2.3 t/m³, the loosening coefficient is 1.5. The volume mass of limestones was 2.65 t/m³, the loosening coefficient was 1.5. In the laboratory of silicon and powder materials at the South Kazakhstan University, the "Technological regulations for the production of crystal and glass" were developed by order of Glass K LLP. Experimental melting of glassmaking in an inductive furnace with a graphite crucible was carried out from the quartzites of the Kuibyshevskoye deposit and raw materials suitable for the production of brand glasses were obtained C-070-2, Б-100-1, Б-100-2, ПБ-150-1, ПБ-150-2 и ПС-250.

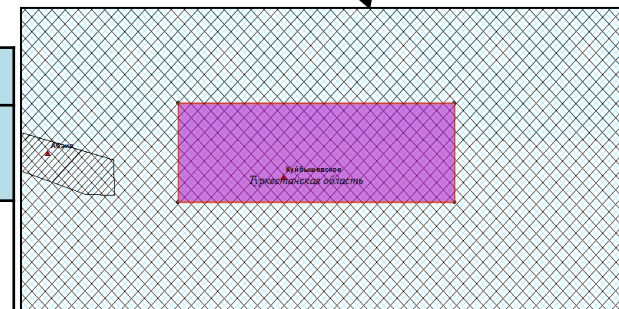
Quartzites contain silica in an amount of at least 80-85%, enrichment is carried out by hydrometallurgical leaching of impurities to a silica concentration of 99.5-99.9%.

The process of thermal reduction of silicon is carried out in an electric arc furnace, while the following charge composition is consumed for 1 ton of Kr3 grade silicon: quartzite (concentrate) - 2580 kg, charcoal – 370 kg, low-ash coal - 560 kg, petrocox - 370 kg, wood chips (birch) – 1320 kg. The specific power consumption is 13 MWh/ton of silicon. Mining and geological conditions and mining technical features of the field development are favorable for open-pit mining. The explored depth of the useful thickness in the inventory counting circuit reaches 50 m. There are no layers of empty rocks inside the useful thickness, there is no overburden.



Kuybyshevskoye

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Landmine	Balance reserves
Kuibyshevskoye	A+B+C1 – 476,0 thousand.t.

Narkyzyl deposits in Dzhambyl region

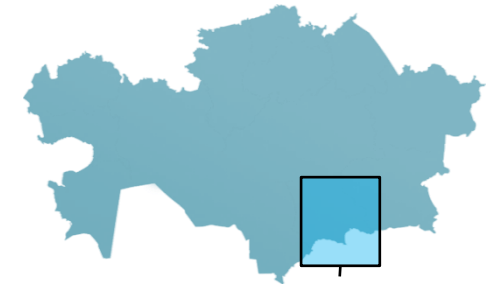


Location: Narkyzyl is located in Krasnogor district, Dzhambyl region.

Brief geological description: The deposit is confined to the Zhaysan syncline. It was discovered in 1987 by V.E. Sinitsyn and R.M. Gutermacher. Disjunctive disturbances are north-western; the largest fault is the North-Kendyktas. Barite mineralization is confined to the carbonaceous-siliceous-carbonate layered formation of the Khasan formation of the Lower Cambrian, rhythmically overlapping flyschoid sediments. The thickness of the layers is from centimeters to the first meters. Barite mineralization is contained in three ore zones located at different local stratolevels and traced for 20 km in length and 5 km in width. The main component of the ore is barium, presented in the form of sulfate, the next most common are carbonates (calcite and dolomite), quartz.

Chemical composition of barite ores, %: SiO_2 – 2,0-12,0 (1,6); Fe_2O_3 – 0,3-0,8(0,5); CaO – 8-29,0(17,0); Al_2O_3 – 0.1-0,9; TiO_2 – 0,0255-0,08; $\text{Na}_2\text{O} + \text{K}_2\text{O}$ – 0,06-0,13; п.п.п. – 0,1-0,2 (0,15). Impurity elements in barites, %: Cu, Pb, Zn – 0.0007-0,1; S – 9,8-13, Mn, Cr, V, Ni – 0,01-0,0003; Mo, Zr – 0,003-0,0005.

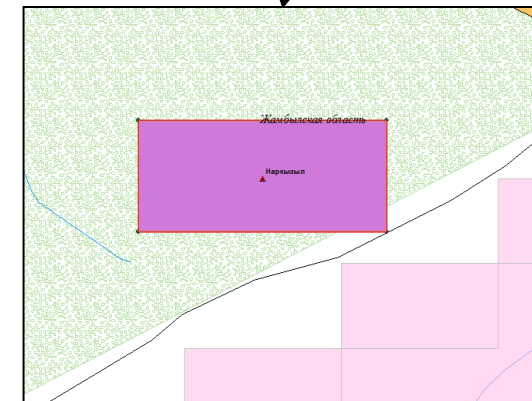
Average barite content 68.83 %, in industrial ores – 69,4 %.



Narkyzyl

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022			
Landmine (field)	Balance reserves, thousand tons		Off-balance reserves, thousand t
Narkyzyl	A+B+C1 – 18,19	C2 – 32,5	



Priozernoye deposits, Kariernyi district in Kostanay region



Location: The site of the deposit is located in the Auleskolsky district of Kostanay region, 140 km south-east of Kostanay.

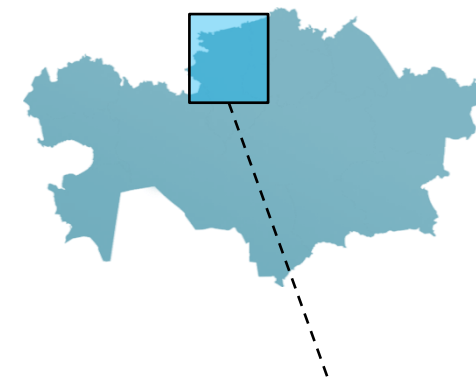
Brief geological description: Terrigenous deposits of the Lower Jurassic age, represented by conglomerates, gravelites, sandstones, siltstones, interlayers and layers of brown coal, take part in the geological structure of the deposit. They form a gentle (angles of incidence 5-10%) brachysyncline complicated by a series of tectonic disturbances of the discharge type.

The coals of the deposit are mainly humus, low-sulfur (1.3%) grade 2B. Their ash content is 2%, volatile yield is 49%, the highest calorific value is 6.6 tons kcal/kg, the lowest is 2.9 thousand kcal/kg of working fuel. They can be used as energy and household fuel.

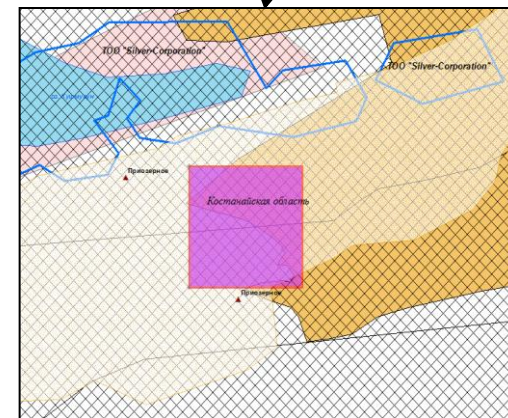
Mining and geological conditions are favorable for open-pit mining of the western part of the deposit. Coal seams are distributed unevenly in the section of the formation. In its lower part there are five coal seams, in which 95% of the reserves of the deposit are concentrated.

The strata have, in general, a simple structure, their average thickness ranges from several meters (Intermediate strata No. 1, 2, 3) to 18-22 m (V.M and N.M strata). the latter are the main working layers in which 48% and 40% of the field's reserves are concentrated, respectively.

The length of the deposit is 12 km, the width is up to 3.5 km. The relief is very difficult, since the deposit occupies the eastern edge of Lake Kushmurun (a strip 500-800 m wide), the steep slope of its indigenous shore with a height of 78.5 m and a small section of the watershed plateau adjacent to it. The deposit was studied at the stage of detailed exploration in 1950-1953 .



Priozernoye, Kariernyi district the territory for the extraction of solid minerals for obtaining the right of subsurface use , which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Landmine

Balance reserves

Priozernoye

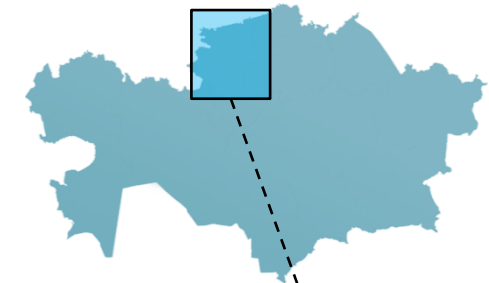
A+B+C1 – 341922 thousand.t.

Zhanyspay deposits in Kostanay region

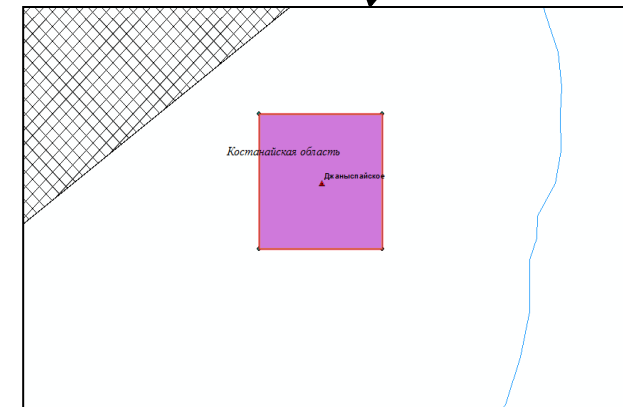


Location: Kostanay region.

Brief geological description : The Janispay deposit is confined to the depression of the same name of the north-eastern strike with a length of 80 km and a width of 25 km. The depression was identified by the Turgai geophysical expedition in 1947-1948, located in the Oktyabrsky district of Kostanay region. The central part of it is crossed by the Akmola-Magnitogorsk railway line. The Kushmurun and Duzbai formations are coal-bearing. In the context of the first, nine coal seams were identified, of which two layers are of major industrial importance: Powerful 1 (0.7-29 m) and Powerful 2 (0.7-15). The structure of the layers is simple. In the direction of the board, the depressions split and wedge out. In the Duzbai formation, 26 layers of coal from 0.5 to 7 m were found, lying at depths from 110 to 570 m. The distance between the layers does not exceed 10-15m. Brown, humus, fusenized coals, ash content 18%, working humidity 32%. Low-sulfur coals (0.7%). The heat of combustion of the combustible mass is 6.5 thousand kcal/kg. The total reserves of the field are estimated at 28.5 billion tons, including 16.5 billion tons up to a depth of 300 m.



Zhanyspay the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

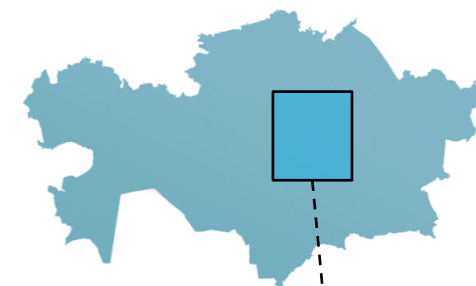
Useful component	Balance reserves	
coal	A+B+C1 – 353739,0 thousand.t.	C2 – 395728, 0 thousand t

Kenespay deposits in Karaganda region



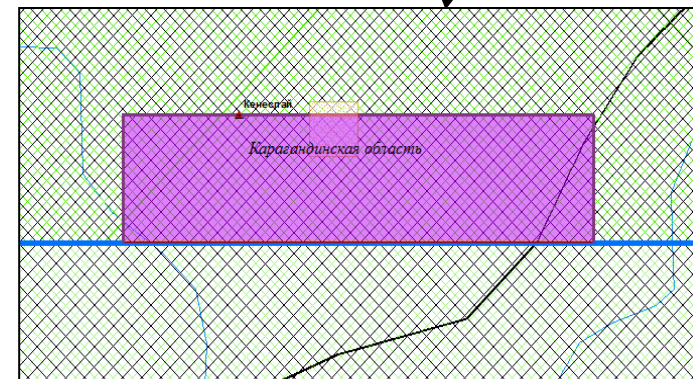
Location: is located 80 km southwest of the city of Karaganda.

Brief geological description: The Tekturma ridge is a chain of low mountains or grids stretched in the latitudinal direction south of Karaganda for 300 km, from the Aktau mountains in the west almost to the city of Karkalinsk in the east. Ultrabasic and basic rocks of the Tekturmas complex are mainly represented by merpentinites, among which small bodies of gabbro and gabbro-diabases are developed. Massifs of ultrabasic Kenespai rocks are located in the central part of the serpentine belt. The rocks of the Paleozoic basement, the products of their weathering and loose Cenozoic sediments lying on them take part in the geological structure of the area. Mineralization is confined to the Mesozoic weathering crust, which underwent chemical transformation at the beginning, and subsequently erosion. Erosive remnants of the transformed weathering crust have been preserved, mainly along the coils and, less often, along the gabbro. The weathering crust covering the serpentine massifs is similar to the Khalilov type of weathering crust of the southern Urals in zoning – a sequential alternation of lithological varieties of weathering products.



Kenespay the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022		
Useful component	Balance reserves	
gold	A+B+C1 – 145,3 kg	C2-133,3 kg



Bogembay deposits in Aqmola region

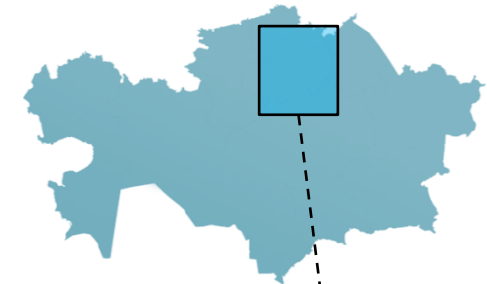


Location: The Bogembay deposit is located in the Alekseevsky district of Akmola region, 150 km northeast of Astana.

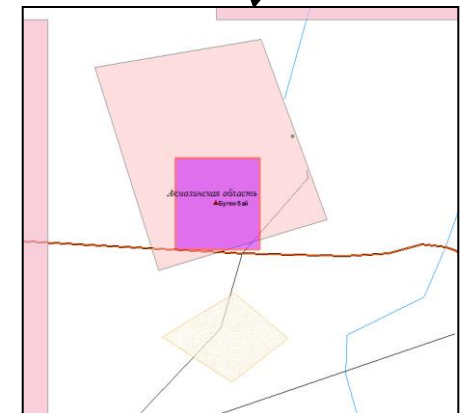
In orographic terms, the deposit area is a hilly plain with absolute elevations of 300-400m, dissected by the valley of the Aksu River.

Brief geological description : The geological structure of the deposit involves terigenno-sedimentary deposits of lower carbon age (gray-colored sandstones, siltstones, mudstones, coal beds), composing a relatively small, synclinal structure (4x11km), divided by tectonic disturbance into two mulds (Northern and Southern) (Fig. 12.1).

According to their position in the section, lithological composition, fauna, and the nature of coal bearing, these deposits, by analogy with the Karaganda basin, are divided into three formations. Industrial coal bearing is associated with the Karaganda suite, at the base of the section of which one complex coal seam with a capacity of 1-5m is installed. The formation consists of two interlayers, of which the lower one is of practical importance, with a capacity of 2.5 m. The thickness of the upper layer sometimes increases from 0.6 m to 2m, but usually it is wedged or replaced by carbonaceous mudstones. The maximum depth of the coal seam is 400m. Coal deposits are stone, humus, high-ash and very difficult to enrich. The ash content of the coal mass is 35-45%, the sulfur content is 1.0–1.5%, phosphorus is 0.01–0.02%, the heat of combustion per combustible mass is 8000-8500 kcal/kg, the lowest working fuel is 4500-5500 kcal/ kg, the volatile yield is 20-22%. The coals are slightly sintered, the thickness of the plastic layer is 8-12 mm. They belong to the OS brand and are suitable only as an energy fuel.



Bogembay the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022			
Landmine(field)	Balance reserves, thousand tons		Off-balance reserves, thousand tons
Bogembay	A+B+C1 – 161883,4	C2-94703,6	

Zhedeusu deposits in Eastern-Kazakhstan Region

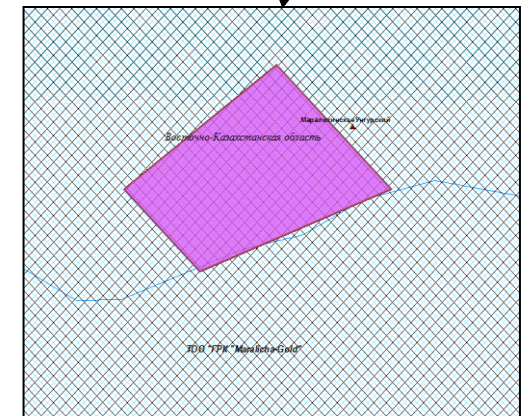


Location: It is located in the East Kazakhstan region, 60 km northeast of the village. Kurchum.

Brief geological description: The area of the Zhedeusu deposit is located in the southeastern closure of the Irtysh structural-metallogenic zone, where the Kurchum-Kaldzhirsky ridge-anticlinorium stands out. The main role in the placement of the gold mineralization of the area belongs to the processes of magmatism, the manifestations of which are associated with the zones of deep and feathering faults. The Maralikha gold ore node is one of the main sources of formation of valley placers of the Kurchum, Maralikha rivers, as well as numerous spoon placers. Sedimentary and metamorphic deposits of the Paleozoic, intrusive rocks of Permian and Carboniferous ages, sedimentary deposits of the Cenozoic take part in the geological structure of the area. The Gedeusu deposit covers the valley of the Kurchum River for 10 km . The valley of the Kurchum River in this segment is developed in Paleozoic rocks, represented by quartz-chlorite-sericite shales on sandstones, siltstone-sandstones. The smooth pattern of the valley is controlled by discontinuous tectonics. The productive horizon is localized in the lower part of the section of boulder-pebble deposits and in the weathered part of the raft. The content of clay material in the productive horizon is 3-5%. The placer in the plan has a ribbon-like (in the lower part of the plot) and a trickle (in the upper part) building. The width of the industrial contour varies from 20 to 120 m. The average gold content in the industrial formation ranges from 0 to 3731 mg/m³, averaging 731 mg/m³ (in the lower section) and 495 mg/m³ (in the upper section). In general, according to the placer, high gold contents (more than 1 g/m³) are confined to the weathered part of the raft. According to the results of furrow testing, 30% of the metal from the productive horizon is concentrated in loose boulder-pebble deposits and 70% is concentrated in the bedrock of the raft.



Zhedeusu the territory for the extraction of solid minerals for obtaining the right of subsurface use , which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Useful component	Balance reserves
gold	A+B+C1 – 72,04 kg

Khayruzovskoye deposits (The Outlier 3, The Outlier 2, The Outlier 5)

In Eastern-Kazakhstan region



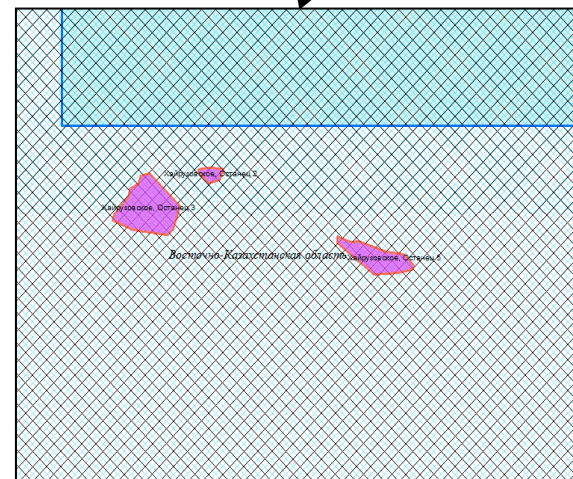
Location: located in Eastern-Kazakhstan.

Brief geological description: Khayruzovskoye wollastonite deposit. The mineral is composed of epidote-garnet- calcite-wollastonite rocks, localized in the form of outliers measuring 80-320x40-50 m in a granodiorite massif, characterized by variable quality of the mineral. Chemical composition of wollastonite in %: SiO₂ – 49,0; TiO₂ – 0,1; Al₂O₃ – 2,1; Fe₂O₃ – 1,1; CaO – 41,1; Mg, 1; K₂O – 0,3; Na₂O – 0,2; K₂O + Na₂O – 0,5.

Physical properties: bulk weight-2.89 g/cm³; water absorption-0.91%; porosity-1.14%; compressive strength-824.0 kg/cm². Mineralogical composition of wollastonite scarn: wollastonite-52%, quartz-9.2%, calcite-17.8%, garnet-3.3%, diopside-6.9%, epidote-2.5%, feldspar-4.3%, sphene-0.2%, others-1.8%. The resulting concentrate (after enrichment) meets the quality requirements of paint, porcelain, electro-ceramic, abrasive and other industries.



Khayruzovskoye (Outlier 3, Outlier 2, Outlier 5) the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Useful component	Balance reserves	
wollastonite	A+B+C1 – 983,0 thousand t.	C2-101,0 thousand t.



Kendyrlykskoye deposits, Karaungur site

In Eastern-Kazakhstan region

Location: The Kenderlykskoye deposit, Karaungur site is the largest complex uranium-coal deposit in Eastern Kazakhstan, the deposit is located in the Zaisan district of the East Kazakhstan region, 50-65 km southeast of Zaisan. The deposit has been known since the last century, has been studied fully and has been used periodically for local needs.

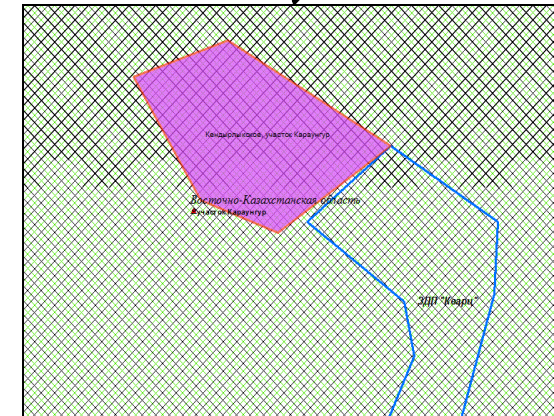
Brief geological description: The coals of the deposit are confined to the Middle Upper Carboniferous (Kendyrlyk formation), Upper Permian (Akkolkan formation) and Upper Triassic (Tologai formation) deposits. The Kendyrlyk formation contains one layer of coal, with a capacity of 2.1-2.7 m, and two layers of oil shale. Its coal bearing is established only on the south-western wing of the mulda and can be traced along the stretch for 16 km. From 28 to 51 coal seams have been identified in the Accolkan formation, of which only 10 have a working capacity of 0.6 - 1.6 to 5.1 m, a total of 19 m. All layers have a complex, unstressed structure. The deposits of the Tologai formation fill the central part of the syncline and enclose up to 48 layers of brown coal, of which 16 have a working capacity of 0.6 to 7.2 m. The total capacity of the working layers is 40 m. The coals of the first two formations are humus, stone, high-ash (from 19-30 to 45%), low-sulfur (0.4 - 0.9%), according to the degree of metamorphism they belong to gas and partially to long-flame. The heat of combustion per combustible mass is up to 7.7 thousand kcal / kg; the yield of resin on dry coal is 3.7-10%. The coals of the Tologai formation are brown, leafy matte and dense semi-shiny. Their ash content varies in the range of 10-55% (on average 34%), low-sulfur, the yield of resin with semi-coking is 6-10%. Reserves of coal up to a depth of 1800 m are estimated at 587 million tons, brown - at 1033 million tons (up to a depth of 600 m). 73 million tons of stone and 67 million tons of brown coal are suitable for underground mining. The deep horizons of the Kendyrlyk deposit are considered inactive. The coals of the deposit are important as energy fuel, and the coals of the Kendyrlyk and Tologai formations can be used as raw materials for semi-coking and gasification. Coal reserves are provided by operating enterprises for a period of more than 50 years.



Kendyrlykskoye, Karaungur site

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Extract from the state inventory accounting as of 01.01.2022			
Deposits(site)	Balance reserves		Off-balance reserves, thousand tons
Kendyrlyk(Karaungur)	A+B+C1 – 4927,3	C2-7134,4	2238,1



Kendyrlykskoye deposits, Угольное поле (2-ая угленосная свита)



в Восточно-Казахстанской области

Location: The Kendyrlykskoye coalfield deposit (2nd coal-bearing formation) is the largest complex uranium-coal deposit in Eastern Kazakhstan, located in the Zaisan district of the East Kazakhstan region, 50-65 km southeast of Zaisan. The deposit has been known since the last century, has been studied fully and has been used periodically for local needs.

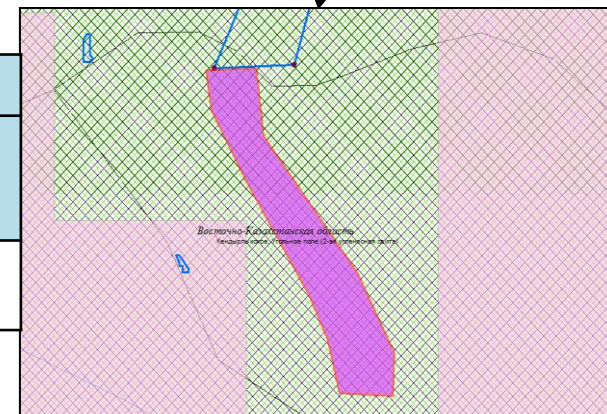
Brief geological description: The coals of the deposit are confined to the Middle Upper Carboniferous (Kendyrlyk formation), Upper Permian (Akkolkan formation) and Upper Triassic (Tologai formation) deposits. The Kendyrlyk formation contains one layer of coal, with a capacity of 2.1-2.7 m, and two layers of oil shale. Its coal bearing is established only on the south-western wing of the mulda and can be traced along the stretch for 16 km. From 28 to 51 coal seams have been identified in the Accolkan formation, of which only 10 have a working capacity of 0.6 - 1.6 to 5.1 m, a total of 19 m. All layers have a complex, unstressed structure. The deposits of the Tologai formation fill the central part of the syncline and enclose up to 48 layers of brown coal, of which 16 have a working capacity of 0.6 to 7.2 m. The total capacity of the working layers is 40 m. The coals of the first two formations are humus, stone, high-ash (from 19-30 to 45%), low-sulfur (0.4 - 0.9%), according to the degree of metamorphism they belong to gas and partially to long-flame. The heat of combustion per combustible mass is up to 7.7 thousand kcal / kg; the yield of resin on dry coal is 3.7-10%. The coals of the Tologai formation are brown, leafy matte and dense semi-shiny. Their ash content varies in the range of 10-55% (on average 34%), low-sulfur, the yield of resin with semi-coking is 6-10%. Reserves of coal up to a depth of 1800 m are estimated at 587 million tons, brown - at 1033 million tons (up to a depth of 600 m). 73 million tons of stone and 67 million tons of brown coal are suitable for underground mining. The deep horizons of the Kendyrlyk deposit are considered inactive. The coals of the deposit are important as energy fuel, and the coals of the Kendyrlyk and Tologai formations can be used as raw materials for semi-coking and gasification. Coal reserves are provided by operating enterprises for a period of more than 50 years.



Kendyrlykskoye, Coal field (2nd coal-bearing formation)

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Extract from the state inventory accounting as of 01.01.2022			
Deposits(site)	Balance reserves		Off-balance reserves, thousand tons
Kendyrlykskoye, Coal field (2nd coal-bearing formation)	A+B+C1 – 10043	C2-0	

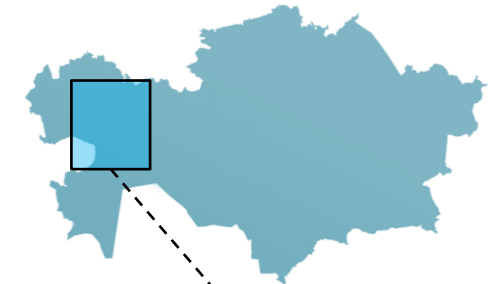


Deposits 108 in Atyrau region



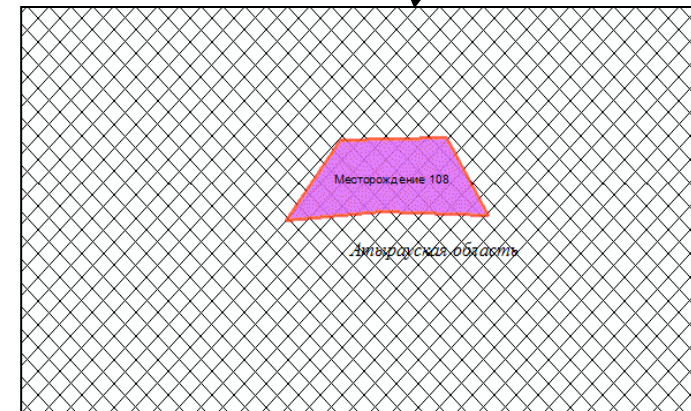
Location: The deposit is located in Atyrau region.

Brief geological description: Geologically, the deposit is one of the largest salt domes of the Caspian syncline. The core of the dome is composed of chemogenic sediments and brought to the daytime surface, where the arched part of it is crowned with eluvial formations (Khazar and Khvalyn deposits). Ore bodies, in the form of eluvial "blind" lenses of boron-bearing salts, including asharite, ulexite, hydroboracite, etc., are deposited in accordance with the gray gypsum (gypsum hat) containing them. The sizes of ore bodies are in the range of 400- 650 m in length and 75-230 m in width, the depth of occurrence is up to 40 m. Rich ore lenses (up to 15-30%) gradually turn into poor ores (9-12%) and further into boron-bearing clays.) In 1964-1991, rich ores with a B₂O₃ content of up to 15-20% were mined. When working off balance reserves of rich ore, off-balance ores were also mined along the way, which were stored in special dumps on the sides of quarries. All ore bodies were formed under identical conditions, so their composition is similar in all deposits. The mineralogical composition of ores is as follows, in %: asharite (14-18, with an average of 14), ulexite (5-8,8, cf.6), inoite (1-4, cf.2), gypsum (60-70, cf.63), anhydrite (3-7, cf.4), clay minerals (2-15, cf.4), calcium (2-7, cf.2), magnesite (1-5, cf.2), other 2. Chemical composition of borate ores in %: B₂O₃ - 7.4, CaO - 28, 80z-36, SO₃-Z, AOZ-up to 1, GeO-up to 5, SiO₂-2, GegO₂-OD, MgO-up to 6, H₂O-9%, and others - 2.4.



Deposits 108

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Extract from the state inventory accounting as of 01.01.2022

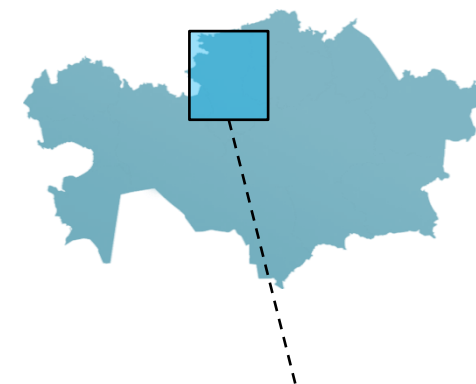
Useful component	Balance reserves
Boron	A+B+C1 – 35,3 thousand t.

Varvarinskoye deposits (Site 3) in Kostanay region



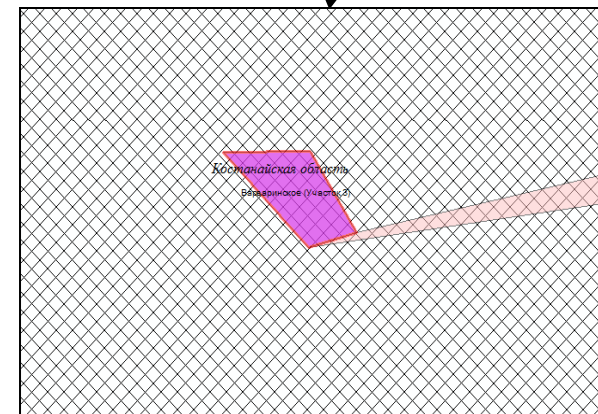
Location: The Varvarinskoye field is located in the Taranovsky district of Kostanay region, 97 km west-southwest of Kostanay.

Brief geological description: At the base of the section there are limestones of the famen of the eastern wing of the Petrovsky anticline, complicating the Denisov synclinorium. Karst craters in limestone overlain by weathering crust products are filled with bauxite, variegated, kaolinite and lignite clays of Cenomanian-Turonian. Above the section, they are replaced by quartz-hardened sandstones of the Turonian and glauconite-quartz sands of the Eocene (Fig. 20). Six ore sites have been identified, of which eight ore bodies of site 1 are of practical interest. The ore bodies are arranged in a backstage manner and are grouped into three groups: 1-4, 5 and 6-8. The largest 1 and 7 ore bodies, in which up to 65% of bauxite reserves are concentrated. All ore bodies have a lenticular shape, elongated in the north-east direction, the length along the strike is from 100 to 400 m, the thickness is 1.3-43.3 m, the depth of the subhorizontal roof is from 0.5 to 62.7 m. The chemical composition of bauxite: Al_2O_3 - 37.21%; SiO_2 - 8.4%; Fe_2O_3 - 32.96%; CaO - 0.10%; flint module - 4.4. The bauxite-bearing thickness of 80-120 m is composed of clay, stony and friable differences of bauxite, overlapping with each other and with bauxite and kaolinite clays. According to the scale of mineralization, the deposit is small.



Varvarinskoye (Site 3) the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022		
Useful component	Balance reserves	
bauxite	A+B+C1 – 2000,0 thous. t.	C2-200,0 thous. t.

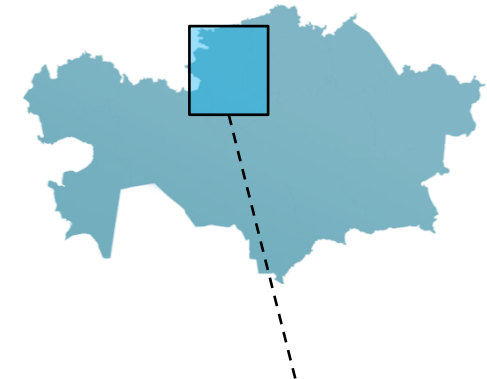


Tobolskoye deposits (II site) in Kostanay region



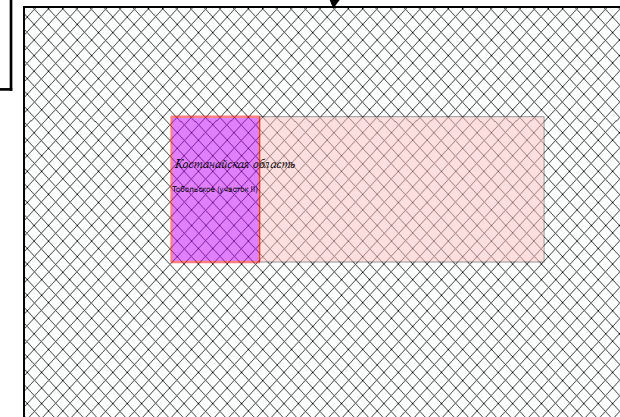
Location: The Tobolsk deposit is located 20-25 km south-east of the Denisovka railway station, Kostanay region.

Brief geological description: The deposit is represented by 16 deposits (sections): Baikonisskaya Vostochnaya, central and western, Aikon-Sorskaya and Aikon-Sorskaya severnaya, Aksakal-Kopinskaya, Kurzhun-Kopinskaya, Yuzhno-Livanovskaya, No. No. V-X. All of them are genetically related to the continental fine-grained sandy deposits of the Chilikta and Chagraya formations of the Oligocene and the products of their washing. There are three types of placers: primary sands of the upper horizons of the Chilikta formation of the Middle Oligocene, washed sands of the lower horizons of the Chagrai formation of the Upper Oligocene and re-deposited sands of the Neogene-Quaternary age. The size of the deposits ranges from 770 to 7600 m in extent, from 280 to 1500 m in width and from 0.5 to 10 m in power.



Tobolskoye (II site) the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022			
Deposits (site)	Balance reserves thous. t.		Off-balance reserves, thousand tons
Tobolskoye	A+B+C1 – 407	C2-12	118



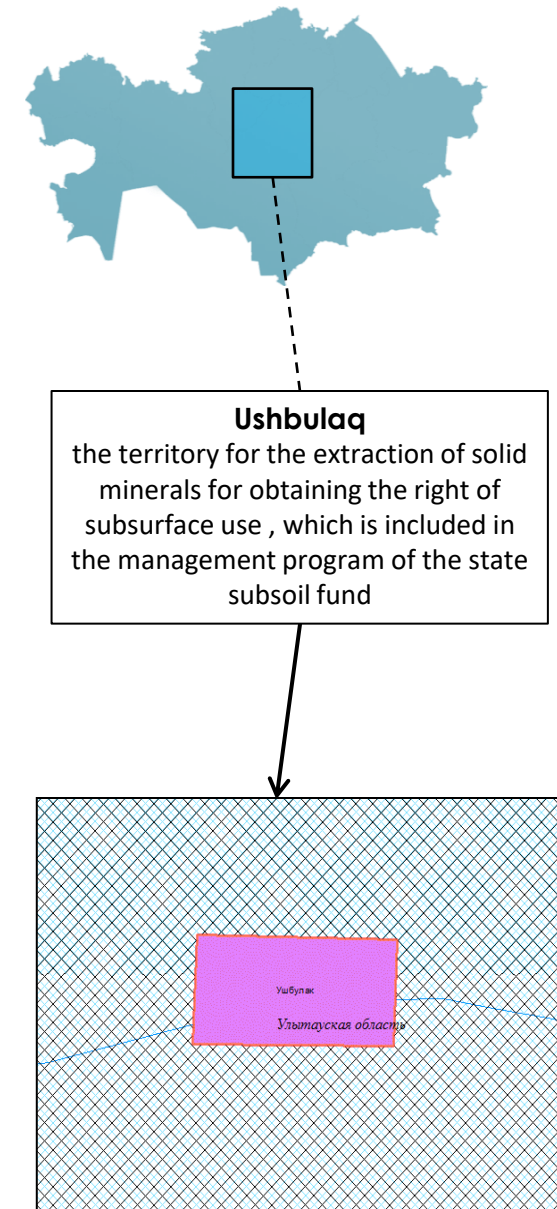
Ushbulaq deposits in Ulytau region



Location: The Geres deposit is located 25 km to the CER from the railway station Akkul, 15 km to the south from the village. Priezernoie and 17 km south of the village . Bogdanovka.

Brief geological description: They are confined to a rodusitic variegated thickness of Early Permian age within the Akmola syncline, which is a structural element of the Dzhezkazgan depression.

Rhodusite-asbestos ores of deposits are relatively simple in material and mineral composition. Among them, veined, interspersed and veined-interspersed types of ores are distinguished. The content of rhodusite-asbestos in ores ranges from 300 g/t to 2000 g/t. According to the structural and textural features and a number of physical properties within the deposits, three main varieties of rhodusite are distinguished: rhodusite-asbestos (fibrous rhodusite); loose (microfibre) rhodusite; strong (dense, "crystalline", microfibre, opalized) rhodusite. In terms of chemistry, optical, and X-ray properties, all varieties are identical. According to the chemical composition, rhodusite-asbestos of the Akmola syncline is a magnesium-ferruginous sodium hydrosilicate. Technological tests have established the conformity of the quality of rodusit-asbestos deposits Kumola and Ushbulak (after wet enrichment) TU 21-37-29-83 "Rodusit asbestos" and TU 21-22-14-75 "Asbestos blue".



Extract from the state inventory accounting as of 01.01.2022

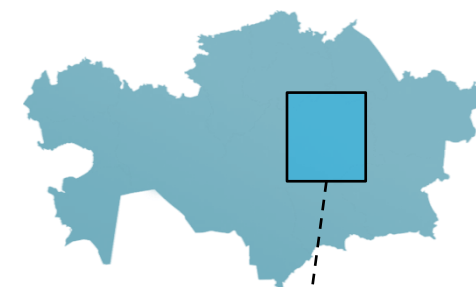
Deposits (site)	Balance reserves thous. t		Off-balance reserves, thousand tons
Ushbulaq	A+B+C1 – 6,7	C2 – 2,2	2,7

Sulushoqy deposits in Karaganda region



Location: The Sulushoqy deposit is located in the Karaganda region, 60 km northwest of the ores. Akchatau.

Brief geological description: the structure of the deposit involves tuffs and subvolcanites of liparite-dacite composition of carbon, broken through by granites of the Karatal massif, which is associated with the scarring and keratinization of the host rocks. Scarns are bustamite, garnet-bustamite, garnet and wollastonite. Gold-silver mineralization is localized in garnet-bustamite rocks of contact-infiltration type controlled by the sublatitudinal zone of crushing and brecciation of the host rocks (Fig. 33). Ores are low-sulfide (sulfides up to 1%). Ore composition: gold, pyrite, chalcopryite, silver minerals, chlorargyrite, native silver, manganese minerals, fluorite, quartz, chalcedony, garnet, malachite, iron and manganese hydroxides and other neoplasms. The high concentration of gold (more than 100 g/t) and silver (2.5 kg/t) is confined to the hypergenesis zone and is closely related to manganese minerals. In primary ores, the content of gold is 28 g/t, silver is 1700 g/t; lead (up to 1%), copper (tenths of a percent), manganese (up to 10%), rarely arsenic (0.005%) and molybdenum (0.001%) are present. The deposit is small, the oxidized ores have been worked out by the miners in a quarry.

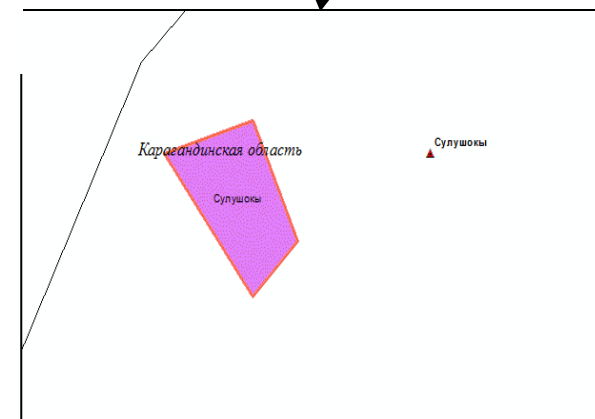


Sulushoqy

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022.

Type of mineral	Balance reserves		Off-balance reserves, thousand tons
Gold, kg	A+B+C1 – 84	C2 – 189	-
Silver, t	A+B+C1 – 5,1	C2 – 8	-

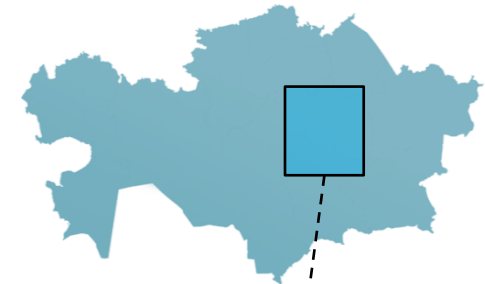


Bosaga deposits in Karaganda region



Location: Месторождение находится в Агадырском районе Карагандинской области.

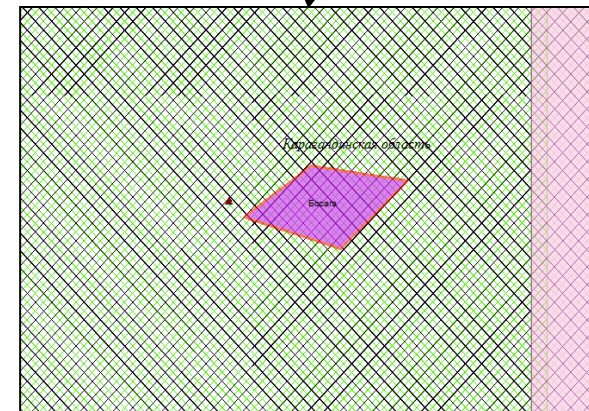
Brief geological description: It is dated to the southern wing of the Aidarly-Aktau syncline to the exocontact of the intrusion of granodiorites of the Bosaginsky massif of the Upper Ordovician age. The complication is localized in the zone of development of wollastanoite, wollastonite-garnet and garnet skarnoids. Near-ore changes-calcification, calcitization, epidotization, opalization and pyritization. The power of near-ore changes from 3 to 18 m. The ore-containing skarnoid zone completely inherits the lenticular-layered structure of the original siliceous-carbonate rocks, has sharp contacts between newly formed rock varieties. The occurrence is steep along the contact plane of the intrusion, the thickness of the zone is 120 m. Wollastonite is suitable for the manufacture of fine ceramics, as an abrasive and as a molding material. The most rational scheme for the enrichment of wollastonite ore is magnetic—electric, which allows to obtain a concentrate with a wollastonite content of 75-91%, with 69% extraction, and a garnet concentrate with a garnet content of up to 95%.



Bosaga

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022.			
Deposits(site)	Balance reserves thous. t		Off-balance reserves, thousand tons
Bosaga	A+B+C1 – 5127	C2 – 237	



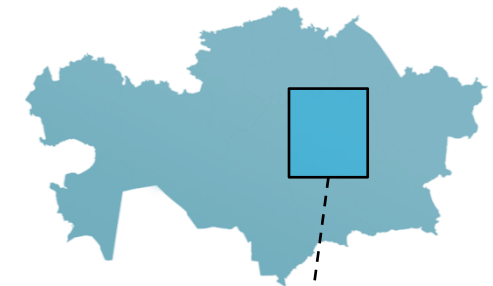
Syurpriz deposits in Karaganda region



Location: The deposit is located in the Shetsky district of the Karaganda region, 60 km east of the village of Nura-Taldy and 25 km northwest of the Alaigyr deposit.

Brief geological description: The deposit was discovered in 1981 by A. L. Burmak.

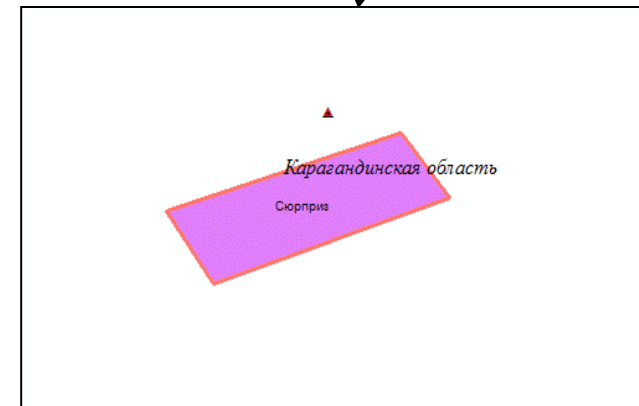
The deposit is located in the Uspenskaya crumple zone and is confined to the horizon of Lower Turneian limestones and siltstones lying in the exocontact of the Late Permian Kuttu-Adam-Irek intrusive granite massif of the Akchatau complex. Near-ore changes are expressed in intensive contact metasomatism (fig. 66). The ore-bearing stratum lies monoclinaly with a drop of 30-500 to the northwest. One formation-like deposit "Surprise" with a stretch to the northeast and east-northeast, falling 30° to the northwest, was identified. Its length is 795 m, width is 15-65 m, power is 11.5-36.5 m. The depth of the roof is from 0 to 150 m. The weathering crust is developed from the surface to a depth of 0-10 m. Mineral composition of the ore mass, %: wollastonite - 35-70; calcite -16.5, there are quartz and single grains of epidote, garnet, pyroxene.



Syurpriz

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022			
Deposits(site)	Balance reserves thous. t		Off-balance reserves, thousand tons
Syurpriz	A+B+C1 – 755,3	C2 – 2633,8	-

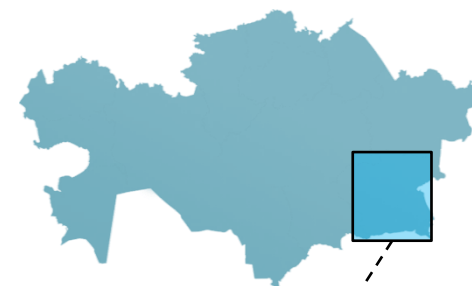


Tursun-tore deposits in Zhetysu region



Location: The deposit is located in the Almaty region, 150 km from the railway station of Mulaly and 40 km from the paved highway -Alma-Ata-Leninogorsk.

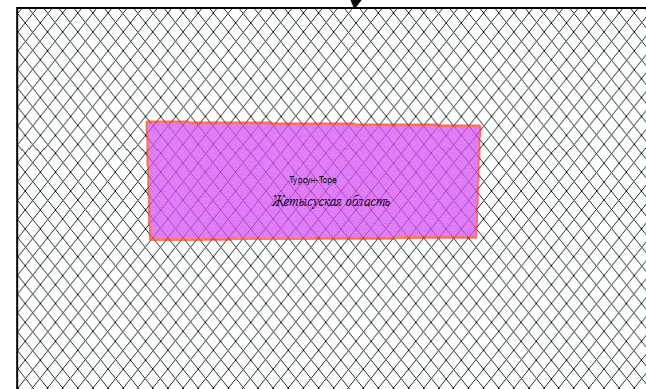
Brief geological description: The deposit was discovered in 1966. Ore bodies are localized in tectonic cracks. The deposit is localized in sedimentary-terrigenous sediments of the Silurian-Devonian, intensively shale and crushed. The genesis of the mineralization is plutogenic-hydrothermal, gold-quartz mineral type, poor-sulfide ore formation. The near-ore changes of the host rocks are represented by calcification - 1-2 m, crushing 1-3 m. Near-surface changes of bodies are poorly expressed -single nests and deposits of iron hydroxides, malachite, azurite are noted in the near-surface part. The hydrogeological conditions of the development are simple - the maximum water inflow into the mine workings (underground mining during tunnel opening) does not exceed 20 cubic meters/ hour. Water supply: domestic - a spring with a flow rate of 1-1.5 l/sec, technical - water r. Tastybien is 6 km from the deposit.



Tursun-tore

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022			
Deposits(site)	Balance reserves, kg		Off-balance reserves
Tursun-tore	A+B+C1 – 342	C2 – 155	23

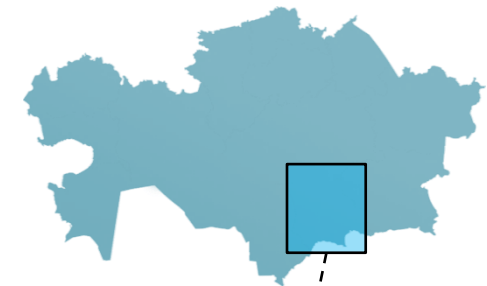


Tiesay deposits in Dzhambyl region



Location: The deposit is located in the Sarysu district of Zhambyl region.

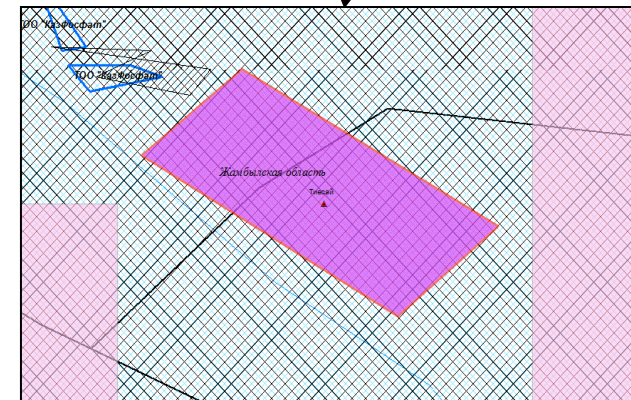
Brief geological description: The field has a length of up to 6.5 km with a width of up to 700 m. The area of the deposit is 3.2 km². Terrigenous formations of the Karaoi series of the Upper Precambrian and Cambrian carbonate deposits of the Tamdinsky series are developed at the deposit. The phosphorite-bearing deposits of the Chulaktau formation, which lies at the base of the Tamdinsky series, are confined to the stratigraphic contact. The phosphorite horizon at the deposit is represented by one reservoir body. Two phosphorite bundles separated by a layer of phosphate conglomerates with a capacity of up to 7.2 m are isolated in the structure. Phosphate minerals: fluorapatite, calcium phosphate, carbonates. Phosphate substance is a part of oolites, pseudophosphates, phosphate fragments. The deposit is dominated by the siliceous-phosphate type of ores, to a lesser extent – carbonate-siliceous-phosphate.



Tiesay

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund

Extract from the state inventory accounting as of 01.01.2022			
Deposits(site)	Balance reserves, thous.t		Off-balance reserves, thous.t
Tiesay	A+B+C1 – 5472	C2 – 17895	658

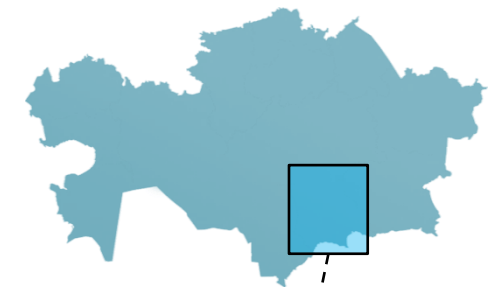


Kaynazar in Dzhambyl region



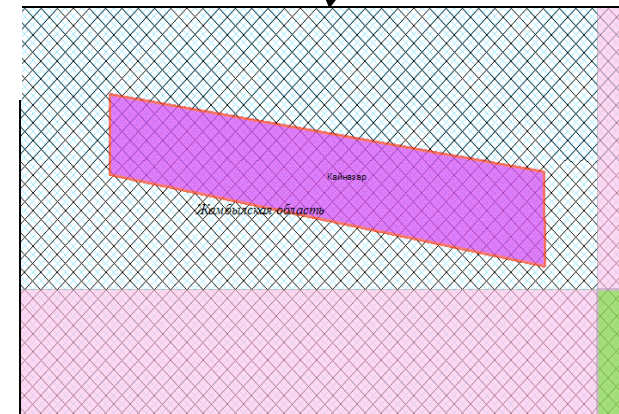
Location: The deposit is located northeast of the city of Karatau.

Brief geological description: The structure of the monocline involves carboniferous terrigenous-sedimentary deposits with a thickness of 3500 m, including a productive layer of clay limestones and fine-grained marls of Late Visean age. Within the horizon, 25 indigenous deposits and five deluvial ruins of flints with colored chalcedony were identified. The deposits are lenticular, have a west-northwest strike consistent with the strike of the host rocks and a north-northeast fall. Along the strike, the deposits are traced at 10-150 m (on average 50 m) with a width of 2-100 m (on average 25 m) and a thickness of 0.05-1.5 m (on average 0.25 m). The deposits are characterized by sharp contacts with the rocks of the sole and roof, as well as weakly expressed surrounding zones of silicification (1-2 m wide) and chloritization (10-15 cm). From the surface to a depth of 1 m, the deposits are destroyed with the formation of deluvial ruins of chalcedony-containing flints inheriting the strike of the indigenous deposits. The mineral composition of chalcedony-containing flints is represented by chalcedony, quartz and opal. Chalcedony has a cryptocrystalline microspherulite structure (the size of spherulites is thousandths and hundredths of mm); fibrous varieties are less common. Quartz in industrial chalcedony-containing flints is coarse-crystalline (up to 2.5 cm). Opal is rare in the deposit, forms close accretions with chalcedony. The color of technical chalcedony is bluish-gray; flint - gray, black, red. Ornamental chalcedony is characterized by cherry-red, honey color, high (7-7.5) hardness, shell fracture, glass luster, viscosity. Colored chalcedony is suitable for the production of jewelry and handicrafts. The maximum output of products from industrial raw materials is 46%, on average 15%.



Kaynazar

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

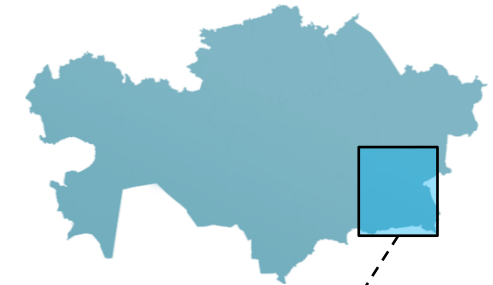
Deposits(site)	Balance reserves, t		Off-balance reserves, t
Kaynazar	A+B+C1 – 14,7	C2 – 2,7	-

Tasty-bien deposits in Zhetysu region.

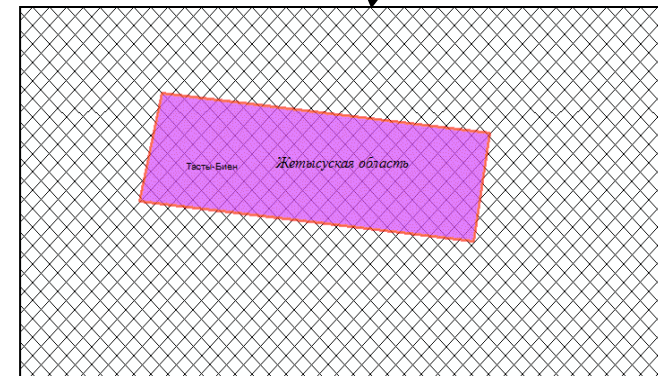


Location: It is located in the Kopylsky district of Taldykorgan region, 80 km east of Taldykorgan.

Brief geological description: Quartz-vein type deposit. Ore-bearing - sand-shale rocks of the Middle Devonian. The vein zone of the sublatitudinal strike is traced by ditches at 200 m, represented by two quartz veins 70 and 50 m long, 0.7 and 0.8 m thick with a gold content of 41.6 and 33.0 g/t, respectively. In vein 2 at a depth of 20 m, the gold content in the core sample is 13.4 g/t. The veins are branching, of variable power (from 0.02 to 1.3 m) and strike, traced by wells to a depth of 50-60 m. Core composition: quartz (up to 85%), pyrite, chalcopryite, galena, sphalerite. Gold is free in quartz, up to 2 mm in size, extremely uneven distribution (from 0.5 to 930 g/t). In a gross sample weighing 45 tons, the content was 79 g/t. The deposit is small, undiscovered. The State Balance Sheet of the Republic of Kazakhstan as of 01.01.12 has gold reserves in the category C1-187 kg, C2 -338 kg (31.17 g/t).



Tasty-bien
the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Useful component	Balance reserves		Off-balance reserves
Gold	A+B+C1 – 187 кг.	C2 – 338 кг.	

Belogorskoye deposits in Eastern-Kazakhstan region



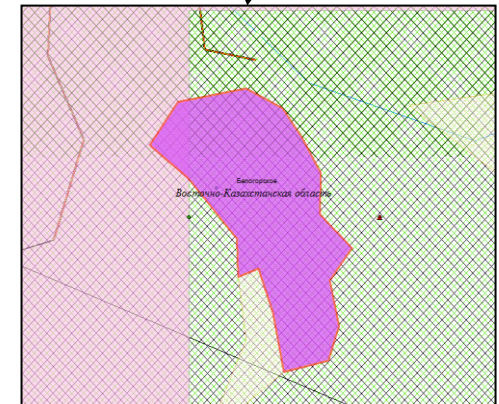
Location: it is located in the Ulan district of the East Kazakhstan region

Brief geological description: The deposit belongs to the pegmatite tantalum-tin formation. Ore bodies of complex structure, with inflations, clamps and branches. In general, the shape of the bodies is irregular-tiled. Ore bodies are represented by powerful (up to 20 m) and extended (up to 1200 m) pegmatites of microcline-albite and albite composition. The main ore bodies - the veins Western, Eastern, Central, Southern and Unnoticed have a stretch of 315-320 °, the fall of the SW 45-50 °. The internal structure of the veins is zonal (from the periphery to the center): microcline-block quartz-albite-microcline-quartz-albite. The greysens of recumbent vein blocks are the most rich in tantalite. Ore minerals are tantalite-columbite, fine- and coarse-crystalline beryl, less often - cassiterite. Pegmatite bodies in the form of a series of close veins form a fan in the plan, expanding in a south-easterly direction, composing several suites. Each suite has a stem-the main vein. According to Yu.A.Sadovsky, the formations are linear-prismatic in their structure. Tantalum mineralization is the main thing. Its content in ores ranges from 0.004 to 0.0096%. Of practical importance are also: tin with a content in ores from 0.015 to 0.08%, beryllium - 0.04-0.055%, niobium - 0.008-0.0085%. Associated components - quartz, mica, feldspar, their satellite elements: The deposit has been worked out by quarries, at depth - by tunnels, deeper and on the flanks - preserved.



Belogorskoye

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Useful component	Balance reserves		Off-balance reserves
Beryllium(BeO)	A+B+C1 – 1358 т	C2 – 341 т	2816 т
Pewter	A+B+C1 – 617 т	C2 – 157 т	502 т
Tantalum	A+B+C1 – 243 т	C2 – 42 т	299
Niobium	A+B+C1 – 224 т	C2 – 57 т	0

Kendyrlykskoye deposits, 1st coal-shale field in the East Kazakhstan region



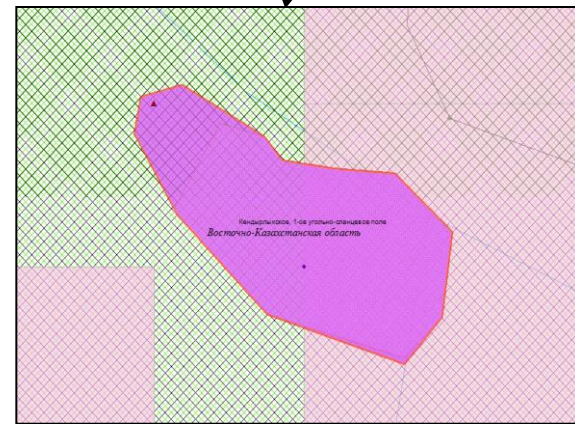
Location: The deposit is located in the Zaisan district of the East Kazakhstan region, 50-65 km south-east of the city of Zaisan.

Brief geological description : The coals of the deposit are confined to the Middle Upper Carboniferous (Kendyrlyk formation), Upper Permian (Akkolkan formation) and Upper Triassic (Tologai formation) deposits. The Kendyrlyk formation contains one layer of coal with a capacity of 2.1-2.7 m and two layers of oil shale. Its coal bearing is established only on the south-western wing of the mulda and can be traced along the stretch for 16 km. From 28 to 51 coal seams have been identified in the Accolcan formation, of which only 10 have a working capacity of 0.6-1.6 to 5.1 m, a total of 19 m. All layers have a complex, unstressed structure. The deposits of the Tologai formation fill the central part of the syncline and enclose up to 48 layers of brown coal, of which 16 have a working capacity of 0.6 to 7.2 m. The total capacity of the working layers is 40 m. As part of the Kenderlyk deposit, the Karaungur, Saikan, Akkoin coal plots, shale and brown coals are allocated - Site 1, Site 2. Combustible shales within the Kendyrlyk deposit are located on the northwestern flank, 4-8 km from the industrial coal seams of the Karaungur and Saikan sites. Oil shales are localized at three stratigraphic levels: the lower one is the Kenderlyk formation; the middle one is the Karaungur formation and the upper one is the Taranchinsky formation. The most productive are the oil shales of the lower stratigraphic level – the Kenderlyk formation. The most fully studied are the shales of the Kenderlyk formation, the least studied are the shales of the Saikan formation.



Kendyrlykskoye, 1st coal-shale field

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

Useful component	Balance reserves		Off-balance reserves
Coal	A+B+C1 – 11 281 thous. t.	0	0

Severnoye (Vostochny section) deposit in Kostanay region

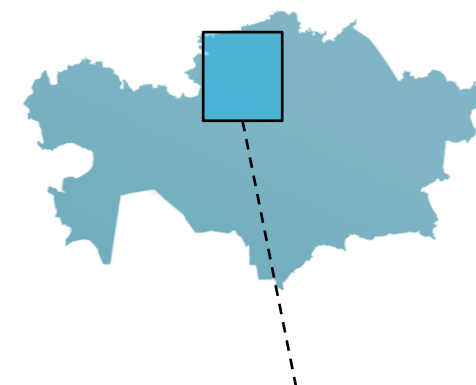


Location: It is located 12 km northeast of Arkalyk, 3 km north of Verkhne-Ashutsky birthplace

Brief geological description: The deposit is located in the zones of erosion-karst depressions developed in the north-eastern wing of the Arkalyk syncline. The ore deposits are confined to the bauxite-bearing suite of the Paleogene. From the surface, the formation is overlain by variegated sandy-clay deposits of the Paleogene with a thickness of 40 m. Mineralization is controlled by the contact of Fran clay shales and mudstones with Famen limestones. Refractory clays are deposited in the roof and sole of ore bodies.

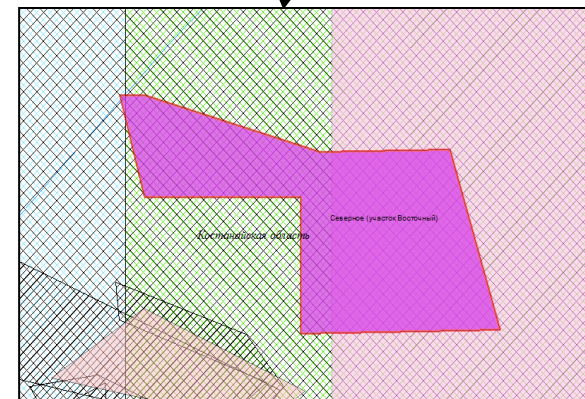
Bauxites are stony, friable, clayey and sugary; leguminous, breccia-like, pelitomorphic and collomorphic. The organic matter content ranges from 2% in gray bauxites to 60-70% in lignites, the zonal part of which is represented by gibbsite. The alumina content is 28-53%, the average is 46.7%. Silicon module 3,4-4,6. The ores contain elevated concentrations (up to industrial) of gallium, niobium, zirconium, and rare earths.

Technological tests using the Bayer method have established the possibility of alumina extraction at the level of 85.7-87%. The quality of bauxite corresponds to the B-3 and B-4 brands.



Severnoye (East section)

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022

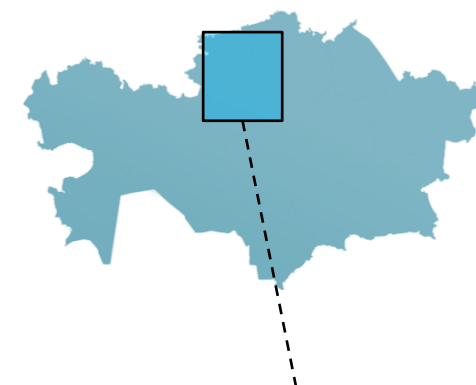
Useful component	Balance reserve		Off balance
Bauxite	A+B+C1 – 2049 тыс. т.	C2 – 723 thous.t.	0

Severnoye deposit (uch. Severny) in Kostanay region



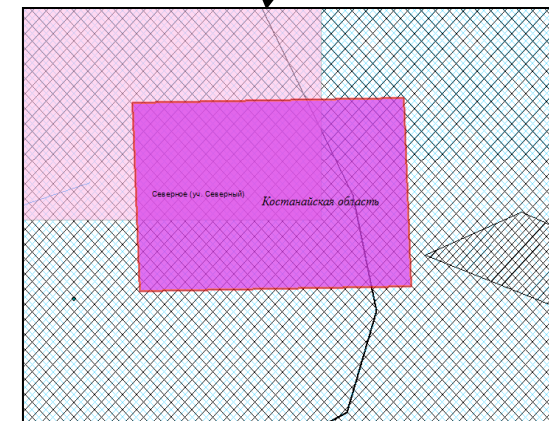
Location : Расположено в 12 км северо-восточнее г. Аркалык, в 3 км к северу от Верхне-Ашутского месторождения

Brief geological description: The deposit is located in the zones of erosion-karst depressions developed in the north-eastern wing of the Arkalyk syncline. The ore deposits are confined to the bauxite-bearing suite of the Paleogene. From the surface, the formation is overlain by variegated sandy-clay deposits of the Paleogene with a thickness of 40 m. Mineralization is controlled by the contact of Fran clay shales and mudstones with Famen limestones. Refractory clays are deposited in the roof and sole of ore bodies. Bauxites are stony, friable, clayey and crusty; leguminous, breccia-like, pelitomorphic and collomorphic. The organic matter content ranges from 2% in gray bauxites to 60-70% in lignites, the zonal part of which is represented by gibbsite. The alumina content is 28-53%, the average is 46.7%. Silicon module 3,4-4,6. Concentrations of gallium, niobium, zirconium, and rare earths have been increased (to industrial) in ores. Technological tests using the Bayer method have established the possibility of alumina extraction at the level of 85.7-87%. The quality of bauxite corresponds to the B-3 and B-4 brands.



Severnoye (uch. Severny)

the territory for the extraction of solid minerals for obtaining the right of subsurface use, which is included in the management program of the state subsoil fund



Extract from the state inventory accounting as of 01.01.2022.

Useful component	Balance reserve		Off balance
Bauxite	A+B+C1 – 0	C2 – 120 thous.t.	0