



SARYKUM DEPOSIT

(Coal and anthracite)

Location

The deposit “Sarykum” is situated in the North-Western Pribalkhash throughout the territory of lakeside areas of Karaganda region. The city of Balkhash and a railway station Balkhash 1, 2 are situated within 70 km to the east of the deposit. In the north part of the deposit there is a railway Aktogay-Mointy. The nearest railway station “Sarykum” is situated within 12 km to the north-west from the center of the deposit.



Components of value

Humus, ash coals (10-48%), Highly metamorphosed to anthracites, Carbon content 91-92%. The average ash content of the top slice: 23,9%, bottom slice: 44,2%(According to geophysics 2-3 times ash content decrease is expected). The increased amount of alumina content in ash (36.8%).

Coal is mainly low-sulfur to 1,8% and sulfur in places to 2,6%. Low-phosphorous. The part of seams is of easy treatment.

Minor mineral resources: germanium-3 g/t, scandium-40 g/t, gallium to 20 g/t.

Subsoil Use Contract

Current Subsoil Use Contract for Geological Prospecting is concluded for 6 years. Area of geological allotment is 302,72 km².

Purpose of investment

Search for a potential joint venture partner to develop a project on Sarykum deposit.

Coal characteristics of the deposit

Coal rank A according to GOST 9276-72. Anthracite according to GOST 25543-82 A.

Rank from 1A to 3A. Ash content of the upper slice to 26%, bottom slice to 50%, according to geophysics decrease of ash content is expected up to 1,2-1,5 times.

Calorific value of the ash-free coal is 7,887-8,365 kcal/kg. Coal beneficiation allowed to



reduce ash content to 8% -20% for different samples.

Yield after Sarykum coal treatment under the anthracite pattern

Seam designation	A ^d of run-of-mine coal, %	Headings less than 1,8 g/cm ³		Middlings less than 2 g/cm ³		Waste		Guiding price, US dollar
		Yield of the seam, %	A ^d	Yield of the seam, %	A ^d	Yield of the seam, %	A ^d	
Potential with high value-added price (can be used in the production of carbonaceous filler for electrode products, calcium carbide in the chemical industry and metallurgy)								
K9*	27,2	87,5	8,3	3,8	31,6	8,7	80,1	Prices of anthracite lumps are about 250 US dollar
K8*	33,7	64,4	18,9	-	-	35,6	56,1	
K2*	34,6	72,5	18,0	-	-	27,5	77,6	
For electrical energy industry, metallurgy and domestic household sector								
K3*	52,6	35,4	28,5	23,4	49,9	41,1	71,0	90-150 US dollar
K1*	50,9	1,4	23,6	23,5	29,7	75,0	57,1	
K4*	47,9	37,2	24,7	25,7	42,3	36,5	74,1	
K5*	44,1	53,7	26,5	16,6	48,6	29,6	71,2	
K6*	37,4	0,9	20,0	40,4	27,5	58,3	50,2	
K7*	46,7	0,1	20,0	2,6	22,3	97,2	47,0	

*Calculation according to coal bulk

* According to geophysics and exploration drilling carried out in 2017 ash content is expected to decrease 1,2-1,8 times at slices K1-K8

Rate of Sarykum coal washing

1. Easy treatment seams:

- K2 of medium capacity – 2,19 m;
- K8 of medium capacity – 1,6 m;
- K9 of medium capacity – 1,79 m.

2. Rebellious seams:

- K3 of medium capacity – 2,84 m

3. Very rebellious seams :

- K1 of medium capacity – 1,43 m;
- K4 of medium capacity – 3,08 m;
- K5 of medium capacity – 0,5 m;
- K6 of medium capacity – 1,6 m;
- K7 of medium capacity – 1,38 m;

According to geophysics increase of seams capacity is expected up to 0.2 - 6,8 m

Area of application of the coal for the Sarykum deposit: chemistry, electrical, engineering, metallurgy, energy, coal Chemistry, household.



Analysis of previous work

Drilling at the deposits is below the standards, core recovery in places at coal intervals was about 15-30%.

Comparison of the geological column with log strip allows to expect with a great deal of confidence a significant increase of seam capacity and decrease of ash content, as in drilling a single core the coal was primarily abraded, mainly high quality, due to its low hardness.

Average capacity increase of 15 existing intersections is of 1.31 m, varying from + 0,2 m to 6,80 m. After resources counting within which the comparison was made, the growth was 27.8% was obtained. If we use it for all resources approved for open-field development, we gain growth of 37,850.0 thousands of tons, the strip ratio will be 5,03 t/m³.

Resources and reserves

Overview table of resources and reserves:

Attribute/index	ROM reserve estimates metric tons		Ash content, %	S/R(stripping ratio), m3/t
	C ₂	P ₁		
Within open-cut mining to a depth of 150 meters	136 153 560	15 910 232	10,1 - 43,3	7,9* According to geophysics decrease is expected up to 5
Outside open-cut mining	280 838 967	140 965 411	15 - 46,8	The remaining reserves are planned to be developed from the flank of the section by inclined adits
Total	416 992 527	156 875 643		

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