

# OIL SHALE POTENTIAL IN SERBIA

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## ABSTRACT

Basic geological exploration in Serbia detected 23 deposits of oil shale with reserves of over 4.7 billion tones. Oil shale in these deposits is of various qualities and oil content. The biggest deposits with commercial potential is Aleksinac basin.

Aleksinac deposit is explored at the highest level, with reserves exceeding 1.9 billion tones with average content of organic matter of approximately 20% and with oil content of approximately 10%. These reserves are confirmed with technical documentation (Elaborate on reserves) in accordance to Serbian legislation. Other deposits of oil shale in Serbia are requiring additional geological exploration.

Oil shale in Aleksinac deposit is separated by single coal seam, into upper or roof oil shale and lower or floor part. Also, oil shale deposit is divided into three fields: Dubrava (due north), Morava and Logorište (due south). Thickness of roof oil shale at northern part is between 45 and 70 m (57 m on average), while thickness in the southern part varies between 34 and 77 m), with average thickness of 56 m. Thickness of floor oil shale is less consistent (3 to 33 m). Basic technical analyses of oil shale for all fields are given in following table.

### Technical analyses of oil shale

	Logorište	Morava	Dubrava
Moisture, as delivered, (%)	6.40	5.30	1.20
Ash, (%) *	63.66	64.80	64.33
Sulphur, total, (%)	2.30	4.50	0.41
Coke, (%)	65.31	65.55	64.53
C-fix, (%)	1.65	0.75	0.20
Volatiles, (%)	28.29	29.15	34.27
Combustibles, (%) *	29.94	29.90	34.47
Lower calorific value, (kJ/kg)	8.81	5.66	6.87
Raw oil, (%), acc. Fischer	12.70	7.60	12.20

Preliminary analyses and studies showed that oil shale can be mined both by surface and underground mining methods.

Initial evaluation of Aleksinac oil shale indicates that basically it can be thermally processed using existing commercial oil shale processing technologies used in Estonia. However – properties of the raw oil differ from Estonian shale oil and it requires different upgrading process for the oil.

During 1950-ies small oil shale open-pit operated at the northern part of Aleksinac deposit. At the moment there is no oil shale mining and processing in Serbia but Ministry of Energy and Mining from the Government of Serbia is ready to support activities related to oil shale deposits utilization. However, Estonian company Viru Keemia Grupp AS identified potential of Aleksinac deposit and showed preliminary interest in mining and processing of oil shale. For this reason VKG established collaboration with Faculty of Mining and Geology of University of Belgrade. Some of the results of this collaboration are presented in this paper.

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