

20.04 **Oil Shale Characteristics and Mineralization Regularity of Eocene Fushun Basin**

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Fushun Basin, which is located in the northeast area of China, is a small scale Cenozoic fault basin. This basin is rich in abundant coal and oil shale resources, and has more than 80 years producing history. The western opencast mine was the largest in Asia. The oil shale resource is 3.65 Billion tons. The precursor research on Fushun basin mainly focuses on coal-forming regularity, but little research on oil shale-forming condition has been conducted.

Research samples have been taken from the west opencast mine of Fushun basin. The oil shale is grayish-black to brown in color. Oil shale deposits in the Eocene Jijuntun Formation, the burial depth is 16.7 to 633.8m; the individual layer thickness is up to 190m; the average oil yield is 5-8%; the ash content is 77.65%; the caloric value is 5.7MJ/Kg. The kerogen types of organic matter are I-II₁, R_o value is 0.43 - 0.5, and the oil shale is in an immature lithogenic stage. An east-west syn-sedimentary fault controls the distribution of oil shale belts and oil shale thickness. Trace element Sr/Ba ratios are between 0.1 and 0.4, Sr/Cu ratios are between 1.08 and 4.99. From the poor oil shale to the rich oil shale, Ni/Co ratio increases and Ni/V ratio decreases. The kaolinite content in the clay mineral fraction of oil shale is high. Research indicates that oil shale formed in a semi deep to deep anaerobic freshwater lake under warm and humid climatic conditions. Organic matter of the rich oil shale mainly comes from aquatic plankton such as algae, and organic matter of poor oil shale comes from the mixtures of algae and continental clastic material.

Oil shale mainly develops in the transgressive system tract (TST) and highstand system tract (HST) portions of sedimentary sequences. Oil shale in TST has features of thin-middle thickness and low-middle oil yield, and oil shale in HST has features of middle-thick thickness and middle-high oil yield.