

11.3 Characteristics and Genetic Types of Continental Oil Shale, China

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The oil shale resource in China is very abundant, and the sedimentary environment is mostly continental. Oil shale is mainly deposited in Meso-Cenozoic formations. The oil shale is black gray - dark gray or grayish brown – brown; generally the color of rich oil shale is darker than that of poorer oil shale. The mineral content of oil shale consists mainly of quartz, feldspar and clay minerals, and the fraction of kaolinite in the clay minerals is relatively high. The quality of Chinese oil shale is generally very good; shale oil with oil yield more than 5% makes up 67.64% of the whole shale oil resource. The ash contents are usually between 53.27% and 84.35%, so the Chinese oil shale belongs to the category of high-ash oil shale. The caloric values of oil shale in each area is different; even in the same area, the caloric values of oil shale in different formations is also different. As far as associated minerals are concerned, oil shale is rich in numerous rare-earth and trace elements, which give oil shale huge potential for comprehensive utilization.

With respect to organic matter genesis, Continental oil shale in China can be divided into sapropelic oil shale, humosapropelic oil shale and saprohumolic oil shale. The sedimentary environment of oil shale deposition can be divided into depression lacustrine oil shale, fault lacustrine oil shale and fault limnic oil shale; With respect to the waters in which oil shale formed, the oil shale can be divided into fresh oil shale, brackish oil shale and saline oil shale. The organic genesis and environmental genesis of oil shale are closely connected with each other. Comprehensively considering the two factors, one can better illustrate the genetic types of oil shale. Limnic oil shale is deposited in fault basins, occurs in association with coal, and is mostly humosapropelic oil shale and saprohumolic oil shale. Lacustrine oil shale is deposited not only in fault basins but also in depression basins; oil shale exists either alone or as the top layer of coal, and is mostly sapropelic oil shale and humosapropelic oil shale.