Rock-Eval Pyrolysis Characteristics of Westphalian Aged Coal Beds in Kozlu, Zonguldak/Turkey

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Kozlu Formation has 20 productable hard coal beds and 5 hard coal beds has been chosen for this study. The age of the Kozlu formation was determined as Westphalian by Özler et al. (1992). Kerey et al. (1986) stated that lacustrine deposits were found at the bottom of the Kozlu Formation. The upper part of Kozlu Formation consists from sediments of the flood plain including the coals with thick and lateral continuity and the other levels are formed by meandering river sediments.

Çay, Acılık, Domuzcu, Büyük, Kesmeli coal beds are sampled for this study. Thicknesses of Çay, Acılık, Domuzcu coal layers are 3.0, 5.1, 2.9 with 0,5, 0,1, 0,34 meters clay interbeddings, respectively. Büyük and Kesmeli coal thicknesses are 2.4, 1.2 meters.

The total organic carbon (TOC) contents of coals in the Çay, Acılık, Domuzcu, Büyük and Kesmeli are 44.16, 41.36, 40.47, 44.06 and 23.47 %wt. Hydrogen Index (HI) values are 266, 284, 261, 277 and 158 mgHC/gTOC, respectively. Çay, Acılık, Domuzcu and Büyük coals have high TOC and moderate HI values while the Kesmeli coal has relatively lower TOC and lower HI values. All coal samples displays very low Oxygen Index (OI) values with average 2 $mgCO_2/gTOC$. Çay, Acılık, Domuzcu and Kesmeli coals contain a mixture of type II and type III kerogen while Büyük coals contains only type II kerogen. T_{max} values for the Çay, Acılık, Domuzcu, Büyük and Kesmeli coals are 461, 465, 457, 460 and 461 °C, respectively.

According to pyrolysis data, the Kozlu coal beds are mature (high volatile bituminous-A/medium volatile bituminous coal). Although coals generally have low HI values, the Kozlu coals have exceptionally high HI values. These exceptionally high HI values indicates that the kozlu coals have oil potantial as well as gas potantial. The mature charecter of the kozlu coals show that these coals generated petroleum and moderate HI values indicates that the Kozlu coals still have petroleum generation potential.

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