

Source rock potential and thermal maturity of the Oligocene Šitbořice Member (Menilite Formation) in the Ždánice Unit (Czech Republic)

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Rocks deposited within the Oligocene Paratethys are recognised as hydrocarbon sources. Those strata are one of the most important source rocks in the Flysch Carpathians among others. The Šitbořice Member (uppermost NP23 to lowermost NP25 zone) represents the upper part of the Menilite Formation in the Outer Flysch Carpathians of the Czech Republic. The Šitbořice Member is composed of brown and green non-calcareous shales, occasionally with bodies of mudstones or concretions of carbonates. Our research represents the results of bulk geochemical analysis and Rock-Eval pyrolysis. The geochemical evaluation, source rock potential, kerogen type and thermal maturity of the Šitbořice Member were studied using borehole cores. Based on the boreholes gamma logs, the continuous profile of the Menilite Formation in the area has been reconstructed.

TOC and Rock-Eval pyrolysis data were used for the primary assessment of the source rock potential and determination of the predominant type of organic matter. TOC ranges from 0.63 to 6.87 wt.%, with the average of 2.90 wt.%. The HI ranges from 53 to 541 mg HC/g TOC (with the average of 196 and median of 153 mg HC/g TOC). The TOC and Rock-Eval data show that Šitbořice Member holds mostly “very good” source rock potential according to TOC, however, “poor” according to petroleum potential (Peters, 1986). Nevertheless, 12 of total 37 samples are classified as “good” and 3 samples as “very good” source rock according to petroleum potential. The equal distribution between kerogen type II and III has been indicated by HI. However, the “true” HI based on the relationship of the residual hydrocarbon potential versus TOC according to Dahl *et al.* (2004) corresponds to kerogen type II. Presumed immaturity was confirmed by Rock-Eval Tmax. All studied samples reach narrow Tmax range from 400 to 424 °C. These values indicate low thermal maturity and the presence of a large portion of unconverted original organic matter. This fact is reflected in the kerogen type determination and the evaluation of its source rock potential.

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