



Physical- and geochemical properties of core samples from the Swedish part of the southern Baltic Sea: Implications for CO₂ storage

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Feasibility studies of CO₂ storage in Sweden has been conducted based on the geological and geophysical data from the southern Baltic Sea (e.g. Juhlin et al., 2013). One suitable formation for CO₂ storage may exist below southern Gotland, with good aquifer properties for storage and suitable caprock.

We present detailed results from a series of measurements conducted on core samples consisting of Cambrian sandstone (potential reservoir rock) and Ordovician limestone (potential caprock). The core samples are provided by Geological Survey of Sweden (SGU) and were collected from 146-586 m depth. The experiments consist of petrophysical properties measurements (density, porosity, permeability, thermal conductivity and P-wave velocity) and chemical analysis.

The two rock types reveal contrasting properties, for example density and P-wave velocity is 2.26 ± 0.13 gr/cm³ and 3.14 ± 1.00 km/s, respectively, for the sandstone (reservoir rock) while significantly higher values were obtained for the limestone (caprock), 2.58 ± 0.08 gr/cm³ and 6.09 ± 0.24 km/s respectively.

The objective of this study is to evaluate the interrelationships between the obtained petrophysical and geochemical properties from southern Swedish Baltic Sea to better understand the implications of the evaluated properties for CO₂ storage in Sweden.