



Quality Aspects of a Marine Aggregate Deposit off the SE Euboea Island, Greece, for its Exploitation - Preliminary Results

Marianthi Anastasatou (1), Vasilios Kapsimalis (2), Michael Stamatakis (1), Antonia Tsoutsia (3), Serafeim Poulos (3), Grigoris Rousakis (2), Aikaterini Karditsa (3), Stelios Petrakis (3), Konstantinos Aspiotis (1), Nafsika Papavlasopoulou (1), and Giorgos Stamatakis (4)

(1) University of Athens, Faculty of Geology and Geoenvironment, Department of Economic Geology and Geochemistry (anastasat@geol.uoa.gr), (2) Hellenic Centre for Marine Research, Institute of Oceanography, (3) University of Athens, Faculty of Geology and Geoenvironment, Department of Geography and Climatology, (4) University of Athens, Faculty of Chemistry

Aggregates are inert materials, such as terrestrial or marine sand and gravel, composed mainly of limestone, igneous rocks and sandstone. There is an international trend of increasing demand for aggregates during the last 30 years. Thus, marine aggregate (MA) demand has been displayed a remarkably increased due to limited terrestrial deposits and strict environmental issues related to their exploitation, induced by mining legislation. Regarding offshore MA extraction, important physical and biological seabed impacts that may persist long after the completion of the MA dredging, should be addressed, according to European directives, that deal with aspects such as restoration of the influenced subaqueous mining area.

The present contribution focuses on the qualitative determination of the marine sediments on inner continental shelf of SE Euboea (central Aegean Sea), concerning primarily its silica content and secondarily the various environmental issues, in order to evaluate whether or not this subaqueous deposit fulfils the requirements for its exploitation.

This MA deposit was found during the implementation of the research project THALES-MARE (MIS 375655) and after taking into consideration the presence of highly siliceous coastal lithology of the South Euboea Island. The area belongs to the Attico-Cycladic geotectonic zone, and especially in the Blueschist Unit, Styra and Ochi nappes. It consists mainly of metamorphosed clastic siliceous sedimentary and calcareous, mafic and felsic volcanic rocks and serpentinites. Sixteen representative samples were analysed out of 48 were collected in June 2014, during the scientific cruise of the M/V Aegaio (Hellenic Centre for Marine Research). The grain size analysis shows that seabed sediments are granulometrically classified mostly as sand, with contaminants of finer fractions and with the sand content often to be >90%. X-Ray Diffraction analysis revealed that the predominant crystalline phase is quartz (often >70% according to a semi-quantitative estimation) with minor trace minerals, such as albite and clay minerals.

On the basis of the qualitative characteristics, sediments on the inner continental shelf of SE Euboea can be classified as siliceous and being considered appropriate for potential exploitation, that is related also to its quantitatively characteristics. The relatively shallow depths (<40 m) and the absence of any beach nearby together with the ordinary population of benthic community support such an extraction. Definitive decisions for the commercial interest of the specific deposit will be concluded after the accomplished quality characterization and the estimation of the proven and inferred reserves of the deposit.

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