Deliverable B1-2

Technical report with characterization of various industrial mineral qualities (group A)

December 2018

This Deliverable constitutes product of the implementation Action B1 Collection of oil wastes and preparation of stabilizers.

The industrial minerals of group A are examined in this report. Various industrial minerals were selected to be used as potential stabilizers. In order to investigate the effect of industrial minerals properties on their stabilizing performance, various grades were produced which have different physical properties and their stabilization performance is evaluated after lab scale stabilization experiments.

Since the chemical and physical properties of industrial minerals are not standard and wide variations maybe observed between samples that originate from different ore mines, the determination of raw material characteristics and especially the properties that could affect the stabilization process is rendered crucial. The industrial minerals used in the current project originate mostly from Greece.

After in-detail characterization of the raw materials, namely: chemical composition, particle size distribution, water content (Loss on Ignition) and mineralogical analysis, three different grades were produced with different granulometry. Each one of these grades was treated through a sophisticated method that has been developed at the NTUA Laboratory of Metallurgy; this method allows in-detail knowledge and control of the treatment conditions, thus enabling the production of minerals grades with the desirable properties, in terms of density, granulometry and porosity.

Nine different industrial minerals grades of different granulometry and density were prepared and subjected to characterization analyses in terms of the crucial properties that are expected to affect their use as sorption/stabilization medium: particle size distribution, porosimetry analysis, compressive strength, morphological observation, oil absorption and water absorption.

After the evaluation of the results the most appropriate candidates for the stabilization process were selected.