Poster MS10

Accelerated Carbonation of Hardened Cement Samples using Supercritical CO_2

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Development of methods for accelerated carbonation of concrete represents an important challenge in the domain of carbon dioxide sequestration as well as for recycling of concrete aggregates. The present study aimed at characterizing a set of hardened cement cylinders (165 mm height, 36 mm diameter) treated with high pressure CO_2.for duration of about 1 hour. Influence of pressure, temperature, processing time and initial hydration was investigated. Evaluation of the carbonation reaction was based on the variation of the pH of the sample (using a pH indicator) coupled to ATG and X-ray diffractometry. The variation of mass of the sample was also used as a global indicator. This study made it possible to define the appropriate operating conditions for complete carbonation in accelerated condition, demonstrating the great potential of this method.