

Role of Sequestration of CO₂ Due to the Carbonation in Total CO₂ Emission Balance in Concrete Life

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Abstract : Calculation of the carbon footprint of cement concrete is a complex process including consideration of the phase of primary life (components and concrete production processes, transportation, construction works, maintenance of concrete structures) and secondary life, including demolition and recycling. Taking into consideration the effect of concrete carbonation can lead to a reduction in the calculated carbon footprint of concrete. In this paper, an example of CO₂ balance for small bridge elements made of Portland cement reinforced concrete was done. The results include the effect of carbonation of concrete in a structure and of concrete rubble after demolition. It was shown that important impact of carbonation on the balance is possible only when rubble carbonation is possible. It was related to the fact that only the sequestration potential in the secondary phase of concrete life has significant value.

Keywords : carbon footprint, balance of carbon dioxide in nature, concrete carbonation, the sequestration potential of concrete

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