

## Influence of sea water on mortar dissolution: An experimental approach

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Concrete deterioration due to salts is the similar phenomenon with salt weathering widely observed in natural stones. This study aims to elucidate the mechanism of sea water attack to mortar which has the same matrix with concrete. We made two kinds of mortar from Portland cement (P-type) or alumina cement (A-type), mixing respectively with quartz sand and water. After hardening, tablet type specimen with 3.5-cm diameter and 1-cm height. Dissolution experiment was performed using polished tablets and three kinds of sea water with half, usual and twice of salt concentrations. Electric conductivity was measured every 48 hours. The experiment was continued until 1200 hours. White materials were crystallized on the surface of each tablet. XRD analysis was carried out to determine the materials. Brucite ( $Mg(OH)_2$ ) was detected from P-type mortar, while Aragonite ( $CaCO_3$ ) was detected from A-type mortar. A little amount of gypsum ( $CaSO_4 \cdot 2H_2O$ ) was also detected, however, it may be influenced on concentration of sea salts in the solution. The mechanism of these secondary minerals can be explained from the view point of water-rock interaction.