

Effectiveness of Natural Zeolite in Mitigating Alkali Silica Reaction Expansions

Authors : Esma Gizem Daskiran, Mehmet Mustafa Daskiran

Abstract : This paper investigates the effectiveness of two natural zeolites in reducing expansion of concrete due to alkali-silica reaction. These natural zeolites have different reactive silica content. Three aggregates; two natural sand and one crushed stone aggregate were used while preparing mortar bars in accordance with accelerated mortar bar test method, ASTM C1260. Performance of natural zeolites are compared by examining the expansions due to alkali silica reaction. Natural zeolites added to the mixtures at %10 and %20 replacement levels by weight of cement. Natural zeolite with high reactive silica content had better performance on reducing expansions due to ASR. In this research, using high reactive zeolite at %20 replacement level was effective in mitigating expansions.

Keywords : alkali silica reaction, natural zeolite, durability, expansion

Conference Title : ICCCE 2015 : International Conference on Construction and Civil Engineering

Conference Location : London, United Kingdom

Conference Dates : September 25-26, 2015