POTENTIAL ALKALI–SILICA REACTIVITY OF TUFFACEOUS ROCKS IN THE PENGERANG AREA, JOHORE

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Concrete is known to deteriorate as a result of interaction between certain reactive minerals in some types of aggregates and the alkaline pore fluids originating from Portland cement. This interaction which is known as alkali-silica reaction (ASR), was highlighted in Malaysia in March 1988 when the Singapore Government banned the import of volcanic quarry stones from the Pengerang area in Johore.

Based on rock aggregate tests, the mechanical and physical properties of tuffaceous rocks are within the acceptable limits as recommended by JKR Malaysia for use as constructional aggregates. However, chemical tests on potential alkali-silica reactivity showed that the tuffs from Pengerang contained reactive minerals. X-Ray Diffraction studies showed the possible occurrences of reactive tridymite and cristobalite in some of the samples. Petrographic studies showed that other reactive minerals are chalcedony and strained quartz, and also possibly, the crypto- to microcrystalline quartz which form the groundmass of the tuffs.

However, as granites which are innocuous are abundant in Peninsular Malaysia, the problem of alkali-silica reactivity should not be too worrying.

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