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Lightweight concrete containing recycled plastic aggregates

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Concrete industry needs millions of tons of aggregate comprising natural sands and gravels each year. In recent years there is an increasing trend to use recycled aggregate with a view to saving natural resources and to produce lightweight concrete. With this in mind a study was undertaken to produce a recycled plastic aggregate (RPA) from easily available materials such as waste plastic and fillers such as red sand. A laboratory study was undertaken to investigate the physical properties of RPA. Also concrete compressive strength and durability, latter in terms of chloride migration were investigated. Results for two w/c ratios with 100% replacement of conventional lightweight aggregate (LWA) with recycled plastic aggregate (RPA) showed that reduction in strengths of about 50% and about 13% reduction in chloride penetration. Nonetheless, strengths of 12 to 15MPa were achieved, and thus it is possible for this aggregate to be used in areas where low strengths are required, such as low side building cementations backfill and others.

Biography

Fahad K Alqahtani obtained his BSc in Civil Engineering in 2008 from King Saud University in Riyadh, Kingdom of Saudi Arabia. In 2009, he joined the University of Birmingham, where he obtained MSc degree in Construction Management (2010). He is currently pursuing his PhD at University of Birmingham. His research area is in innovating sustainable construction materials and its potential uses in concrete. He has published one patent in synthetic aggregate to use in concrete.

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