عنوان مقاله:

Experimental Research on the Effects of Waste Foundry Sand on the Strength and Micro-Structural Properties of Concrete

محل انتشار:

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خلاصه مقاله:

Now a days, a great distance has to be travelled to find good quality natural river sand. These supplies are also running out very quickly. So, a replacement for river sand is being sought after. Natural river sand is non-renewable and takes millions of years to be produced. By using manufactured sand, natural sand is completely replaced. Lack of research has led to the substitution of leftover waste foundry sand for manufactured sand in concrete. By adding used foundry sand to concrete, it is possible to enhance mechanical properties like compressive strength, fracture toughness, and flexibility. Using tests on cubes, cylinders, and unreinforced beams, the mechanical properties of concrete made with waste foundry sand and manufactured sand as fine aggregate were assessed. Tensile, splitting, and flexural strengths of the concrete were all determined after ۷, ۱۴, ۲۸, ۵۶, and ۹۰ days of curing. SEM, EDS, and Thermo Gravimetric Analysis (TGA/DCs) were also used to perform micro structural analyses on the control mixture and mixtures containing ۱۰, ۲۰, ۳۰, ۴۰, and ۵۰% waste foundry sand. The strength differences that occur when fine aggregates are replaced with waste foundry sand in different proportions are better understood, thanks to the micro structural experiments. In order to justify its use as a replacement for fine aggregate in terms of strength and microstructure studies, just the right amount of WFS was added to the concrete. Doi : ۱۰.۲۸۹۹۱/CEJ-۲۰۲۲-۰۸-۱۰-۰۱۰ Full Text : PDF

کلمات کلیدی:

Waste Foundry Sand; Manufactured Sand; Fine Aggregate; Flexural Strength; Splitting Tensile Strength; Compression Strength; SEM; EDS; Thermo Gravity Analysis.