

Study of mechanical behaviour of concrete triple blended with steel fibers, fly ash and condensed silica fume

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Abstract

Latest advancements has been seen in every industry and there has always been a strong competition in the market amongst industries in term of economy, profits, shares etc. one such industry is construction industry where concrete is the key building substance which is in limelight. Since past, we have seen much advancement in concrete because of the research which is in progress on concrete to come out with a product which should be economical and strong enough to resist all kind of loads. In this research, fly ash and silica fume are used as a replacement for cement and a small percentage of steel fibers were included by volume of concrete. Here, fly ash is replaced by 0%, 15%, 30% and silica fume is replaced by 0%, 6%, 12% and 18% for cement. Initially, a set of concrete specimens were casted with 0%, 15%, 30% fly ash and 0%, 6%, 12% and 18% silica fume with 0% inclusion of steel fibers and experiments were conducted for compressive, flexural and split tensile strength. Secondly, another set of concrete specimens were casted with 0%, 15%, 30% fly ash and 0%, 6%, 12% and 18% silica fume with 0.5% inclusion of steel fibers and tested for the same. Similarly, another set of samples were casted 0%, 15%, 30% fly ash and 0%, 6%, 12% and 18% silica fume with 1% addition of steel fibers and tested to determine the strength parameters of concrete. And it was witnessed that at 15% fly ash and 12% silica fume with 1% steel fiber, compressive strength, split tensile strength and flexural strength were shown a peak value.

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