

# **Effect of sand Replacement by silica sand on strength of fibers reinforced foamed concrete**

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## **ABSTRACT:**

To investigate the effect of sand type and particles grading, three (1200 kg/m<sup>3</sup>) foamed concrete mixes were produced with conventional sand (particles size <2.36), conventional sand (partials size <0.5mm) and silica sand (partials size <0.5mm). Additionally, three more (1200 kg/m<sup>3</sup>) foamed concrete mixes were reinforced by Polypropylene fibers (0.5% of volume) with different lengths (12, 18, 30 mm) and tested to examine the effect of added fibers and their lengths on the strength of foamed concrete. Absolute volume method was adopted to design the investigated mixes, while pre-foamed foam method was adopted to produce the foamed concrete mixes. It was found that replacing of conventional sand by silica sand helped in increasing both compressive and splitting tensile strengths. Also, an increase of strength was noticed with decreasing the particles grading of conventional sand from 2.36mm to 0.5mm. Moreover, reinforced foamed concrete mixes by Polypropylene fibers showed the highest strengths compared to those without fibers. Furthermore, incorporation of silica sand and polypropylene fibers together has the most beneficial influence on the strength of foamed concrete.