

Effect of coarse aggregate quality on the mechanical properties of high strength concrete

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Abstract: This paper reports results of a study conducted to evaluate the effect of four types of coarse aggregates, namely calcareous, dolomitic, quartzitic limestone, and steel slag, on the compressive and tensile strength, and elastic modulus of high strength concrete. The highest and lowest compressive strength was obtained in the concrete specimens prepared with steel slag and calcareous limestone aggregates, respectively. Similarly, the split tensile strength of steel slag aggregate concrete was the highest, followed by that of dolomitic and quartzitic limestone aggregate concretes. The lowest split tensile strength was noted in the calcareous limestone aggregate concrete. The type of coarse aggregate also influences the modulus of elasticity of concrete. Weaker aggregates tend to produce a more ductile concrete than stronger aggregates do. © 2002 Elsevier Science Ltd. All rights reserved.