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Abstract

Despite application of fiber reinforced concrete, high strength concrete and self-compacting concrete in the construction industry in the last decades, the investigations about combination of these types of concrete in Fiber Reinforced High-Strength Self-Compacting Concrete (FRHSSCC) is very rare in the literature. This study reviews a wide range of experimental data of the mix design in terms of the components and their proportions and the compressive strength of FRHSSCC in the last 12 years. The applied coarse and fine aggregates, chemical and mineral admixtures, fibers, cement, water, powder components and the ratios of water to cement and water to binder are broadly analyzed and evaluated. In addition, the compressive strength of the FRHSSCC mixtures are evaluated. The relationship between the compressive strength with water to cement and water to binder ratios in the mixture, water content, fine and coarse aggregates and the powder content is also discussed and compared in the case studies. Considerable variety of the mix designs with different components and proportions to achieve FRHSSCC without the mixing problems is evident in the collected case studies.

Keywords:

Fiber reinforced polymer (FRP); High strength self-compacting concrete (HSSCC); Compressive strength; Mix design