

Fresh properties of self-compacting concrete with plastic waste as partial replacement of sand

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Abstract This work aimed to investigate effecting of using plastic waste as partial replacement of fine aggregate, on the fresh characteristics of self-compacting concrete (SSC). For this purpose, different self-compacting concrete mixes were designed at constant water-to-binder ratio of 0.32 and 520 kg/m³ of binder content. Class F fly ash was used as partial replacement of cement (30% by weight of cement). The six designated plastic waste contents of 0, 2.5, 5, 7.5, 10, and 12.5% and three different sized Plastic wastes (fine plastic wastes, coarse plastic wastes, and mixed plastic waste) were considered as experimental parameters. The workability properties of self-compacting concrete mixtures were performed regarding to slump flow diameter, T50 slump flow time, V-funnel flow time, L-box height ratio, and L-box T20 and T40 flow times. The 28-day compressive strengths of self-compacting concretes were also measured. The experimental results of this work are showed that the plastic waste with the sizes and contents that used in this work can be used successfully as a fine aggregate in self-compacting concrete.