

Abstract

The aim of this study is to see the possibility to use or to recycle wastes of Marine origin, in particular seashells in a self-compacting mortars (SCMs) as a fine aggregate by sand substitution. An experimental study was conducted to evaluate the properties in the fresh (fluidity and flowability) and hardened properties (bulk density, porosity/water absorption, flexural and compressive strength and elastic modulus) of self-compacting mortars (SCMs) with the partial and total substitution of sand (S) by seashells (Sh) crushed at different ratio ($Sh/S = 0\%$, 10% , 20% , 50% and 100%) by weight. The obtained results show that the crushed seashells (0/5 mm class), can be used as the fine aggregate for self-compacting mortar, without affecting the essential properties of mortar. However, the flowability of mortars based 100% of seashells, was better and is suitable for a fluid concrete (as a self-compacting concrete). Also, up to 100% replacement of sand by the crushed seashells has caused a slight reduction in compressive strength and elastic modulus of studied mortars. The macrostructural study by optical microscope of the interfacial zone (seashells-binder) has shown that there is a good adhesion between seashell and cement paste and the angular form of the seashells has significantly improved the distribution of this latter in the cementitious matrix