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Replacement of natural sand for blasted copper slag in mortars

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This work aimed to evaluate the feasibility of application of copper slag waste, after being used as an abrasive material, coming to be called blasted copper slag. It was intended to replace natural fine aggregate to blasted copper slag in mortars, into two fractions, named fine and coarse blasted slag sand, according to the number of times that were used in the abrasive process. Four mixtures were produced, for each type of blasted slag, with levels of 25%, 50%, 75% and 100% of replacement to natural sand, in addition to the reference mortar. The consistence of fresh mortars was measured by the flow table test and the spreading range was fixed for 270 ± 20 mm. Physical and mechanical tests were performed with produced mortars. Mortars with blasted copper slag, both fine and coarse slag, demanded lower water/binders ratio to achieve the desired spreading, compared to the reference mixture. Mechanical tests showed important performance reductions in compression strength of the mortars with fine blasted slag, both in relation to the reference mortar, and when compared to mortars with same replacement content of natural sand by coarse blasted slag. It could be concluded that, for low levels of natural aggregate replacement by coarse blasted slag, there is feasibility of most mortar application, since there are not required high levels of strength and stiffness.