Development of an Adhesive Mortar Using the Residue from Kaolin Beneficiation Process

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During the kaolin beneficiation process a large amount of residue is generated and it is estimated around 70 to 80 % of all extracted material is not used and is disposed in environment without any concern about the impact caused on it. This work aimed to develop an adhesive mortar using this residue in replacement of conventional fine aggregate, sand, whose extraction for building products development results in serious environmental problems such as deforestation, silting rivers and water contamination by the equipment used during the process. Initially the residue has been characterized by ED-XRF and XRD techniques which indicated the material is mainly composed by kaolinite and mica, then the adhesive mortars containing up to 100 % of the sand replaced by the residue were submitted to Slip, Open Time and Tensile Adhesive Strength Tests. The results indicated adhesive mortars containing up to 25 % of its fine aggregate replaced by the residue maintained the technical specification established by Brazilian standards and a water demand close by the one of the industrialized adhesive mortars. Thus, the residue derived from kaolin beneficiation process, proved to be a viable option for reducing the use of sand in the development of adhesive mortars. This substitution is in favour both to give a destination to residue, also to reduce the use of sand as fine aggregate, since its extraction brings several environmental problems in.