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Cement Portland production with dregs and grits from kraft pulp mills incorporated to clinker

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Abstract

Kraft pulp mills are expanding rapidly in Brazil and industrial waste generation is increasing. Concern about the increase in waste generation and disposal are growing. Waste must be preferentially recycled or reused and when this is not possible, it must be disposed in an environmentally sound manner. Technical feasibility of using solid wastes from kraft pulp mills as raw material in other industries is an interesting approach to manage environmental and economic aspects of the industry. Pulp mill wastes are classified as non-hazardous and non-inert according to the Brazilian NBR 10.004. This paper proposes evaluate the technical feasibility of the incorporation of alkaline wastes named dregs and grits, to cement clinker in different proportions as raw material in the cement Portland industry. The research was carried out in three steps. First, it was carried out the characterization of dregs, grits and clinker. Second, the preparation of specimens in the dimensions of 5 cm diameter and 10 cm in length approximately using different proportions (0, 2.5, 5, 7.5, 10 and 15%), of dregs and grits were made, Third, the laboratory testing (determination of soundness by the Le Chatelier method, determination of setting times, determination of water content of the paste with normal consistency, determination of compressive strength and static modulus of elasticity) were carried out. The results showed that the addition of dregs and grits to clinker up to 10% were feasible according to the Portland cement Brazilian standards.

Keywords: *Kraft pulp mills; Dregs; Grits; Waste management; clinker.*