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EFFECT OF INCORPORATING SLUDGE FROM POULTRY SLAUGHTERHOUSE WASTEWATER TREATMENT SYSTEM IN CERAMIC MASS FOR TILE PRODUCTION

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ABSTRACT: Brazil is one of the largest producers of red ceramic in the world and the main mass used in the manufacture of this product are composed exclusively of clay, which are extremely abundant in the Earth's crust. Several studies in the literature consider the incorporation of small amounts of waste from different segments in the ceramic mass, usually at levels lower than 10%, due to the inertness of waste by ceramic processing. The western region of the State of Paraná stands out in the production and processing of poultry meat, and this process in the slaughterhouses industry consumes a lot of water, and consequently generates effluents that require a specific treatment. Normally, the wastewater treatment system used for this activity is the process of physical-chemical flotation followed by tridecanters, which generates a considerable amount of sludge that also needs a proper disposal; it is often sent to outsourced companies to produce compost along with other organic materials, but with a high cost of transportation and destination for generating companies. Given this fact, seeking viable alternatives to the use of this type of sludge generated in the poultry slaughterhouse wastewater treatment system, it was proposed a study to evaluate, on a laboratory scale, the technical feasibility of incorporating it in ceramic mass intended for manufacturing tiles. Low concentrations of sludge generated by the slaughterhouses have been included in a mass industrially used for the manufacture of ceramic tiles and the performance of the mixtures was evaluated compared to a reference mass, without inclusion of waste. The specimens prepared with such formulations were tested for bulk density, linear drying and firing shrinkage, bending rupture stress, efflorescence formation and the behavior of mixture during firing was evaluated by vitrification curves. The results indicate that incorporation of 2% (w / w) sludge in the ceramic mass did not significantly alter the properties of the material, being even possible to reduce the consumption of fuel in burning, since the inclusion of such organic matter into the mass contribute to heat generation, since the combustion of the material is an exothermic reaction.

Key words: Sludge, waste, ceramic mass.