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VALORIZATION OF PLASTER MOLDS WASTE FROM FINE CERAMIC INDUSTRY

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Abstract

The Environment Action Program foresees the development of a Thematic Strategy concerning the sustainable use of natural resources and waste management (Report EUR 21002 EN, 2004). In this context, the activities regarding the research and industrial development related to waste valorization through recycling and reusing have been grown. The wastes resulted from the fine ceramic technological process (scraps, used molds etc.) may be valorized. The used molds can be valorized in other technological processes if the content in calcium sulfate semi-hydrate is framed within the limits imposed by the respective technology. The enhancement of the semi-hydrate can be achieved by a dehydration process in accordance with the chemical transformation in the system $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} - \text{CaSO}_4$.

In this paper, the thermodynamic potential of dehydration of the used plaster molds resulted from the manufacture of household ceramic products is studied. If a 60 minutes time is considered as an efficient dehydration time, one may observe that regardless the dehydration temperature, the content of semi-hydrate in the obtained plaster is around 86 %. Such a product can be used as plaster for construction, for modeling or for fertilizer conditioning.

Key words: dehydration process, molding plaster, solid waste, valorization

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