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ANALYSIS OF THE UTILIZATION OF WASTE CATALYSTS FROM CATALYTIC CRACKING REACTORS IN OIL INDUSTRY

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Abstract

This article covers the investigation of the catalyst waste (T.R.M 1 and T.R.M 2) produced in the reactor of oil catalytic cracking. The analysis of this waste was carried out. The properties of T.R.M 1 and T.R.M 2 were investigated and determined, the mineralogical analysis of catalyst waste was implemented, the analysis of thermal effects during the burning was performed. Catalyst waste materials investigated were used in a ceramic system (from 7 % to 20 % of the overall amount). It was identified that the optimal quantity of additive T.R.M 1 in formation mixes was 10%. With this amount of the additive, after the burning of formation mixes at 1050°C temperature, ceramic systems with the following properties were formed: total contraction - up to 6.5%, density of the system - larger than 1847 kg/m³, compressive strength - larger than 13 MPa, water absorption - up to 11 %, and effective porosity - up to 21 %. The identified optimum quantity of additive T.R.M 2 in the formation mix was 20 %. The obtained ceramic systems have the following parameters: total contraction - less than 10 %, density - higher than 1852 kg/m³, compressive strength - higher than 15 MPa, water absorption - less than 9 %, and effective porosity - lower than 17 %.

Key words: building ceramic, catalyst, oil waste, recycle

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