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UTILIZATION OF OIL WELL-DERIVED DRILLING WASTE IN SHALE-BRICK PRODUCTION

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Abstract

The main objective of this study is to investigate the utilization potential of oil well-derived drilling waste (DW) in the fired shale-brick production. Different mixtures were suggested for the experimental work with the DW content varying from 20% to 40%. The prepared briquettes from different mixture were fired at a temperature ranging from 950°C to 1050°C for 1 h, with a heating rate of 2~3°C /min. Water absorption, apparent porosity, bulk density, weight loss by ignition, firing shrinkage and compressive strength of the fired briquettes has been investigated. The results indicated that it is feasible to use oil well-derived drilling waste as a raw material in the production of fired shale-brick. When the DW content is less than 40%, increasing the firing temperatures led to decrease water absorption and apparent porosity and increase the shrinkage, density and compressive strength of fired briquettes. Increasing the DW content produced a negative effect as increasing of water absorption and apparent porosity and decreasing of shrinkage and compressive strength. Moreover, 20% of DW content fired at 1000°C, 30% DW at 1050°C and 40% DW at 950°C, the strength of the laboratory made bricks met the requirements of the MU30, MU20 and MU10 according to Chinese National Standard (GB5101-2003), respectively.

Key words: oil well-derived drilling waste (DW), physico-mechanical property, shale-brick

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