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Utilization of textile waste cuttings in the production of briquette with pumice aggregate by converting it into a fiber**Hasan Baylavli and Mücella Çelik B**
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The consumerism in the textile sector also causes an increase in textile waste. Compared to other wastes, most of the clothing and textile waste can be recycled. In addition to producing new clothes, rugs and cleaning cloth, insulation and filling materials, tar paper and panels are also used in the utilization of these wastes. In this study, jean trousers in used waste condition have been converted into fibers. Waste jean pants fibers are used in pumice aggregate briquette. The trousers made into fiber contain 97% cotton and 3% elastane. In 1800 kg/m³ pumice aggregate mixture, 2 kg/m³ ratio of waste jean pants fibers were supplemented. Production was made in briquette factory. Two (2) series of briquettes are manufactured with fiber additives and fiber-free additives. The number of briquettes produced in one batch in the factory is 156. On the samples produced, pressure resistance, density, size, surface control, and thermal permeability tests were conducted. The same operations were replicated by exposing the samples to temperatures of 200°C, 400°C, 600°C and 800°C. The waste jeans fibers have a positive effect on the compressive strength of briquettes. Compressive strength of the control sample is 1,48 to 0,51 MPa. The compressive strength of the samples with fiber additive in waste jeans is 1,47 and 0,72 MPa. The average results were evaluated by testing six samples in each series. As temperature increases in all samples, compressive strength and density values are also decreased. According to the control sample, the density of fiber samples in waste jeans increased slightly. With the increase in temperature in the control sample, the samples have become more brittle and dispersed. Less dispersion has occurred in samples with fiber additive in waste jeans. The length of usage of the construction materials is longer than the length of use of the clothes. Therefore, the evaluation of textile waste in construction materials prevents waste from reappearing for a more extended period.

Recent Publications

1. Shakir A.A., Naganathan S., Nasharuddin K. Bin M., (2013), Development Of Bricks From Waste Material: A Review Paper, Australian Journal of Basic and Applied Sciences, 7(8): 812-818, ISSN 1991-8178.
2. Pinto J., Cruz D., Paiva A., Pereira S., Tavares P., Fernandes L., et al., (2012), Characterization of corn cob as a possible raw building material. Construction and Building Materials, 34:28–33.
3. Gries, T., Raina, M., Quadflieg, T., Stolyarov O. (2016)., Textile Fibre Composites in Civil Engineering, Woodhead Publishing Series in Civil and Structural Engineering, Part One: Materials, Production Technologies and Manufacturing of Textile Fibre., Composites for Structural and Civil Engineering, 3–24.
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5. Briga-Sa A., Nascimento D., Teixeira N., Pinto J., Caldeira F., Varum H., Paiva A., (2013), Textile waste as an alternative thermal insulation building material solution, Construction and Building Materials; 38: 155–160.

Biography

Hasan BAYLAVLI works in Hitit University Construction Technology and Building Audit Programs, in Çorum, Turkey as Research Assistant. Completed associate degree program in 1997 in Gazi University Çorum Vocational School Construction Program. Graduated from Pamukkale University, Faculty of Engineering, Department of Civil Engineering in 2000. Did Master's degree in Eskişehir Osmangazi University, Faculty of Engineering, Department of Civil Engineering Building Materials. Still does doctorate in University, Faculty of Engineering, Department of Civil Engineering Building Materials. Works in these subjects: self-compacting concretes, fiber-reinforced concretes and recycling. Furthermore, has studies in the fields of university campus planning, green campus and energy-efficiency in buildings..