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RECOVERY OF SAWDUST AND RECYCLED RUBBER GRANULES AS SOUND ABSORBING MATERIALS

Ancuța-Elena Tiuc^{1*}, Viorel Dan¹, Horațiu Vermeșan¹, Timea Gabor¹, Marian Proorocu²

¹Technical University of Cluj-Napoca, Faculty of Materials and Environmental Engineering, Department of Environmental Engineering and Sustainable Development Entrepreneurship, 103-105 Muncii Blvd, Romania

²University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Agriculture, 3-5 Mănăștur Way, Romania

Abstract

This paper presents a research on ways to reduce waste and to diminish sound pollution by recovery of fir sawdust and recycled rubber granules and use in making sound absorbing composite materials. Four materials were prepared using raw materials (fir sawdust and recycled rubber granules) in various percentages, and polyurethane binder. Materials mechanical and acoustic properties were characterized, proving these materials have useful properties. Materials acoustic performance was compared with performance of materials existing on the market: glass wool and flexible polyurethane foam. Sound absorption coefficient was experimentally determined by impedance tube method, in a frequency range of 100-3200 Hz. Results show that composite materials made from waste are superior to existing materials, with regard to acoustic performance, particularly at frequencies below 1600 Hz. Sound absorption coefficient measured for material made with sawdust and 30% polyurethane binder reached a minimum value of 0.65 in the large frequency range of 300-3150 Hz, and a maximum value of 0.979 at the frequency of 2000 Hz.

Key words: polyurethane binder, recycled rubber, sawdust, sound absorbing materials, waste

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