STONE SAMPLES BASED ONE WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

Elena Ramona Andrei [1], Ramona Marina Grigorescu [1], Madalina Elena Grigore [1], Lorena Iancu [1,2], Rodica-Mariana Ion [1,2], Paul Ghioca [1], Mircea Ioan Filipescu[1], George Ionut Radu [1]

[1] *National Institute for Research and Development in Chemistry and Petrochemistry- ICECHIM, Bucharest, 060021, Romania*

[2] *Valahia University of Târgovişte, Doctoral School of Materials Engineering, 130004, Târgovişte, Romania*

**Corresponding author: (andreiramona@hotmail.com)*

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Introduction:. The reuse of plastic components of waste electrical and electronic equipment (WEEE) is an important concern both for environmental issues and to preserve the material resources, with minimum energy consumption. In our study, plastic components of WEEE were used to obtain stone samples for different applications, (figure 1).

Materials and methods: One way to reuse these polymers is to obtain low-weight stones for interior walls in building construction. Plastics materials based on polyamides, polycarbonates and polyesters after dismantling and identification by specific methods were finely cut as powder of 1-2 mm using a cutting mill SM 300, Retsch. Stone samples of 4 cm^3 based on gypsum, sand and WEEE mixture of polymers were obtained. The porosity, compactness, water absorption, and compressive strength of the obtained samples were analyzed.

Results: It was observed that the addition of WEEE polymers in the stone samples composition did not significantly alter the compressive strength, (figure 2). The prepared stone samples with WEEE have uniform composition and lower density, are less porous and more compact. In addition, it has been observed that the water absorption of stone samples modified with WEEE polymer decreased in comparison with the control sample.

Fig. 1. Stone sample with WEEE

Fig. 2. Stone sample before and after mechanical testing

Conclusions: The resulting WEEE fraction after separation of polystyrene polymers has been used as an additive material in the production of low-weight stones samples, with low humidity absorption and improved antiphonal properties usable for interior walls in building construction.

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