

INFLUENCE OF SELECTED MICRO ADDITIVES CONTENT ON THERMAL PROPERTIES OF GYPSUM

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Abstract

The presented work focuses on the influence of the micromaterials (microspheres, aerogel and polymer hydroxyethyl methyl cellulose) on thermal properties of gypsum. The polymer and the aerogel are used as additives in the weight fraction, up to 1% of pure gypsum and the microspheres in the weight fraction, up to 10% of gypsum. The water-to-gypsum ratio was at the level of 0.75. Non-stationary method and Isomet 2114 experimental setup were applied for the purpose of measurements of thermal parameters. The coefficient of thermal conductivity λ , the specific heat C_p and the thermal diffusivity a were determined. The gypsum with polymer content resulted in more than 15% lower thermal conductivity in comparison to the specimen without HEMC as a result of the different density and total porosity of the material. The gypsum with aerogel and microspheres content resulted in more than 8% and 7% respectively lower values in comparison to the pure gypsum without micro additives. Decrease in thermal conductivity, thermal diffusivity and density with added micro product were observed as a result of structure modifications of the gypsum product.

Keywords: Aerogel; hydroxyethyl methyl cellulose; Micromaterials; Microspheres; Thermal properties.