

عنوان مقاله:

Correlation of Apparent Thermal Conductivity and Electrical Resistivity of Moist Thermal Insulation Materials

محل انتشار:

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خلاصه مقاله:

The goal of the present study is to investigate the effect of moisture on apparent thermal conductivity and electrical resistivity of thermal insulation materials and finding their correlation. For this purpose, a set of experiments are conducted. In these experiments with changing the moisture content, thermal conductivity and electrical resistivity are measured. To measure the thermal conductivity, heat flow meter device is used and for measuring electrical resistivity, a simple electrical circuit is provided. Thermal conductivity and electrical resistivity curves according to moisture content are provided and consequently the correlation of apparent thermal conductivity and electrical resistivity for moist porous medium is obtained. Since available experimental methods of determination of apparent thermal conductivity for insulation materials are expensive and time-consuming and conducting them out of laboratory is not possible, by using the obtained correlation between two mentioned parameters, determination of apparent thermal conductivity of insulation materials by quick and affordable measurement of their electrical resistivity will be possible. Constants of the correlation for each material should be determined by experiments.

کلمات کلیدی:

apparent thermal conductivity, insulation materials, moisture, electrical resistivity

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