

Thermal insulation capacity of a 3D printed material

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Keywords. 3D printing, thermal conductivity, experimental research, temperature measurement, empirical mathematical model

Abstract.

The 3D printing process allows obtaining parts with different interior structures and made of different materials. Such parts can be used to avoid overheating of various objects under the action of thermal radiation. The existence of different internal structures of the parts, as well as the 3D printing conditions and the distinct physical properties of the materials used determine a different behavior of the parts in terms of their thermal insulation capacity. In order to obtain an image on the thermal conductivity of thin parallelepiped-shaped parts obtained by 3D printing, an experimental research was conceived and materialized. The experiments involved the use of a heat source and respectively the measurement of temperature on the surface opposite to that exposed to thermal radiation. The obtained results were mathematically processed in order to obtain empirical mathematical models that would highlight the ability of 3D printed parts to be used as thermal insulating materials.

References

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