

THERMAL PROCESSES WITHIN IMITATION LEATHER WHEN HEATING AND COOLING

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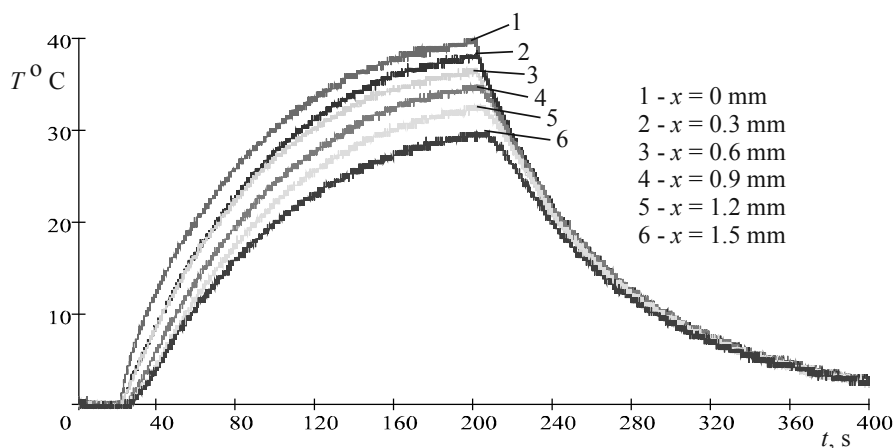
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Skin covers all external surface of human body and serves as a protective barrier from traumas, radiations, overheating and infections. The skin can be easily damaged by traumas and burns. Skin transplantation is an optimum solution in such cases and imitation leather can be used as a transplantat.

The thermoregulation of organism is the important function of human skin. The purpose of our work is to define the thermal parameters of imitation leather.

The sample contains six layers of imitation leather of size 50 x 50 mm and thickness 0.3 mm each. The thermocouples are located both between the layers and on the external surfaces of the sample. Signals of thermocouples were transferred through the of analog-digital transformer to the computer.

Figure shows changes of temperature at the different depths of skin sample when heating the sample by light irradiation.



Thermal processes when heating the sample by the light irradiation

On the basis of obtained experimental data we have managed to evaluate thermal conductivity coefficient ($k = 0.068$ W/(m*K)) and thermodiffusion coefficient ($a = 5.92 \cdot 10^{-8}$ m²/s) of imitation leather.