

# **Damage to the human skin by frictional heating**

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## **Abstract**

Material selection for sport and personal care products is typically done by optimising the complex interaction between manufacturing costs, functionality and e.g. environmental impact, durability, colour aspects and design aspects. An important requirement from the user's point of view, however, is the degree of comfort. Although comfort is tightly linked to human factors technology, it is also a matter of sound tribological design, especially for products that involve sliding contacts with the human skin. This work explores a small part of such design and concentrates on the possibility of irritation of (and ultimately damage to) the human skin, related to frictional heating in sliding contacts. Two cases are presented, one for a moving product and stationary human skin and one for a stationary product and moving human skin. The effect of the sliding velocity and the effect of the products thermal conductivity are calculated and presented for a largely simplified skin model. Preliminary results are presented on frictional heating in single summit contacts, indicating the importance of knowledge on the elastic behaviour of the epidermis.