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Evaluation of Thermal Transport Properties of Pillows

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Abstract: In order to design thermally desirable pillows, the relation between the sensory evaluation of the coolness of pillows and their thermal transport properties was investigated. The perception value *Pv* of coolness was correlated with the dry heat loss *Qd* of the pillow. The pillows with a large value of *Qd* were regarded as cooler. The *Pv* value tended to correspond to the apparent thermal conductivity *Ke* of the padding material used in the top side of the pillow. Pillows with a large value of *Ke* were regarded as cooler. The pillows with a small value for the contact area *CA* of the head and pillow showed a cooler feeling. The temperature *Tm* between the head and pillow after 30 minutes of use was measured. A pillow that had larger values for *Qd* and *Ke* and a smaller value for *CA* showed a lower value for *Tm*, and was regarded as being cooler.

Key Words: pillow, padding material, thermal transport property, coolness

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