

Forschungsvorhaben

Qualitätskriterien für die Berechnung des
längenbezogenen Wärmedurchgangskoeffizienten Ψ_{fg}
(Psi-Wert) des Übergangs Rahmen-Glasrand-Glas
und Vergleich mit experimentellen Daten

Kurztitel:

Psi-Wert Fenster

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Abstract

The present research project, promoted by the DIBt, investigated the linear thermal transmittance caused by the interaction of frame and glazing. For this the linear thermal transmittance of common insulating glass units with different glazing spacer bars in various frame systems made of aluminium, plastics and wood were calculated and compared to experimental data for three selected frame systems.

The calculations were performed independently by six research institutes. The variance of the results turns out to be less than 10%, that means about 0,005 W/(m²·K) for a glazing spacer bar with improved thermal performance. The calculated sensitivity analysis shows also an uncertainty of 0,005 W/(m²·K) caused by accepted production tolerances. Essential criteria of quality of the calculation is a validated software, a suitable modelling, especially of the edge seal of the insulating glass unit, the accurate treatment of cavities and the consequent prevention of systematic errors.

The experimental determination of the linear thermal transmittance requires a complex differentiation measurement. The tests were performed at three accredited laboratories. The analyses according GUM shows an uncertainty of 25%. The single values of the measurements agree with the calculated values excellently.

For the declaration of characteristic values of products the frame profile and the glazing should be defined. Characteristic values thus obtained may generally be accepted for other combinations of frame and glazing within the uncertainty above mentioned.