Arbeitskreis Thermophysik

in der GEFTA

Intercomparison on PMMA: 2002

Material: Polymethyl Methacrylate, (Plexiglass Type GS; Manufacturer Degussa Röhm Plexiglas GmbH)

Thermophysical properties measured:

- thermal conductivity
- temperature range -70°C to +80°C

Participating laboratories:

- ARC Seibersdorf Research GmbH (ARCS, Austria)
- BASF AG (Ludwigshafen, Germany)
- Brandenburgische Technische Universität Cottbus (BTU, Germany)
- Eidgenössisches Materialprüfungs- und Forschungsanstalt (Dübendorf, Suisse)
- Forschungsinstitut für Wärmeschutz e. V. (FIW, München, Germany)
- Fraunhofer-Institut für Bauphysik (IBP, Stuttgart, Germany)
- Institut für Begutachtung und Überwachung von Baustoffen GmbH (Herzogen rath, Germany)
- Institut für Fenstertechnik e. V. (Rosenheim, Germany)
- Laboratoire de Technologie Industrielles Henri Tudor (Luxembourg)
- Materialforschungs- und Prüfanstalt (MPW, Weimar, Germany)
- Materialprüfungsamt NRW (MPANRW, Dortmund, Germany)
- Materialforschungs- und Versuchsanstalt (Neuwied, Germany)
- National Physical Laboratory (NPL, Teddington, Great Britain)
- Physikalisch-Technische Bundesanstalt (PTB, Germany)
- Saint-Gobain Isover G + H AG (Ladenburg, Germany)
- Taurus Instruments GmbH (Weimar, Germany)
- Universität Erlangen-Nürnberg (Germany)

Publication

International Journal of Thermophysics, Vol. 25, No. 5, September 2004
"Intercomparison of Measurements of the Thermophysical Properties of Polymethyl Methacrylate"
S. Rudtsch, U. Hammerschmidt

Presents the results of intercomparison measurements on thermal conductivity, thermal diffusivity, specific heat capacity, and density of polymethyl methacrylate (PMMA) in the temperature range between -70°C and +80°C. The purpose of this comparison was to investigate the variability of the results among guarded hot-plate (GHP) and guarded heat-flow meter (GHF) techniques on the one hand, and among GHP/GHF and other measuring instruments on the other. The primary objectives are to characterise the material properties mentioned and to quantify the effects of thermal contact resistance and temperature measurements. With regard to future use of PMMA as a reference material, reference data for the thermal conductivity have been derived.