



Arbeitskreis Thermophysik

in der GEFTA

Intercomparison on steel: August 2000 - März 2002

Material: Austenitic nickel chromium steel (X 10 NiCrMoTiD 15 15; Nr. 1.4970)

Thermophysical properties measured: thermische Ausdehnung

- thermal expansion
- specific heat capacity
- thermal conductivity
- thermal diffusivity
- temperature range 0°C to 1000°C

Participating laboratories:

- ARC Seibersdorf Research GmbH (ARCS, Austria)
- Bayerisches Zentrum für Angewandte Energieforschung e. V. (ZAE, Germany)
- Fraunhofer Institut für Keramische Technologien und Sinterwerkstoffe (IKTS, Germany)
- Bergakademie Freiberg (Germany)
- Technische Universität Graz, Institut für Experimentalphysik (Austria)
- Universität Stuttgart, Institut für Kernenergetik und Energiesysteme (IKE, Germany)
- Österreichisches Gießerei-Institut (ÖGI, Austria)
- Physikalisch-Technische Bundesanstalt (PTB, Germany)
- Forschungszentrum Karlsruhe GmbH, Institut für Materialforschung I (FZK, Germany)
- RWTH Aachen, Institut für Keramische Komponenten im Maschinenbau (IKKM, Germany)

Laboratory	Thermal expansion	Specific heat capacity	Thermal diffusivity	Thermal conductivity
ARCS	x	x	x	x
Freiberg	x	x	x	x
FZK			x	
Graz		x		
IKE			x	x
IKKM		x	x	x
IKTS	x	x	x	x
ÖGI	x	x	x	x
PTB		x		
ZAE	x	x	x	x

Publication

International Journal of Thermophysics, Vol. 26, No. 3, May 2005

"Intercomparison of Thermophysical Property Measurements on an Austenitic Stainless Steel"

S. Rudtsch, H. P. Ebert, F. Hemberger, G. Barth, R. Brandt, U. Groß, W. Hohenauer, K. Jaenicke-Rößler, E. Kaschnitz, E. Pfaff, W. Poeßnecker, G. Pottlacher, M. Rhode, B. Wilthan

Presents the results of an inter-laboratory comparison of thermal conductivity, thermal diffusivity, specific heat capacity, and thermal expansion measurements on austenitic stainless steel in the



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temperature range between 20 and 1000°C. Mean values are presented for the physical properties studied. Reliable relative expanded uncertainties can be stated for the properties determined, which were achieved by applying good measurement practice, i. e. 3% for thermal expansion, 5% for specific heat capacity and thermal diffusivity, and 6% for thermal conductivity. The mean values derived from this intercomparison agree well with the results of a previous intercomparison in 1990.