

Working Group 9 report to CCT, June 2005

Times

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Members

Tetsuya Baba	NMIJ	Japan
Carlos Nieto de Castro	IPQ	Portugal
Ferruccio Girard	IMGC	Italy
Graham Machin	NPL	UK
Jean-Rémy Filtz	LNE	France
Jintao Zhang	NIM	China
Leonard Hanssen	NIST	USA
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Sang-Hyun Lee	KRISS	Korea
Stefan Sarge (Joachim Fischer)	PTB	Germany

Terms of Reference

The Terms of Reference of WG-9 are:

To advise the CCT on matters related to thermophysical properties, and to assess the need in this subject field for a key comparison.

Direction

- 1 Establish the thermophysical property standards to meet requirements of global needs such as conservation of energy, safety, trades, industrial needs etc.
- 2 Give priorities considering needs and capability of the member institutes and countries.
- 3 SI traceable measurements which can be evaluated uncertainty based on GUM.
- 4 Approach considering diversity of thermophysical properties

Discussions

Capability and interest of their institute and country are stated by all members and compiled to a table.

The following consensus was reached and the pilot studies shall be started referring the capability on the table.

Consensus in WG-9

Continue to accumulate information of needs and capability of members, their institutes, and their country.

At present, limited comparisons should be started very soon to realize future key comparisons.

Members of WG-9 will collaborate to limited comparisons for the fields which they have capability.

Pilot studies for limited comparison

It is decided that pilot studies for limited comparison in the following three fields are shall be started.

- 1 Thermal conductivity of insulating materials

Temperature range	0 - 100 °C
Measurement technique	guarded hot plate method
Pilot institute	LNE, France

- 2 Thermal diffusivity of dense materials up to higher temperatures by laser

Temperature range	RT - 1000 °C
Measurement technique	laser flash method
Pilot institute	NMIJ, Japan

- 3 Normal spectral emissivity of solids

Temperature range	T > 200 °C
Measurement technique	to be determined
Pilot institute	NPL, UK

Feasibility study for thermophysical property measurements of liquid

Generally, thermophysical property measurements of liquids from RT to 500 K are more matured than those of solids from the metrological point of view. Since, only Professor Castro is the specialist of this field in WG-9 working members, he will summarize the situation of this field and propose a plan at the next WG-9 meeting mainly for the following topics.

- 1 Thermal conductivity of liquid by transient hot wire method below 500 K.
- 2 Thermal conductivity of molten metals by transient hot strip method up to 1500 K.

Next meeting

The next meeting of CCT WG9 will be held at the 17th European Conference on Thermophysical Properties (ECTP2005) from September 5 to 8, 2005 at Bratislava, Slovakia.