

**EUROMET PROJECT
FINAL REPORT**

1. Ref. No.: 624	2. Subject Field: Thermometry	
3. Type of collaboration: Intercomparison		
4A. Partners: PTB, CEM, IMG, BNM-LNE, NPL (institutions)	4B. CEC funded? No	
5. Participating countries: DE, ES, IT, FR, UK		
6. Title: Intercomparison of Pt/Pd thermocouples calibrated at the freezing points of Cu (or Au) and Ag		
<p>7. Progress:</p> <p>The subject of the project was the intercomparison of Pt/Pd thermocouples calibrated at the freezing points of copper ($t_{90} = 1084.62$ °C) and silver ($t_{90} = 961.78$ °C). Furthermore the freezing temperatures of different copper cells should be compared.</p> <p>PTB circulated two stable Pt/Pd thermocouples. One of them was annealed and only used for the intercomparison of the copper fixed point cells of the participants. The second thermocouple was annealed and calibrated at the freezing points of Cu and Ag. Furthermore it was used to measure immersion profiles at both fixed points.</p> <p>The results of the comparison are as follows: The agreement of the emfs measured by the participants at the freezing points of copper by using both Pt/Pd thermocouples is within a temperature equivalent of about 0.15 K and also within the combined uncertainties for $k = 1$ of a single calibration performed at the participating laboratories. The measured emfs of the thermocouple used at the freezing point of silver show an agreement within a temperature equivalent of about 0.07 K which is within the combined uncertainty of each measurement at this fixed point. From the results it can be concluded that Pt/Pd thermocouples are suitable as transfer standards for the dissemination of temperatures and the approximation of the ITS-90 because of their stability within about 0.1 K for temperatures up to the freezing point of copper. Furthermore, it was confirmed that the freezing temperatures of the different copper fixed point cells used at most of the participating laboratories agree within a temperature equivalent of about 50 mK.</p> <p>The results of the intercomparison have been presented and will be published in the proceedings of the 9th International Symposium on Temperature and Thermal Measurements in Industry and Science, Cavtat 2004.</p>		
8. Coordinator's name: Frank Edler		
Address: Physikalisch-Technische Bundesanstalt, Abbestr. 2-12, D-10587 Berlin, Germany		
Telephone: +49 30 3481 538 Telefax: +49 30 3481 504 E-mail: frank.edler@ptb.de		
9. Completion date: June 2003	10. Coordinator's signature:	11. Date: 22.04.2005

Notes for completion of the form overleaf

*) Delete as appropriate