

EUROMET PROJECT FINAL REPORT

1. Ref. No.: 395	2. Subject Field: mass	
3 Type of collaboration: co-operation in research		
4A. Partners: (institutions) BIPM, CEM, DFM, BNM, IMG, MIKES, NPL, PTB, SP, UME	4B. CEC funded? no	
5. Participating countries: DE, DK, ES, FI, FR, GB, IT, SE, TR		
6. Title: CONVECTION EFFECTS IN MASS CALIBRATION DUE TO TEMPERATURE DIFFERENCES OR GRADIENTS		
<p>7. Progress:</p> <p>Most of the partners made measurements on convection effects in mass calibrations or on temperature differences inside the weighing chamber of a mass comparator. The results were presented at the annual meetings as oral or written presentations. These have been copied and distributed as two booklets, see below. As a summary of the results it became evident, that temperature differences or gradients in the weighing chamber and differences between mass standards and the ambient air lead to non-negligible changes of the balance indications. The evaluations of the measurements have lead to quantitative relations between the temperature difference between mass standards of different sizes and the deviation of the weighing instrument due to convection effects. They have also led to recommended waiting times for acclimatization of the mass standards in order to achieve acceptably small weighing deviations. These waiting times will become part of a new international recommendation of OIML (revised OIML R 111) as well as part of an EA publication for the calibration of weighing instruments.</p> <p>Publications:</p> <ul style="list-style-type: none"> - M. Gläser: Change of the apparent mass of weights arising from temperature differences, Metrologia 36 (1999), 183-197 - G. Mana, C. Palmisano, A. Perosino, S. Pettoruso, A. Peuto: Convective forces in high precision mass measurements, Meas. Sci. Technol. 13 (2002), 13-20 <p>Reports:</p> <ul style="list-style-type: none"> - EUROMET Project No. 395 <Title> Working documents, Presentations of participants, meeting on 18 February 1998 in Oslo (or before), Braunschweig, August 1998, Reports of PTB, BNM/LNE, SP, CEM, BNM/INM, MIKES - EUROMET Project No. 395 <Title> Working documents, Contributions of participants from 1999 to 2002, Braunschweig, February 2002, Reports of UME, METAS, IMG, and copies of the publications of PTB and IMG, cited above 		
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9. Completion date: February 2002	10. Coordinator's signature: Michael Gläser	11. Date: 26 February 2002

Notes for completion of the form overleaf