STABILITY OF TYPE K THERMOCOUPLES AT 1000°C

Speaker: S. G. Petkovic
Authors: S. G. Petkovic, F. A. L. Goulart, F. D. Campos, M. S. Monteiro, P. R. Santos
R. R. Filho*, R. M. Ferreira** and E. T. Teves**
National Institute for Metrology, Standardisation and Industrial Quality, INMETRO
Rio de Janeiro, Brazil
*VISOMES Comercial Ltda
**CONSISTEC Controles e Sistemas de Automação Ltda
sgpetkovic@inmetro.gov.br

ABSTRACT

Type K thermocouples are more frequently used in Industry. They are usually calibrated in the range 0°C to 1100°C, with expanded uncertainty (k=2) of ± 1,0°C up to 1000°C. Sheathed thermocouples having compacted mineral oxide insulation and thermocouples in conventional closed-end protecting tubes were studied. We investigated the electromotive force stability of type K thermocouples calibrated in fixed point cells during 100 hours. The results, laboratory facilities, calibration method, and the annealing influence are discussed to evaluate uncertainties. The uncertainty budget reports that the most important factor in the expanded uncertainty is the drift of the electromotive force along time.