

Abstract:

This work examines an electrochemical determination of mixed nitric and sulphuric acid solution that is formed during calorimetric determination of gross calorific value of coal carried out under the ISO 1928:1995 standard. Knowing the amount of these acids is necessary for calculating net calorific value. The named standard only allows use of volumetric methods which are time-consuming. Conductivity and ion-selective measurements were used here which significantly shortened analysis time. Overall conductivity measurement was taken with a 4-electrode meter while nitric acid was measured with a nitrate ISE by known addition method. Sulphuric acid was then calculated according to actual temperature. This research has defined the calibration relations and temperature effect. Several simulated and real-world samples were analysed and the method was evaluated for a possible use in a future automated analyser.