

## Original Paper

# Evaluation of Measurement Uncertainty in Determination of Lead in Glass Materials by a Standard Complexometric Method

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### Abstract

Lead is an important constituent for the preparation of wide variety of glasses like high refractive index optical glasses, radiation shielding glasses, ceramic glazes, enamels, high electrical resistance glasses, glass solders and sealants, etc. Determination of exact quantity of lead is therefore very essential to obtain the desired property of different glasses. With a view to meet the necessity, the measurement uncertainty of the results of lead determination in different lead containing glasses have been evaluated. The lead content has been determined complexometrically at pH 4.3 using di-sodium salt of EDTA. The sources of uncertainty of the results of measurement have been identified as contributions from repeatability, standardization of EDTA, volume measurement by volumetric flask, burette, pipette and end point detection. Sources of uncertainty have been identified and combined following the EURACHEM guidelines. The results show that the major sources of uncertainty arise from standardization and end point detection.

### Keywords

Uncertainty measurements – Lead – Volumetric method by EDTA – Crystal glass – Optical glass – Radiation shielding glass