

Certificate of calibration

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Date: 29th November 2017

Serial Number of Instrument: 0934138938

Results: **Leeds 43I SO₂ ppbV = 1.14 NCAS Primary Standard
ppbV + 0.0378 ppbV**

Uncertainty at amount fractions greater than 100 nmol/mol = $\pm 3\%$ of value. Uncertainty at amount fractions between 0 and 100 nmol/mol = 3nmol/mol.

Carried out and authorised by: Dr Katie Read
NCAS Scientist
University of York
York, UK

Signed: 

Reference to UK Scale

The calibration cylinder used here was supplied by the National Physical Laboratory in***** and therefore quality assured and controlled by independent audit procedures. The calibration performed here relates the output from the TE43i SO₂ analyser front panel to the ppbV determined by the calibration gas.

The most recent calibration (2nd September 2016) of the Standard reported a concentration of 100ppbV on a duplicate instrument: -

Measurement procedure

A zero air supply and a span gas of 100ppbV was delivered to the instrument . The second of two calibrations were used to generate the calibration data.

LEEDS 43I SO₂ output in ppbV = **m** Calibration standard ppbV + **c**

where: **m** is the gradient determined as the ratio of the visiting instrument reading for SO₂ to the calibration gas reading for SO₂ and **c** is the zero intercept expressed in ppbV.

Results

NCAS Primary Standard (nmol.mol ⁻¹)	FAAM 49C (nmol.mol ⁻¹)	Standard deviation (nmol.mol ⁻¹)
0.00	0.04	0.02
100.00	114.21	0.31
100.00	114.79	0.62

Leeds 43I SO₂ ppbV = 1.14 NCAS Primary Standard ppbV + 0.0378 ppbV

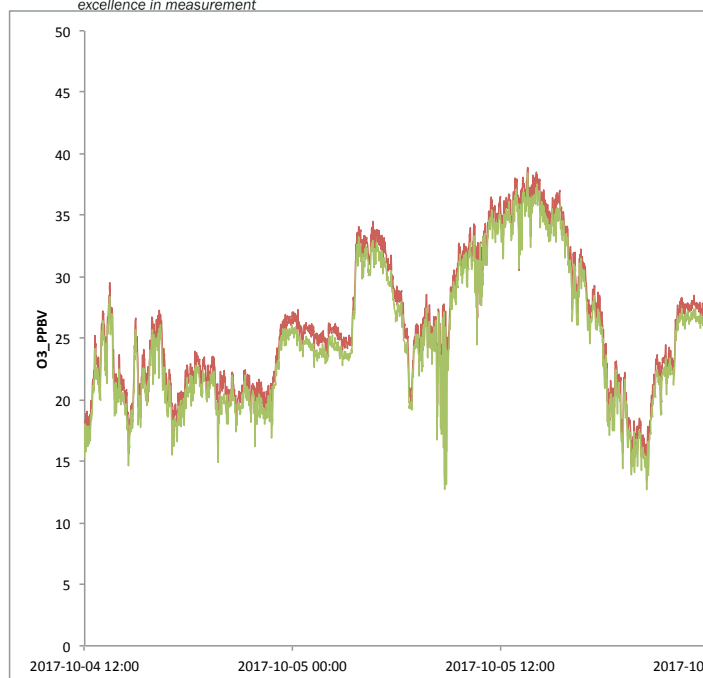
The instrument coefficient should be changed from ** to **** to bring it into calibration for the range 0-100ppbV.**

Uncertainty is generally quoted as ±3% for amount fractions greater than 100 nmol/mol and 3 nmol/mol for amount fractions between 0 and 100 nmol/mol.

Precision of the instrument has been calculated using the zero data and by applying the following formula: -

Precision = $\sqrt{2 \times \text{standard deviation of } 5 \times 1 \text{ minute data points}}$

The precision is 0.22 ppbV for this instrument.



We recommend that you carry out calibrations at least annually to verify the stability of your analyser.

This work was carried out in the COZI-Lab in the Wolfson Atmospheric Chemistry laboratories (WACL) at the University of York. The COZI-Lab is principally funded through the National Centre for Atmospheric Science (NCAS).