

# CERTIFICATE OF CALIBRATION

ISSUED BY H & D FITZGERALD LTD.

DATE OF ISSUE **06 April 2020**      CERTIFICATE NUMBER **12345**



Cefn Du, Tremeirchion,  
St. Asaph, Denbighshire  
LL17 0US, UK  
☎ +44 (0)1352 720 774  
calibration@density.co.uk  
www.density.co.uk

Page 1 of 1 pages

Approved signatory **H. Fitzgerald**  
**I. Edge**

Client **Somebody Ltd., Box Rd, Atown,**

Instrument **Paar DMA 35N**

Serial number **123456**

Date calibrated

**05 April 2020**

## Measurements

On receipt, the meter read  $0.0005 \text{ g/cm}^3$  high when filled with water. It was adjusted to read correctly.

The indicated temperature on the meter was checked by circulating water at constant temperature through the measuring cell at  $20.0^\circ\text{C} \pm 0.1^\circ\text{C}$ . The density meter displayed a temperature of  $20.2^\circ\text{C}$  i.e it read  $0.2^\circ\text{C}$  high.

The density meter was filled with three liquids of known density. The results are tabulated below.

Liquid	Temperature indicated by density meter $^\circ\text{C}$	Displayed density $\text{g/cm}^3$	Corrected density meter temperature $^\circ\text{C}$	Calculated density from certificate $\text{g/cm}^3$	Correction $\text{g/cm}^3$
2,2,4-trimethylpentane	21.5	$0.690_4$	21.5	0.6906	+0.0002
Water	20.4	$0.998_1$	20.4	0.9981	0.0000
Tetrachloroethylene	22.1	$1.619_2$	22.1	1.6192	0.0000

The densities of the liquids used were determined on our UKAS accredited hydrostatic weighing rig. At the time of calibration, the uncertainty of measurement with the calibrants listed above was  $0.00050 \text{ g/cm}^3$ . Uncertainty of the temperature measurement was  $\pm 0.02^\circ\text{C}$ .

Ambient air temperature was  $21.2 \pm 1^\circ\text{C}$ .

When clean & dry, the cell reads  $0.001_3 \text{ g/cm}^3$ .

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k = 2$ , providing a level of confidence of about 95%. The evaluation of the uncertainty has been carried out in accordance with UKAS requirements.

Different models of density meters show different responses to sample viscosity, and exhibit different rates of temporal drift. These effects need to be taken into account when considering the uncertainty of a density measured subsequent to the calibration.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.