

CERTIFICATE OF CALIBRATION

ISSUED BY H & D FITZGERALD LTD.

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CERTIFICATE NUMBER **04662**



Cefn Du, Tremeirchion,
St. Asaph, LL17 0US, UK

☎ + 44 (0)1352 720774

📠 + 44 (0)1352 720249

✉ calibration@density.co.uk

www.density.co.uk

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Approved signatory **H. Fitzgerald**

Description **Tetrachloroethylene**
Batch **162198A**
Expiry date **14 February 2000**

The density of this liquid was determined by hydrostatic weighing, using instruments and weights, the calibrations of which are traceable to the National Physical Laboratory. The liquid in the vial formed part of the bulk liquid tested in the hydrostatic weighing cell.

A total of **30** density measurements were made at ambient pressure, and the following densities at standard atmospheric pressure then calculated:-

10.0°C and 1.013 bar **1637.64** kg/m³ ± 0.01 kg/m³
15.0°C and 1.013 bar **1629.37** kg/m³ ± 0.01 kg/m³
20.0°C and 1.013 bar **1621.09** kg/m³ ± 0.01 kg/m³
30.0°C and 1.013 bar **1604.46** kg/m³ ± 0.01 kg/m³
40.0°C and 1.013 bar **1587.75** kg/m³ ± 0.01 kg/m³
50.0°C and 1.013 bar **1570.92** kg/m³ ± 0.01 kg/m³

The density of this liquid can be found to ± **0.01** kg/m³ over the temperature range of **10** to **50**°C using the following equation:-

$$\text{density} = \alpha + \beta t + \gamma t^2 + d t^3$$

where

$$\alpha = \mathbf{654.148}$$

$$\beta = \mathbf{-1.648\ 89}$$

$$\gamma = \mathbf{-0.000\ 135\ 2}$$

$$d = \mathbf{0.000\ 003\ 55}$$

$$t = \mathbf{\text{temperature in } ^\circ\text{C ITS-90}}$$

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.

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