



Bellingham+Stanley

Frequently Asked Questions

FAQ No: **FAQ-GRP-049 (from April 2009)**

Title: **Calibration Fluids –Calibration Oils & AG Fluids at temperatures other than 20°C**

Background:

Since being awarded UKAS accreditation in 2006, Calibration Oils and AG Fluids will now be supplied with a Certificate of Calibration at 20°C and 589.3nm ONLY.

Values at temperatures other than 20°C:

For customers wishing to know the refractive index or Brix values of the Calibration Oils and AG Fluids at temperatures other than 20°C, use of the specific 'calculator programs' in the Technical Centre of the B+S website should be made. All results obtained from this program will fall outside of UKAS accreditation. It is recommended that even if using the web based calculator, users should print off a copy of the *Temperature Relationship Table* applicable to the specific batch/material for their files in order to view disclaimers and tolerances.

http://www.bellinghamandstanley.com/technical_centre/tech_index.html

A print function will allow the user to print a copy of the web page stating the batch number and the refractive index/Brix at the specified temperature and wavelength for audit purposes.

Alternatively, tables may be downloaded from the Technical Centre as indicated below:

- AG Fluids – tables of Refractive Index/Brix at temperatures between 10-40 °C available for all values - not batch dependant.
- Calibration Oils – table of Refractive Index for individual oils at temperatures between 10-75°C. (Not including high refractive index CRM, code 90-535)



WARNING: calibration oil values are batch dependant – care should be taken to match the data with the correct type and batch number.

Accuracy statement for Calibration Oils at temperatures other than 20 °C:

The refractive index of calibration oils were measured on a high accuracy refractometer at 589.3nm in a temperature controlled room. Refractometer calibration was set prior to testing with high purity water. Refractive index values for water were obtained from "Revised Formulation for the Refractive Index of Water and Steam as a Function of Wavelength, Temperature and Density", adopted by the International Association for the Properties of Water and Steam (IAPWS) and available as part of NIST Standard Reference Database 10¹. Refractive indices calculated from the formulation are absolute refractive indices; conversion to refractive index against air requires division by the respective absolute refractive index of air (NIST Engineering Metrology Toolbox²).

Maximum residual of polynomial data fit: ±0.00005 R.I.