Bellingham+Stanley
Frequently Asked Questions

FAQ No: **FAQ-GRP-049**

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

Background:
Previously, Calibration Oils (codes 18-61 to 18-66) have been supplied with a Certificate of Analysis showing refractive index values between the range 20-75°C and gave traceability to published literature.

Likewise, AG Fluids have been provided with Refractive Index and Brix values at temperatures between 10 and 40 °C.

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

For customers wishing to know the refractive index value 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 but are made in exactly the same manner as previously declared on Certificates of Analysis.

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 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 20-75°C.

WARNING: calibration oil values are batch dependant – care should be taken to match the data with the correct oil 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 10[1]. 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 Toolbox[2]).

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