



# Calibration & Verification Materials for Refractometers - Fluids

Bellingham + Stanley Ltd., a UKAS accredited calibration laboratory number 0834, offer a number of different calibration materials for verifying and calibrating refractometers, traceable to NIST. The standards are made to the highest quality and are supplied with certificates. Depending on the application and instrument type, a choice can be made from the following.

## AG Calibration Fluids

Ideal for use where verification/calibration at the lower end of the °Brix or Refractive Index scale is required. AG fluids are despatched with at least 12-months validity and when purchased as a 'multi-pack' offer excellent value for money as the 'per bottle shipping cost' is significantly reduced.

Order Code			Type	Specification	
Single 5ml Bottle	Multi-pack of 5 x 5ml Bottle	Multi-pack of 20 x 5ml Bottles		Refractive Index <sup>1</sup>	°Brix <sup>2</sup>
90-401	90-501	90-601	AG2.5	1.33659	2.50
90-402	90-502	90-602	AG5	1.34026	5.00
90-403	90-503	90-603	AG7.5	1.34401	7.50
90-404	90-504	90-604	AG10	1.34782	10.00
90-405	90-505	90-605	AG11.2	1.34968	11.20
90-406	90-506	90-606	AG12	1.35093	12.00
90-407	90-507	90-607	AG12.5	1.35171	12.50
90-408	90-508	90-608	AG15	1.35568	15.00
90-418	90-518	90-618	AG40	1.39986	40.00

Maximum Uncertainty:  $\pm 0.000037$  RI  $\pm 0.019$  °Brix  
Traceable to NIST.



## Calibration Oils

Calibration Oils are supplied as a pack of 5 x 5ml glass bottles with 12-months validity from date of despatch.

Order Code	Description	Specification	
Multi-pack of 5 x 5ml Bottles		Refractive Index <sup>1</sup>	°Brix <sup>2</sup>
90-525	Calibration Oil	1.46737	70.78
90-530	Calibration Oil	1.51822	90.17

Maximum Uncertainty:  $\pm 0.000074$  RI  $\pm 0.030$  °Brix  
Traceable to NIST.

Note:

1. Typical Refractive Index @ 589.3nm & 20.0°C.
2. Equivalent °Brix value @ 589.3nm & 20.0°C.

All quoted values for calibration oils are subject to minor batch to batch variations.

### Uncertainties:

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement in units of °Brix (equivalent to weight % sucrose in water) multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with publication EA-4/02.



Bellingham + Stanley Ltd. operates a Quality Management System complying with BS EN ISO 9001:2000 (Certificate No. LRQ 0963791)

Bellingham + Stanley Ltd. pursues a policy of continuous product development and improvement, and as such, information given on this Data Sheet may be updated or withdrawn without notice.



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# CERTIFICATE OF CALIBRATION

## AG Fluid (°Brix Equivalent) Calibration Standard



Calibration of this product was carried out by Bellingham + Stanley Ltd., UKAS accredited calibration laboratory no. 0834, accredited to ISO/IEC 17025:2005.

Product Code: AG40 Product Batch: BSAG40-0005  
Date of Manufacture: 22nd June 2006 Expiry Date: 22nd June 2008

**40.00°Brix ± 0.019**  
 **$n_D^{20} = 1.39986 \pm 0.000037$**

The relationship between °Brix and refractive index at 589.3nm and 20.0°C is that published by ICUMSA (Specification and Standard SPS-3 (2000) Refractometry and Tables – Official). The reported refractive index value for the AG fluid can thus be regarded as traceable to ICUMSA.

### Preparation Details

AG calibration fluids are prepared by mixing water with a soluble chemical of higher refractive index. The Brix value of the fluid is determined using a high accuracy digital refractometer at 20.0°C, which has been calibrated with a NIST traceable sucrose calibration standard of Brix value equal to the target value for the AG fluid according to a Laboratory Procedure QL-103. The AG fluid composition is finely adjusted to give a measured value to within ± 0.01 Brix (± 0.00002 RI) at 20.0°C.

Sucrose Standard: SS40 BS3129  
Refractometer: RFM342 Serial No. BT00002

### Uncertainties

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement in units of °Brix (equivalent to weight % sucrose in water) multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with publication EA-4/02.

### Recommendations for Use

Store samples at ambient temperature in sealed bottle, as supplied. AG fluids can lose or absorb moisture depending upon prevailing temperature and relative humidity. Instrument temperature should be controlled to within 0.1°C of the specified temperature. Shake samples thoroughly before use to ensure homogeneity. Always apply sample to instrument prism using a clean pipette. After applying a sample, immediately replace lid to prevent contamination. Unopened samples have a usable life of 2 years from manufacture provided care is taken to store correctly and to avoid contamination.

AG fluids are chemically stable. Samples are guaranteed up to the time the bottle is opened or until the Expiry Date, whichever comes first. Once opened, the user is responsible for ensuring correct storage and use to ensure subsequent reliability of readings. B+S can only consider queries regarding a sample batch provided unopened bottles are returned prior to the Expiry Date. In no event will B+S be liable for direct, indirect, incidental or consequential damages resulting from the use of this product. AG fluids contain non-toxic components - H&S data (MSDS) available on request.

### Authorised signatory

A. Darkins  
Laboratory Manager

Measurements are traceable to recognised national standards and to units of measurement realised at national standards laboratories.

This calibration certificate shall not be reproduced except in full, without written approval of the issuing laboratory.



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