



CERTIFICATE OF ANALYSIS

ERM[®]-BA003a

Wine – Nominal 15 % ABV (Alcohol by Volume)		
Parameter	Certified Value ¹ at 20 °C	Uncertainty ²
Alcoholic Strength (% ABV)	14.47	0.10
<p>1. The certified value for this material was interpolated from the Official Laboratory Alcohol Table (H M Customs & Excise Reference RDC80/267/04) using the value of the apparent density in air at 20 °C obtained by pycnometry, with all weighings, temperature, volume and other influence quantities traceable to the International System (SI).</p> <p>2. The quoted uncertainty is the half-width of the expanded uncertainty interval calculated using a coverage factor (k) of 2.09, which gives a level of confidence of approximately 95 %.</p>		

This certificate is valid for 12 months from the date of shipment provided the sample is stored with the cap intact under the recommended conditions.

The minimum amount of sample to be used is 75 mL.

NOTE

European Reference Material ERM[®] - BA003a was produced and certified under the responsibility of LGC according to the principles laid down in the Technical Guidelines of the European Reference Materials[®] co-operation agreement between BAM-LGC-IRMM. Information on these guidelines is available on the Internet (<http://www.erm-crm.org>).

Accepted as an ERM[®], Teddington, December 2013.

Signed: _____

Dr Derek Craston, UK Government Chemist
LGC Limited
Queens Road
Teddington
Middlesex
TW11 0LY, UK



All following pages are an integral part of the certificate.

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DESCRIPTION OF THE SAMPLE

A suitable supply of wine was obtained from a commercial source. The wine was stabilised with the addition of sodium metabisulfite and citric acid and thoroughly mixed, being later sub-divided into nominal 250 mL aliquots and sealed in amber glass bottles. The units were subsequently subjected to gamma irradiation to ensure sterilization.

The material was tested for homogeneity by pycnometry measurements on the wine distillate obtained from 75 mL sub-samples of wine units selected at random from across the fill run. The level of homogeneity proved to be satisfactory for a sample volume of 75 mL.

INTENDED USE

The primary intended use of this reference material is for the validation and quality control of methods for the determination of the alcohol content of alcoholic beverages.

ANALYTICAL METHOD USED FOR CHARACTERISATION

The alcoholic strength of this reference material was determined at LGC according to the provisions of the United Kingdom Spirit Regulations 1991 by measuring the apparent density in air at 20 °C of the wine distillate. The alcoholic strength was taken to be the percentage of alcohol by volume corresponding to that density according to the Official Laboratory Alcohol Table [1] issued under the authority of the Commissioners of H.M. Customs and Excise.

The apparent density in air at 20 °C of the wine distillate as measured by pycnometry at LGC using a density bottle (BS733), calibrated using pure water as a reference material. All weighings are traceable to SI units. The value for the apparent density in air of pure water adopted for the purposes of the calibration is 997.15 kg/m³ at 20 °C and not the more widely quoted value of 998.20 kg/m³ for the true density of pure water at 20 °C. The adopted value (997.15 kg/m³) is defined in the Official Laboratory Alcohol Table [1].

The Laboratory Alcohol Table [1] is based on data calculated using the general formula relating density, temperature and alcoholic strength by mass contained in Recommendation No 22 of the International Organisation of Legal Metrology (OIML) [2]. Reference [2] gives a value of 789.24 kg/m³ for the true density of pure ethanol at 20 °C and not the more widely quoted value of 789.4 kg/m³.

PARTICIPANTS

Not applicable

SAFETY INFORMATION

Refer to safety data sheet.

INSTRUCTIONS FOR USE

Prior to use the solution should be allowed to equilibrate to room temperature (20 ± 5) °C and then inverted several times to mix the contents. Please note that the wine contains sediment which must be allowed to settle again to the bottom of the bottle before taking a sub-sample from the supernatant liquid for analysis. The sediment does not affect the alcohol content of the wine.

Unscrew the cap immediately prior to use, and discard excess material once the measurement has been made. Open bottles must not be stored for re-use. Paper filtration of the wine may be undertaken if required.

STORAGE

The material should be stored in the dark at $(5 \pm 4) ^\circ\text{C}$.

REFERENCES

- 1) H M Customs & Excise reference RDC80/267/04, 1979.
- 2) Alcoométrie, Recommandation Internationale No 22, Bureau Internationale de Métrologie Légale, Paris 1973.

SPECIMEN

Unit Number:

Shipment Date:

LEGAL NOTICE

The values quoted in this certificate are the best estimate of the true values within the stated uncertainties and based on the techniques described herein. No warranty or representation, express or implied, is made that the use of the product or any information, material, apparatus, method or process which is the subject of or referred to in this certificate does not infringe any third party rights. Further, save to the extent: (a) prohibited by law; or (b) caused by a party's negligence; no party shall be liable for the use made of the product, any information, material, apparatus, method or process which is the subject of or referred to in this certificate. In no event shall the liability of any party exceed whichever is the lower of: (i) the value of the product; or (ii) £500,000; and any liability for loss of profit, loss of business or revenue, loss of anticipated savings, depletion of goodwill, any third-party claims or any indirect or consequential loss or damage in connection herewith is expressly excluded.

Production of this reference material and certificate was supported by the UK National Measurement System.

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