LGC Standards

Excellence through measurement

FIRMS

Forensic Isotope Ratio Mass Spectrometry Scheme

Scheme Description

LGC Standards
Proficiency Testing
1 Chamberhall Business Park
Chamberhall Green
Bury
Lancashire
BL9 0AP
United Kingdom

Telephone: +44 (0) 161 762 2500
Fax: +44 (0) 161 762 2501
Email: customerservices@lgcpt.com
Website: www.lgcpt.com

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Record of issue status and modifications

ISSUE	ISSUE DATE	DETAILS	AUTHORISED BY
1	Feb 2013	First issue created.	M. Whetton
2	Sept 2013	Amendments made to sample types and analytes. Methods section added on page 3.	M. Whetton

Notes:
Where this document has been translated, the English version shall remain the definitive version

Scheme Aims and Organisation

The primary aim of the Forensic Isotope Ratio Mass Spectrometry Proficiency Testing Scheme (FIRMS) is to enable laboratories performing isotope ratio analysis of a range of test materials to monitor their performance and compare it with that of their peers. FIRMS also aims to provide information to participants on technical issues and methodologies relating to isotope ratio analysis.

The FIRMS scheme year operates from January to December. Further information about FIRMS, including test material availability, round despatch dates and reporting deadlines, are available on the current FIRMS application form.

Test Materials

Details of test materials available in FIRMS are given in Appendix A. The test parameters are continually reviewed to ensure that they meet the needs of current laboratory testing and regulatory requirements.

Test material batches are tested for homogeneity for at least one test parameter where it is deemed appropriate. Details of homogeneity tests performed and results are given in the FIRMS Scheme Reports.

Statistical Analysis

Information on the statistics used in FIRMS can be found in the General Protocol and in the Scheme Report. Methods for determining assigned values and the values for SDPA used for individual samples are given in Appendix A.

Methods

Methods are listed in PORTAL. Please select the most appropriate method from the list. If none of the methods are appropriate, then please report your method as ‘Other’ and record a brief description in the Comments Section in PORTAL.

Results and Reports

FIRMS results are returned through our electronic reporting software, PORTAL, full instructions for which are provided by email. However, participants may request result submission forms on which to report and return results if they are unable to report through electronic means. This will incur an additional charge.

FIRMS reports will be available on the website within 10 working days of round closure. Participants will be emailed a link to the report when it is available.

Hard-copy reports are available for an additional charge; these are sent to participants by post within 15 working days of the results deadline.

APPENDIX A - Description of abbreviations used

Assigned Value (AV)

The assigned value may be derived in the following ways:

- From the robust mean (RMean). This is the median of participant results after the removal of test results that are inappropriate for statistical evaluation, e.g. miscalculations, transpositions and other gross errors. Generally, the assigned value will be set using results from all methods, unless the measurement is considered method-dependant, in which case the assigned value will be set by method as illustrated in the report tables.
  For some analytes, where there is a recognised reference method for that type of measurement, this may be used as the assigned value for a particular analyte i.e. it would be applied to results obtained by any method.

- From a formulation value (Formulation). This denotes the use of an assigned value derived from sample preparation details, where known and exact quantities of analyte have been used to prepare the sample.

- From a qualitative formulation (Qual Form). This applies to qualitative tests where the assigned value is simply based on the presence/absence of the analyte in the test material.

- From expert labs (Expert). The assigned value for the analyte is provided by an 'expert' laboratory.

Range

This indicates the concentration range at which the analyte may be present in the test material.

SDPA

SDPA represents the 'standard deviation for proficiency assessment' which is used to assess participant performance for the measurement of each analyte. This may be a fixed value (as stated), a percentage (%) of the assigned value or based on the robust standard deviation of the participant measurement results, either across all methods or by method depending on whether the measurement made is method dependent (see assigned value).

Units

This indicates the units used for the assessment of data. These are the units in which participants should report their results. For some analytes in some schemes participants may have a choice of which units to report their results, however, the units stipulated in this scheme description are the default units to which any results reported using allowable alternative results will be converted to.

DP

This indicates the number of decimal places to which participants should report their measurement results.

Samples 1 and 2 **Analysis of**
Supplied as: 1 x 0.5g Various products (waxes, oils, plant material, chitin, etc.) in an amber vial

Analyte	Method	AV	Range	SDPA	Units	DP
$\delta^{2}H_{VSMOW}$	All	RMean	All	Robust SD	-	2
$\delta^{13}C_{VPDB}$	All	RMean	All	Robust SD	-	2
$\delta^{15}N_{AIR}$	All	RMean	All	Robust SD	-	2
$\delta^{18}O_{VSMOW}$	All	RMean	All	Robust SD	-	2