



Standards

Excellence through measurement

Ethanol and other related reference materials



Promoting quality in alcohol analysis

LGC Standards Proficiency Testing (PT) is an accredited international provider of proficiency schemes. We have over 25 years experience in all aspects of providing PT services to laboratories undertaking chemical, clinical, microbiological, and physical measurements.

LGC Standards PT annually runs over 1,500 proficiency testing exercises, serving more than 7,000 laboratories. We produce in excess of 250,000 test materials which are distributed to over 140 countries worldwide.

The leading schemes for alcohol measurement

- **QUARTZ - Forensic Blood Toxicology**
Alcohol test material for driving impairment (drink driving)
- **TOX - Clinical and Forensic Toxicology Investigation**
Human blood and human serum test material for ethanol determination
- **FORENSICS* - Alcohol Back Calculation and Alcohol Technical Defence**
Paper exercises for the determination of blood/breath alcohol concentration
*currently not included in our scope of accreditation
- **BAPS - Analysis of Lager, Bitter and Dark Ales**
Comprehensive range of analytes including alcoholic strength
- **DAPS - Analysis of Wine, Spirits and Ready to Drink Beverages**
A wide range of alcoholic beverages and intermediate process test materials for analysis



Benefits of participation

- A truly independent assessment of measurement quality, which enables laboratories to compare their analytical capabilities with peer laboratories
- Results obtained are recognised as a demonstration of laboratory quality by a range of 'third parties', customers, regulators and accreditation bodies
- Secure online storage, reporting and trending of your data using our proprietary software system - *PORTAL*
- Typical round cycle - from despatch to report in four weeks



Commitment to quality and efficiency is demonstrated through certification to ISO 9001 for all our activities and accreditation to ISO/IEC 17043 for the operation, management and design of proficiency testing schemes.

Contents

Introduction.....	2
Ethanol reference materials from ERM and NIST	3
Measurement of ethanol in industrial and other processes.....	3
Measurement of ethanol in biological fluids	4
Measurement of ethanol in breath.....	5
ISO Guide 34 ethanol reference materials	6
Individual aqueous ethanol standards.....	6
Calibration kits for ethanol.....	6
Ethanol in water reference materials.....	7
Aqueous ethanol reference materials.....	7
Aqueous ethanol reference materials.....	8
Ethanol in human serum.....	9
Serum ethanol reference materials	9
Serum ethanol reference materials	10
Precision controls in serum	11
Ethanol in human blood.....	12
Human blood reference materials	12
Ethanol human blood reference materials.....	12
Ethanol and methanol human blood reference materials.....	13
ISO Guide 34 congener and multi component alcohol related reference materials	14
Congener and multi component alcohol related reference materials	15
Aqueous congener and multi component alcohol reference materials	15
Serum congener and multi component alcohol reference materials	17
Markers for identification of ethanol use.....	19
ISO Guide 34 certified reference materials	19
Solid reference materials.....	19
Ethyl glucuronide and ethyl sulphate in human urine and serum.....	20
Ethyl glucuronide and ethyl sulphate control materials.....	21
Stable isotope labelled fatty acid ethyl esters	21
Carbohydrate deficient transferrin (CDT)	21

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Contents

Introduction.....	2
Ethanol reference materials from ERM and NIST	3
Measurement of ethanol in industrial and other processes.....	3
Measurement of ethanol in biological fluids	4
Measurement of ethanol in breath.....	5
ISO Guide 34 ethanol reference materials	6
Individual aqueous ethanol standards.....	6
Calibration kits for ethanol.....	6
Ethanol in water reference materials.....	7
Aqueous ethanol reference materials.....	7
Aqueous ethanol reference materials.....	8
Ethanol in human serum.....	9
Serum ethanol reference materials	9
Serum ethanol reference materials	10
Precision controls in serum	11
Ethanol in human blood.....	12
Human blood reference materials	12
Ethanol human blood reference materials.....	12
Ethanol and methanol human blood reference materials.....	13
ISO Guide 34 congener and multi component alcohol related reference materials	14
Congener and multi component alcohol related reference materials	15
Aqueous congener and multi component alcohol reference materials	15
Serum congener and multi component alcohol reference materials	17
Markers for identification of ethanol use.....	19
ISO Guide 34 certified reference materials	19
Solid reference materials.....	19
Ethyl glucuronide and ethyl sulphate in human urine and serum.....	20
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Introduction

LGC Standards has assembled an unrivalled collection of reference materials for ethanol and related materials. Covering ethanol standards and related materials in both forensic/clinical and industrial relevant concentrations, through to specific biochemical markers of alcohol use, this range of materials will satisfy most of the reference material requirements of analytical laboratories.

To help the end user, the materials have been divided into a number of categories based on their position in the reference material hierarchy, degree of certification, matrix and intended use. This will allow easy selection of the most appropriate reference material for a particular analytical purpose.

Each section is structured in a similar manner. The manufacturer's intended use of a material is listed along with an overview of the quality aspects surrounding the production and certification. Item description and concentrations are listed as per the producer's details.

LGC Standards is very aware that different manufacturers use different concentration units when describing their materials. These local conventions can give rise to confusion. We have therefore included below a table to allow for the easy interconversion of units. We have also colour coded entries throughout the catalogue for easy identification and interconversion.

mg% or mg/100ml or mg/dl	g/dl	g/l
10	0.01	0.1
15	0.015	0.15
20	0.02	0.2
25	0.025	0.25
30	0.03	0.3
50	0.05	0.5
67	0.067	0.67
80	0.08	0.8
100	0.1	1
107	0.107	1.07
110	0.11	1.1
150	0.15	1.5
200	0.2	2
300	0.3	3
400	0.4	4
500	0.5	5

Ethanol reference materials from ERM and NIST

Intended use

- Initial calibration and validation of analytical methodologies
- Occasional monitoring of analytical performance

National Measurement Institutes (NMI's) are responsible for the development and implementation of accurate, robust and traceable measurement systems in their respective countries. As part of their function, NMI's produce highly characterised and fully traceable reference materials and certified reference materials

Two of these NMI's, LGC, the United Kingdom's designated NMI for chemical and bioanalytical measurement, and the National Institute for Science and Technology (NIST) currently manufacture highly characterised aqueous ethanol standards at forensic and industrial relevant concentrations. The LGC produced materials are released through the European Reference Material initiative (www.erm-crm.org).

Conceived and designed to be directly traceable to the Système Internationale d'Unités (SI), the primary attribute of these materials is their low underlying uncertainty value. The ERM and NIST products can be regarded as being the ultimate reference materials for the measurement of ethanol.

These higher order reference materials can be divided into three broad categories associated with the industrial production of ethanol, measurement of ethanol in biological fluids, and measurement of ethanol in human breath alcohol.

Measurement of ethanol in industrial and other processes

ERM aqueous ethanol reference materials

The primary use of these reference materials is for checking the calibration of automatic density meters commonly used in industry to determine alcoholic strength and for checking analyst and method performance.

Certified values (at 20°C)	Part number	Description	Pack size
Ethanol 4.96ml/100ml Density 990.05 kg/m ³	ERM-AC404	Ethanol/water - 5% Ethanol	1 x 50ml glass bottle
Ethanol 14.99ml/100ml Density 977.94 kg/m ³	ERM-AC405	Ethanol/water - 15% Ethanol	1 x 50ml glass bottle
Ethanol 40.04ml/100ml Density 946.91 kg/m ³	ERM-AC406	Ethanol/water - 40% Ethanol	1 x 50ml glass bottle
Ethanol 69.98ml/100ml Density 884.55 kg/m ³	ERM-AC407	Ethanol/water - 70% Ethanol	1 x 50ml glass bottle

Introduction

LGC Standards has assembled an unrivalled collection of reference materials for ethanol and related materials. Covering ethanol standards and related materials in both forensic/clinical and industrial relevant concentrations, through to specific biochemical markers of alcohol use, this range of materials will satisfy most of the reference material requirements of analytical laboratories.

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30	0.03	0.3
50	0.05	0.5
67	0.067	0.67
80	0.08	0.8
100	0.1	1
107	0.107	1.07
110	0.11	1.1
150	0.15	1.5
200	0.2	2
300	0.3	3
400	0.4	4
500	0.5	5

Ethanol reference materials from ERM and NIST

Intended use

- *Initial calibration and validation of analytical methodologies*
- *Occasional monitoring of analytical performance*

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Ethanol 14.99ml/100ml Density 977.94 kg/m ³	ERM-AC405	Ethanol/water - 15% Ethanol	1 x 50ml glass bottle
Ethanol 40.04ml/100ml Density 946.91 kg/m ³	ERM-AC406	Ethanol/water - 40% Ethanol	1 x 50ml glass bottle
Ethanol 69.98ml/100ml Density 884.55 kg/m ³	ERM-AC407	Ethanol/water - 70% Ethanol	1 x 50ml glass bottle

Certified values (at 20°C)	Part number	Description	Pack size
37.83 % alcohol by volume, ABV 40.12 % alcohol by volume, ABV 950.38 kg/m ³ density	ERM-BA006	Brandy - alcohol (40%)	1 x 50ml glass bottle
Methanol 8.2g/100l Propan-1-ol 67.4g/100l 2-Methylpropan-1-ol 64.9g/100l 2-Methylbutan-1-ol 19.6g/100l 3-Methylbutan-1-ol 51.4g/100l 2+3-Methylbutan-1-ol 70.1g/100l Indicative values for acetaldehyde, butan-1-ol, furfural, ethyl acetate	LGC5100	Whisky - congeners	1 x 10ml glass bottle
5.04ml/100ml alcohol	LGC5001	Wine - alcohol (5%)	1 x 250ml glass bottle
10.12ml/100ml alcohol	LGC5002	Wine - alcohol (10%)	1 x 250ml glass bottle
14.66% alcohol	LGC5003	Wine – alcohol (15%)	1 x 250ml glass bottle
1.02ml/100ml	LGC5004	Lager shandy – alcohol	1 x 330ml glass bottle
5.07ml/100ml	ERM-BA005	Lager – alcohol (5%)	1 x 330ml glass bottle
0.505 % (v/v) ethanol	BCR-651	Beer - alcohol (low level)	1 x 10ml glass bottle
0.051 % (v/v) ethanol	BCR-652	Beer - alcohol (very low level)	1 x 10ml glass bottle
0.539 % (v/v) ethanol	BCR-653	Wine - alcohol (low level)	1 x 10ml glass bottle
0.52 ± 0.11 µg/l Ochratoxin A	ERM-BD476	Red wine - ochratoxin A (OTA)	1 x 50ml glass bottle

Measurement of ethanol in biological fluids

ERM ethanol reference materials

These materials produced and certified by LGC are intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood and other liquid biological matrices.

Certified value	Part number	Description	Pack size
19.9 mg/100ml	ERM-AC409	Aqueous ethanol 20 mg/100ml	1 x 50ml glass bottle
49.6 mg/100ml	ERM-AC510	Aqueous Ethanol 50 mg/100ml	1 x 25ml glass bottle
66.9 mg/100ml	ERM-AC511	Aqueous Ethanol 67 mg/100ml	1 x 25ml glass bottle
79.6 mg/100ml	ERM-AC401	Aqueous ethanol 80 mg/100ml 25ml	1 x 25ml glass bottle
106.5 mg/100ml	ERM-AC402	Aqueous ethanol 107 mg/100ml	1 x 25ml glass bottle
199.6 mg/100ml	ERM-AC403	Aqueous ethanol 200 mg/100ml	1 x 25ml glass bottle

NIST standard reference materials

These materials, produced and certified by NIST, are intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood.

Certified value	Description	Part number	Pack size
0.01951 g/dl ± 0.00018%	Ethanol-water solution (nominal 0.02% mass fraction)	NIST-2891	5 x ampoule containing 1.2ml
0.03900 g/dl ± 0.00046%	Ethanol-water solution (nominal 0.04% mass fraction)	NIST-2892	5 x ampoule containing 1.2ml
0.08023 g/dl ± 0.00074%	Ethanol-water solution (nominal 0.08% mass fraction)	NIST-2893	5 x ampoule containing 1.2ml
0.10084 g/dl ± 0.00083%	Ethanol-water solution (nominal 0.10% mass fraction)	NIST-2894	5 x ampoule containing 1.2ml
0.1701 g/dl ± 0.0014%	Ethanol-water solution (nominal 0.2% mass fraction)	NIST-2895	5 x ampoule containing 1.2ml
0.2980 g/dl ± 0.0030%	Ethanol-water solution (nominal 0.3% mass fraction)	NIST-2896	5 x ampoule containing 1.2ml
Multi level calibration kit	Ethanol-water solution (nominal 0.02%, 0.04%, 0.08%, 0.10%, 0.20%, 0.30% mass fraction)	NIST-1828B	6 x ampoule containing 1.2ml, 1 of each above concentration

Measurement of ethanol in breath

NIST standard reference materials

These reference materials are primarily intended for use in the calibration of instruments and techniques used for the determination of ethanol in breath.

Certified value	Description	Part number	Pack size
1.554 ± 0.016%	Ethanol-water solution (nominal 2% mass fraction)	NIST-2897	Unavailable at time of printing, please call.
6.040 ± 0.043%	Ethanol-water solution (nominal 6% mass fraction)	NIST-2898	5 x bottle containing 10ml
25.21 ± 0.22%	Ethanol-water solution (nominal 25% mass fraction)	NIST-2899	5 x ampoule containing 1.2ml
Level 1 1.554 ± 0.016% Level 2 6.040 ± 0.043% Level 3 25.21 ± 0.22%	Multi level ethanol-water solution (nominal 2%, 6% and 25% mass fraction)	NIST-1847	6 bottles in total, 2 x 10ml at each concentration

Certified values (at 20°C)	Part number	Description	Pack size
37.83 % alcohol by volume, ABV 40.12 % alcohol by volume, ABV 950.38 kg/m ³ density	ERM-BA006	Brandy - alcohol (40%)	1 x 50ml glass bottle
Methanol 8.2g/100l Propan-1-ol 67.4g/100l 2-Methylpropan-1-ol 64.9g/100l 2-Methylbutan-1-ol 19.6g/100l 3-Methylbutan-1-ol 51.4g/100l 2+3-Methylbutan-1-ol 70.1g/100l Indicative values for acetaldehyde, butan-1-ol, furfural, ethyl acetate	LGC5100	Whisky - congeners	1 x 10ml glass bottle
5.04ml/100ml alcohol	LGC5001	Wine - alcohol (5%)	1 x 250ml glass bottle
10.12ml/100ml alcohol	LGC5002	Wine - alcohol (10%)	1 x 250ml glass bottle
14.66% alcohol	LGC5003	Wine - alcohol (15%)	1 x 250ml glass bottle
1.02ml/100ml	LGC5004	Lager shandy - alcohol	1 x 330ml glass bottle
5.07ml/100ml	ERM-BA005	Lager - alcohol (5%)	1 x 330ml glass bottle
0.505 % (v/v) ethanol	BCR-651	Beer - alcohol (low level)	1 x 10ml glass bottle
0.051 % (v/v) ethanol	BCR-652	Beer - alcohol (very low level)	1 x 10ml glass bottle
0.539 % (v/v) ethanol	BCR-653	Wine - alcohol (low level)	1 x 10ml glass bottle
0.52 ± 0.11 µg/l Ochratoxin A	ERM-BD476	Red wine - ochratoxin A (OTA)	1 x 50ml glass bottle

Measurement of ethanol in biological fluids

ERM ethanol reference materials

These materials produced and certified by LGC are intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood and other liquid biological matrices.

Certified value	Part number	Description	Pack size
19.9 mg/100ml	ERM-AC409	Aqueous ethanol 20 mg/100ml	1 x 50ml glass bottle
49.6 mg/100ml	ERM-AC510	Aqueous Ethanol 50 mg/100ml	1 x 25ml glass bottle
66.9 mg/100ml	ERM-AC511	Aqueous Ethanol 67 mg/100ml	1 x 25ml glass bottle
79.6 mg/100ml	ERM-AC401	Aqueous ethanol 80 mg/100ml 25ml	1 x 25ml glass bottle
106.5 mg/100ml	ERM-AC402	Aqueous ethanol 107 mg/100ml	1 x 25ml glass bottle
199.6 mg/100ml	ERM-AC403	Aqueous ethanol 200 mg/100ml	1 x 25ml glass bottle

NIST standard reference materials

These materials, produced and certified by NIST, are intended primarily for use in the calibration of instruments and techniques used for the determination of ethanol in blood.

Certified value	Description	Part number	Pack size
0.01951 g/dl ± 0.00018%	Ethanol-water solution (nominal 0.02% mass fraction)	NIST-2891	5 x ampoule containing 1.2ml
0.03900 g/dl ± 0.00046%	Ethanol-water solution (nominal 0.04% mass fraction)	NIST-2892	5 x ampoule containing 1.2ml
0.08023 g/dl ± 0.00074%	Ethanol-water solution (nominal 0.08% mass fraction)	NIST-2893	5 x ampoule containing 1.2ml
0.10084 g/dl ± 0.00083%	Ethanol-water solution (nominal 0.10% mass fraction)	NIST-2894	5 x ampoule containing 1.2ml
0.1701 g/dl ± 0.0014%	Ethanol-water solution (nominal 0.2% mass fraction)	NIST-2895	5 x ampoule containing 1.2ml
0.2980 g/dl ± 0.0030%	Ethanol-water solution (nominal 0.3% mass fraction)	NIST-2896	5 x ampoule containing 1.2ml
Multi level calibration kit	Ethanol-water solution (nominal 0.02%, 0.04%, 0.08%, 0.10%, 0.20%, 0.30% mass fraction)	NIST-1828B	6 x ampoule containing 1.2ml, 1 of each above concentration

Measurement of ethanol in breath

NIST standard reference materials

These reference materials are primarily intended for use in the calibration of instruments and techniques used for the determination of ethanol in breath.

Certified value	Description	Part number	Pack size
1.554 ± 0.016%	Ethanol-water solution (nominal 2% mass fraction)	NIST-2897	Unavailable at time of printing, please call.
6.040 ± 0.043%	Ethanol-water solution (nominal 6% mass fraction)	NIST-2898	5 x bottle containing 10ml
25.21 ± 0.22%	Ethanol-water solution (nominal 25% mass fraction)	NIST-2899	5 x ampoule containing 1.2ml
Level 1 1.554 ± 0.016% Level 2 6.040 ± 0.043% Level 3 25.21 ± 0.22%	Multi level ethanol-water solution (nominal 2%, 6% and 25% mass fraction)	NIST-1847	6 bottles in total, 2 x 10ml at each concentration

ISO Guide 34 ethanol reference materials

Intended use

- Suitable for the development and validation of new analytical methodologies, for the verification of existing processes and for routine use as either calibration or control materials.

The ISO Guide 30 series of documents covers the production, certification and appropriate use of reference materials in the modern analytical laboratory. ISO Guide 34 specifically covers the requirements for the production of robust reference materials. The use of ISO Guide 34 reference materials is strongly encouraged under ISO/IEC 17025 and equivalent accreditation systems.

These ethanol reference materials, produced under strict ISO Guide 34 certification processes, have been specifically designed to satisfy these accreditation and other certification requirements. They have been manufactured in varying concentrations and varying pack sizes to meet the differing needs of analytical laboratories. As well as individual concentrations, multi-concentration calibration kits are available for ease of use.

Individual aqueous- ethanol standards

Nominal Concentration	Description	Part number	Pack size (ampoules)
10 mg/dl	Ethanol-10	CERE-040	10 x 1.2ml
15 mg/dl	Ethanol-15	CERE-042	5 x 5ml
20 mg/dl	Ethanol-20	CERE-056 CERE-043	10 x 1.2ml 5 x 5ml
25 mg/dl	Ethanol-25	CERE-035	10 x 1.2ml
40 mg/dl	Ethanol-40	CERE-045	10 x 1.2ml
50 mg/dl	Ethanol-50	CERE-029	10 x 1.2ml
80 mg/dl	Ethanol-80	CERE-030 CERE-037	10 x 1.2ml 5 x 5ml
100 mg/dl	Ethanol-100	CERE-031 CERE-038	10 x 1.2ml 5 x 5ml
150 mg/dl	Ethanol-150	CERE-041	10 x 1.2ml
200 mg/dl	Ethanol-200	CERE-032 CERE-039	10 x 1.2ml 5 x 5ml
300 mg/dl	Ethanol-300	CERE-033	10 x 1.2ml
400 mg/dl	Ethanol-400	CERE-036 CERE-044	10 x 1.2ml 5 x 5ml
500 mg/dl	Ethanol-500	CERE-053	10 x 1.2ml

Calibration kits for ethanol

Part Number	Concentration	Pack size
CERE-034	Ethanol- 50 mg/dl CERE-029 Ethanol- 80 mg/dl CERE-030 Ethanol-100 mg/dl CERE-031 Ethanol-200 mg/dl CERE-032 Ethanol-300 mg/dl CERE-033	2 ampoules of each concentration, 10 ampoule in total

Ethanol in water reference materials

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.
- CE marked, satisfies the requirements set out by In Vitro Diagnostic (IVD) directive 98/74/EC.
- Manufactured under DINEN ISO9001:2008 and DINEN ISO13485:2003 and AC:2007.

Aqueous ethanol reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under ISO Guide 34 accredited processes. The assigned concentrations have been determined by three (3) independent laboratories, each accredited to ISO/IEC 17025 using gas chromatography and enzymatic methodology.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.1 g/l	Aqueous ethanol control EtOH AQ	AC-AQ01-015 AC-AQ01-030	10 x 1.5ml 10 x 3.0ml
0.2 g/l	Aqueous ethanol control EtOH AQ	AC-AQ02-015 AC-AQ02-030	10 x 1.5ml 10 x 3.0ml
0.3 g/l	Aqueous ethanol control EtOH AQ	AC-AQ03-015 AC-AQ03-030	10 x 1.5ml 10 x 3.0ml
0.5 g/l	Aqueous ethanol control EtOH AQ	AC-AQ05-015 AC-AQ05-030	10 x 1.5ml 10 x 3.0ml
0.8 g/l	Aqueous ethanol control EtOH AQ	AC-AQ08-015 AC-AQ08-030	10 x 1.5ml 10 x 3.0ml
1.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ10-015 AC-AQ10-030	10 x 1.5ml 10 x 3.0ml
1.1 g/l	Aqueous ethanol control EtOH AQ	AC-AQ11-015 AC-AQ11-030	10 x 1.5ml 10 x 3.0ml
1.3 g/l	Aqueous ethanol control EtOH AQ	AC-AQ13-015 AC-AQ13-030	10 x 1.5ml 10 x 3.0ml
1.5 g/l	Aqueous ethanol control EtOH AQ	AC-AQ15-015 AC-AQ15-030	10 x 1.5ml 10 x 3.0ml
2.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ20-015 AC-AQ20-030	10 x 1.5ml 10 x 3.0ml
3.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ30-015 AC-AQ30-030	10 x 1.5ml 10 x 3.0ml
4.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ40-015 AC-AQ40-030	10 x 1.5ml 10 x 3.0ml
5.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ50-015 AC-AQ50-030	10 x 1.5ml 10 x 3.0ml

ISO Guide 34 ethanol reference materials

Intended use

- Suitable for the development and validation of new analytical methodologies, for the verification of existing processes and for routine use as either calibration or control materials.

The ISO Guide 30 series of documents covers the production, certification and appropriate use of reference materials in the modern analytical laboratory. ISO Guide 34 specifically covers the requirements for the production of robust reference materials. The use of ISO Guide 34 reference materials is strongly encouraged under ISO/IEC 17025 and equivalent accreditation systems.

These ethanol reference materials, produced under strict ISO Guide 34 certification processes, have been specifically designed to satisfy these accreditation and other certification requirements. They have been manufactured in varying concentrations and varying pack sizes to meet the differing needs of analytical laboratories. As well as individual concentrations, multi-concentration calibration kits are available for ease of use.

Individual aqueous- ethanol standards

Nominal Concentration	Description	Part number	Pack size (ampoules)
10 mg/dl	Ethanol-10	CERE-040	10 x 1.2ml
15 mg/dl	Ethanol-15	CERE-042	5 x 5ml
20 mg/dl	Ethanol-20	CERE-056 CERE-043	10 x 1.2ml 5 x 5ml
25 mg/dl	Ethanol-25	CERE-035	10 x 1.2ml
40 mg/dl	Ethanol-40	CERE-045	10 x 1.2ml
50 mg/dl	Ethanol-50	CERE-029	10 x 1.2ml
80 mg/dl	Ethanol-80	CERE-030 CERE-037	10 x 1.2ml 5 x 5ml
100 mg/dl	Ethanol-100	CERE-031 CERE-038	10 x 1.2ml 5 x 5ml
150 mg/dl	Ethanol-150	CERE-041	10 x 1.2ml
200 mg/dl	Ethanol-200	CERE-032 CERE-039	10 x 1.2ml 5 x 5ml
300 mg/dl	Ethanol-300	CERE-033	10 x 1.2ml
400 mg/dl	Ethanol-400	CERE-036 CERE-044	10 x 1.2ml 5 x 5ml
500 mg/dl	Ethanol-500	CERE-053	10 x 1.2ml

Calibration kits for ethanol

Part Number	Concentration	Pack size
CERE-034	Ethanol- 50 mg/dl CERE-029 Ethanol- 80 mg/dl CERE-030 Ethanol-100 mg/dl CERE-031 Ethanol-200 mg/dl CERE-032 Ethanol-300 mg/dl CERE-033	2 ampoules of each concentration, 10 ampoule in total

Ethanol in water reference materials

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.
- CE marked, satisfies the requirements set out by In Vitro Diagnostic (IVD) directive 98/74/EC.
- Manufactured under DINEN ISO9001:2008 and DINEN ISO13485:2003 and AC:2007.

Aqueous ethanol reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under ISO Guide 34 accredited processes. The assigned concentrations have been determined by three (3) independent laboratories, each accredited to ISO/IEC 17025 using gas chromatography and enzymatic methodology.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.1 g/l	Aqueous ethanol control EtOH AQ	AC-AQ01-015 AC-AQ01-030	10 x 1.5ml 10 x 3.0ml
0.2 g/l	Aqueous ethanol control EtOH AQ	AC-AQ02-015 AC-AQ02-030	10 x 1.5ml 10 x 3.0ml
0.3 g/l	Aqueous ethanol control EtOH AQ	AC-AQ03-015 AC-AQ03-030	10 x 1.5ml 10 x 3.0ml
0.5 g/l	Aqueous ethanol control EtOH AQ	AC-AQ05-015 AC-AQ05-030	10 x 1.5ml 10 x 3.0ml
0.8 g/l	Aqueous ethanol control EtOH AQ	AC-AQ08-015 AC-AQ08-030	10 x 1.5ml 10 x 3.0ml
1.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ10-015 AC-AQ10-030	10 x 1.5ml 10 x 3.0ml
1.1 g/l	Aqueous ethanol control EtOH AQ	AC-AQ11-015 AC-AQ11-030	10 x 1.5ml 10 x 3.0ml
1.3 g/l	Aqueous ethanol control EtOH AQ	AC-AQ13-015 AC-AQ13-030	10 x 1.5ml 10 x 3.0ml
1.5 g/l	Aqueous ethanol control EtOH AQ	AC-AQ15-015 AC-AQ15-030	10 x 1.5ml 10 x 3.0ml
2.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ20-015 AC-AQ20-030	10 x 1.5ml 10 x 3.0ml
3.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ30-015 AC-AQ30-030	10 x 1.5ml 10 x 3.0ml
4.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ40-015 AC-AQ40-030	10 x 1.5ml 10 x 3.0ml
5.0 g/l	Aqueous ethanol control EtOH AQ	AC-AQ50-015 AC-AQ50-030	10 x 1.5ml 10 x 3.0ml

Aqueous ethanol reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under robust ISO Guide 34 accredited processes. Concentrations of each batch have been verified through analysis of the materials by independent Institutions of Forensic Medicine.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.1 g/l	Aqueous ethanol standard	ME20010 ME20011 ME20013	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.2 g/l	Aqueous ethanol standard	ME20020 ME20021 ME20023	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.3 g/l	Aqueous ethanol standard	ME20030 ME20031 ME20033	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.5 g/l	Aqueous ethanol standard	ME20050 ME20051 ME20053	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.8 g/l	Aqueous ethanol standard	ME20080 ME20081 ME20083	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.0 g/l	Aqueous ethanol standard	ME20100 ME20101 ME20103	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.1 g/l	Aqueous ethanol standard	ME20110 ME20111 ME20113	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.3 g/l	Aqueous ethanol standard	ME20130 ME20131 ME20133	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.5 g/l	Aqueous ethanol standard	ME20150 ME20151 ME20153	10 x 1.2ml 100 x 1.2ml 10 x 3ml
2.0 g/l	Aqueous ethanol standard	ME20200 ME20201 ME20203	10 x 1.2ml 100 x 1.2ml 10 x 3ml
3.0 g/l	Aqueous ethanol standard	ME20300 ME20301 ME20303	10 x 1.2ml 100 x 1.2ml 10 x 3ml
4.0 g/l	Aqueous ethanol standard	ME20400 ME20401 ME20403	10 x 1.2ml 100 x 1.2ml 10 x 3ml
5.0 g/l	Aqueous ethanol standard	ME20500 ME20501 ME20503	10 x 1.2ml 100 x 1.2ml 10 x 3ml

Ethanol in human serum

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.
- CE marked, satisfies the requirements set out by In Vitro Diagnostic (IVD) directive 98/74/EC.
- Manufactured under DINEN ISO9001:2008 and DINEN ISO13485:2003 and AC:2007.

Serum ethanol reference materials

These reference materials are ready-to-use liquid serum standards that have not been manufactured under ISO Guide 34 accredited processes. The assigned concentrations have been determined by three (3) independent laboratories, each accredited to ISO/IEC 17025 using gas chromatography and enzymatic methodology.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.1 g/l	Ethanol in serum control EtOH SE	AC-SE01-015 AC-SE01-030	10 x 1.5ml 10 x 3ml
0.2 g/l	Ethanol in serum control EtOH SE	AC-SE02-015 AC-SE02-030	10 x 1.5ml 10 x 3ml
0.3 g/l	Ethanol in serum control EtOH SE	AC-SE03-015 AC-SE03-030	10 x 1.5ml 10 x 3ml
0.5 g/l	Ethanol in serum control EtOH SE	AC-SE05-015 AC-SE05-030	10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in serum control EtOH SE	AC-SE08-015 AC-SE08-030	10 x 1.5ml 10 x 3ml
1.0 g/l	Ethanol in serum control EtOH SE	AC-SE10-015 AC-SE10-030	10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in serum control EtOH SE	AC-SE11-015 AC-SE11-030	10 x 1.5ml 10 x 3ml
1.3 g/l	Ethanol in serum control EtOH SE	AC-SE13-015 AC-SE13-030	10 x 1.5ml 10 x 3ml
1.5 g/l	Ethanol in serum control EtOH SE	AC-SE15-015 AC-SE15-030	10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in serum control EtOH SE	AC-SE20-015 AC-SE20-030	10 x 1.5ml 10 x 3ml
3.0 g/l	Ethanol in serum control EtOH SE	AC-SE30-015 AC-SE30-030	10 x 1.5ml 10 x 3ml
4.0 g/l	Ethanol in serum control EtOH SE	AC-SE40-015 AC-SE40-030	10 x 1.5ml 10 x 3ml
5.0 g/l	Ethanol in serum control EtOH SE	AC-SE50-015 AC-SE50-030	10 x 1.5ml 10 x 3ml

Aqueous ethanol reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under robust ISO Guide 34 accredited processes. Concentrations of each batch have been verified through analysis of the materials by independent Institutions of Forensic Medicine.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.1 g/l	Aqueous ethanol standard	ME20010 ME20011 ME20013	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.2 g/l	Aqueous ethanol standard	ME20020 ME20021 ME20023	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.3 g/l	Aqueous ethanol standard	ME20030 ME20031 ME20033	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.5 g/l	Aqueous ethanol standard	ME20050 ME20051 ME20053	10 x 1.2ml 100 x 1.2ml 10 x 3ml
0.8 g/l	Aqueous ethanol standard	ME20080 ME20081 ME20083	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.0 g/l	Aqueous ethanol standard	ME20100 ME20101 ME20103	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.1 g/l	Aqueous ethanol standard	ME20110 ME20111 ME20113	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.3 g/l	Aqueous ethanol standard	ME20130 ME20131 ME20133	10 x 1.2ml 100 x 1.2ml 10 x 3ml
1.5 g/l	Aqueous ethanol standard	ME20150 ME20151 ME20153	10 x 1.2ml 100 x 1.2ml 10 x 3ml
2.0 g/l	Aqueous ethanol standard	ME20200 ME20201 ME20203	10 x 1.2ml 100 x 1.2ml 10 x 3ml
3.0 g/l	Aqueous ethanol standard	ME20300 ME20301 ME20303	10 x 1.2ml 100 x 1.2ml 10 x 3ml
4.0 g/l	Aqueous ethanol standard	ME20400 ME20401 ME20403	10 x 1.2ml 100 x 1.2ml 10 x 3ml
5.0 g/l	Aqueous ethanol standard	ME20500 ME20501 ME20503	10 x 1.2ml 100 x 1.2ml 10 x 3ml

Ethanol in human serum

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.
- CE marked, satisfies the requirements set out by In Vitro Diagnostic (IVD) directive 98/74/EC.
- Manufactured under DINEN ISO9001:2008 and DINEN ISO13485:2003 and AC:2007.

Serum ethanol reference materials

These reference materials are ready-to-use liquid serum standards that have not been manufactured under ISO Guide 34 accredited processes. The assigned concentrations have been determined by three (3) independent laboratories, each accredited to ISO/IEC 17025 using gas chromatography and enzymatic methodology.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.1 g/l	Ethanol in serum control EtOH SE	AC-SE01-015 AC-SE01-030	10 x 1.5ml 10 x 3ml
0.2 g/l	Ethanol in serum control EtOH SE	AC-SE02-015 AC-SE02-030	10 x 1.5ml 10 x 3ml
0.3 g/l	Ethanol in serum control EtOH SE	AC-SE03-015 AC-SE03-030	10 x 1.5ml 10 x 3ml
0.5 g/l	Ethanol in serum control EtOH SE	AC-SE05-015 AC-SE05-030	10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in serum control EtOH SE	AC-SE08-015 AC-SE08-030	10 x 1.5ml 10 x 3ml
1.0 g/l	Ethanol in serum control EtOH SE	AC-SE10-015 AC-SE10-030	10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in serum control EtOH SE	AC-SE11-015 AC-SE11-030	10 x 1.5ml 10 x 3ml
1.3 g/l	Ethanol in serum control EtOH SE	AC-SE13-015 AC-SE13-030	10 x 1.5ml 10 x 3ml
1.5 g/l	Ethanol in serum control EtOH SE	AC-SE15-015 AC-SE15-030	10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in serum control EtOH SE	AC-SE20-015 AC-SE20-030	10 x 1.5ml 10 x 3ml
3.0 g/l	Ethanol in serum control EtOH SE	AC-SE30-015 AC-SE30-030	10 x 1.5ml 10 x 3ml
4.0 g/l	Ethanol in serum control EtOH SE	AC-SE40-015 AC-SE40-030	10 x 1.5ml 10 x 3ml
5.0 g/l	Ethanol in serum control EtOH SE	AC-SE50-015 AC-SE50-030	10 x 1.5ml 10 x 3ml

Serum ethanol reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under ISO Guide 34 accredited processes. They are intended for use for accuracy monitoring of ethanol determinations in serum. The indicated assay values are established by independent laboratories (accredited according to ISO/IEC 17025).

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.2 g/l	Ethanol in human serum with reference values	ME11021 ME11020 ME11022 ME11023	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
0.3 g/l	Ethanol in human serum with reference values	ME11031 ME11030 ME11032 ME11033	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
0.5 g/l	Ethanol in human serum with reference values	ME11051 ME11050 ME11052 ME11053	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in human serum with reference values	ME11081 ME11080 ME11082 ME11083	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.0 g/l	Ethanol in human serum with reference values	ME11101 ME11100 ME11102 ME11102	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in human serum with reference values	ME11111 ME11110 ME11112 ME11113	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.3 g/l	Ethanol in human serum with reference values	ME11131 ME11130 ME11132 ME11133	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.5 g/l	Ethanol in human serum with reference values	ME11151 ME11150 ME11152 ME11153	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in human serum with reference values	ME11201 ME11200 ME11202 ME11203	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
3.0 g/l	Ethanol in human serum with reference values	ME11301 ME11300 ME11302 ME11303	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
4.0 g/l	Ethanol in human serum with reference values	ME11401 ME11400 ME11402 ME11403	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
5.0 g/l	Ethanol in human serum with reference values	ME11501 ME11500 ME11502 ME11503	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml

Precision controls in serum

Although concentrations are not accurately defined, these ready-to-use liquid controls are suitable for monitoring the precision of ethanol in serum measurements.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.5 - 0.6 g/l	Ethanol in human serum, precision control, X1	ME12012 ME12013	10 x 1.5ml 10 x 3ml
0.8 - 1.1 g/l	Ethanol in human serum, precision control, X2	ME12022 ME12023	10 x 1.5ml 10 x 3ml
2.0 - 3.0 g/l	Ethanol in human serum, precision control, X3	ME12032 ME12033	10 x 1.5ml 10 x 3ml



Serum ethanol reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under ISO Guide 34 accredited processes. They are intended for use for accuracy monitoring of ethanol determinations in serum. The indicated assay values are established by independent laboratories (accredited according to ISO/IEC 17025).

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.2 g/l	Ethanol in human serum with reference values	ME11021 ME11020 ME11022 ME11023	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
0.3 g/l	Ethanol in human serum with reference values	ME11031 ME11030 ME11032 ME11033	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
0.5 g/l	Ethanol in human serum with reference values	ME11051 ME11050 ME11052 ME11053	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in human serum with reference values	ME11081 ME11080 ME11082 ME11083	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.0 g/l	Ethanol in human serum with reference values	ME11101 ME11100 ME11102 ME11102	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in human serum with reference values	ME11111 ME11110 ME11112 ME11113	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.3 g/l	Ethanol in human serum with reference values	ME11131 ME11130 ME11132 ME11133	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
1.5 g/l	Ethanol in human serum with reference values	ME11151 ME11150 ME11152 ME11153	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in human serum with reference values	ME11201 ME11200 ME11202 ME11203	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
3.0 g/l	Ethanol in human serum with reference values	ME11301 ME11300 ME11302 ME11303	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
4.0 g/l	Ethanol in human serum with reference values	ME11401 ME11400 ME11402 ME11403	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml
5.0 g/l	Ethanol in human serum with reference values	ME11501 ME11500 ME11502 ME11503	10 x 0.6ml 10 x 1.1ml 10 x 1.5ml 10 x 3ml

Precision controls in serum

Although concentrations are not accurately defined, these ready-to-use liquid controls are suitable for monitoring the precision of ethanol in serum measurements.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.5 - 0.6 g/l	Ethanol in human serum, precision control, X1	ME12012 ME12013	10 x 1.5ml 10 x 3ml
0.8 - 1.1 g/l	Ethanol in human serum, precision control, X2	ME12022 ME12023	10 x 1.5ml 10 x 3ml
2.0 - 3.0 g/l	Ethanol in human serum, precision control, X3	ME12032 ME12033	10 x 1.5ml 10 x 3ml



Ethanol in human blood

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.
- CE marked, satisfies the requirements set out by In Vitro Diagnostic (IVD) directive 98/74/EC.
- Manufactured under DINEN ISO9001:2008 and DINEN ISO13485:2003 and AC:2007.

Human blood reference materials

Ready-to-use liquid reference controls for accuracy monitoring of ethanol determinations in whole blood which have not been manufactured under robust ISO Guide 34 accredited processes.

The assigned ethanol concentration was determined by three (3) independent laboratories each accredited to DIN EN 17025. Measurements were carried out daily, in duplicate, on 5 separate days using Gas Chromatography.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.3 g/l	Ethanol in whole blood control EtOH WH	AC-WH03-015 AC-WH03-030	10 x 1.5ml 10 x 3ml
0.5 g/l	Ethanol in whole blood control EtOH WH	AC-WH05-015 AC-WH05-030	10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in whole blood control EtOH WH	AC-WH08-015 AC-WH08-030	10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in whole blood control EtOH WH	AC-WH11-015 AC-WH11-030	10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in whole blood control EtOH WH	AC-WH20-015 AC-WH20-030	10 x 1.5ml 10 x 3ml

Ethanol human blood reference materials

Ready-to-use liquid reference controls for accuracy monitoring of ethanol determinations in whole blood which have not been manufactured under robust ISO Guide 34 accredited processes. The indicated reference values are established by independent Institutions of Forensic Medicine by performing multiple analysis under the organizational direction of the manufacturer.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.5 g/l	Ethanol in human whole blood	ME61051 ME61050 ME61052 ME61053	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in human whole blood	ME61081 ME61080 ME61082 ME61083	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in human whole blood	ME61111 ME61110 ME61112 ME61113	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in human whole blood	ME61201	10 x 0.6ml
3.0 g/l	Ethanol in human whole blood	ME61301	10 x 0.6ml
4.0 g/l	Ethanol in human whole blood	ME61401	10 x 0.6ml

Ethanol and methanol human blood reference materials

Ready-to-use liquid reference controls for accuracy monitoring of ethanol and methanol determinations in whole blood which have not been manufactured under robust ISO Guide 34 accredited processes.

The indicated reference values are established by independent Institutions of Forensic Medicine by performing multiple analysis under the organizational direction of the manufacturer.

Concentration	Part number	Pack size (Ampoules x volume)
Ethanol 0 g/l and Methanol 0 mg/l	11V000BF 11V000DF 11V000EF 11V000HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.24 g/l and Methanol 50 mg/l	11V024BF 11V024DF 11V024EF 11V024HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.35 g/l and Methanol 60 mg/l	11V035BF 11V035DF 11V035EF 11V035HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.5 g/l and Methanol 75 mg/l	11V050BF 11V050DF 11V050EF 11V050HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.6 g/l and Methanol 100 mg/l	11V060BF 11V060DF 11V060EF 11V060HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.8 g/l and Methanol 150 mg/l	11V080BF 11V080DF 11V080EF 11V080HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 1 g/l and Methanol 200 mg/l	11V100BF 11V100DF 11V100EF 11V100HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 1.1 g/l and Methanol 250 mg/l	11V110BF 11V110DF 11V110EF 11V110HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 1.8 g/l and Methanol 300 mg/l	11V060BF 11V060DF 11V060EF 11V060HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 2 g/l and Methanol 500 mg/l	11V200BF 11V200DF 11V200EF 11V200HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 3 g/l and Methanol 750 mg/l	11V300BF 11V300DF 11V300EF 11V300HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 4 g/l and Methanol 1000 mg/l	11V400BF 11V400DF 11V400EF 11V400HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml

Ethanol in human blood

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.
- CE marked, satisfies the requirements set out by In Vitro Diagnostic (IVD) directive 98/74/EC.
- Manufactured under DINEN ISO9001:2008 and DINEN ISO13485:2003 and AC:2007.

Human blood reference materials

Ready-to-use liquid reference controls for accuracy monitoring of ethanol determinations in whole blood which have not been manufactured under robust ISO Guide 34 accredited processes.

The assigned ethanol concentration was determined by three (3) independent laboratories each accredited to DIN EN 17025. Measurements were carried out daily, in duplicate, on 5 separate days using Gas Chromatography.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.3 g/l	Ethanol in whole blood control EtOH WH	AC-WH03-015 AC-WH03-030	10 x 1.5ml 10 x 3ml
0.5 g/l	Ethanol in whole blood control EtOH WH	AC-WH05-015 AC-WH05-030	10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in whole blood control EtOH WH	AC-WH08-015 AC-WH08-030	10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in whole blood control EtOH WH	AC-WH11-015 AC-WH11-030	10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in whole blood control EtOH WH	AC-WH20-015 AC-WH20-030	10 x 1.5ml 10 x 3ml

Ethanol human blood reference materials

Ready-to-use liquid reference controls for accuracy monitoring of ethanol determinations in whole blood which have not been manufactured under robust ISO Guide 34 accredited processes. The indicated reference values are established by independent Institutions of Forensic Medicine by performing multiple analysis under the organizational direction of the manufacturer.

Concentration	Description	Part number	Pack size (Ampoules x volume)
0.5 g/l	Ethanol in human whole blood	ME61051 ME61050 ME61052 ME61053	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
0.8 g/l	Ethanol in human whole blood	ME61081 ME61080 ME61082 ME61083	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
1.1 g/l	Ethanol in human whole blood	ME61111 ME61110 ME61112 ME61113	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
2.0 g/l	Ethanol in human whole blood	ME61201	10 x 0.6ml
3.0 g/l	Ethanol in human whole blood	ME61301	10 x 0.6ml
4.0 g/l	Ethanol in human whole blood	ME61401	10 x 0.6ml

Ethanol and methanol human blood reference materials

Ready-to-use liquid reference controls for accuracy monitoring of ethanol and methanol determinations in whole blood which have not been manufactured under robust ISO Guide 34 accredited processes.

The indicated reference values are established by independent Institutions of Forensic Medicine by performing multiple analysis under the organizational direction of the manufacturer.

Concentration	Part number	Pack size (Ampoules x volume)
Ethanol 0 g/l and Methanol 0 mg/l	11V000BF 11V000DF 11V000EF 11V000HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.24 g/l and Methanol 50 mg/l	11V024BF 11V024DF 11V024EF 11V024HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.35 g/l and Methanol 60 mg/l	11V035BF 11V035DF 11V035EF 11V035HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.5 g/l and Methanol 75 mg/l	11V050BF 11V050DF 11V050EF 11V050HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.6 g/l and Methanol 100 mg/l	11V060BF 11V060DF 11V060EF 11V060HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 0.8 g/l and Methanol 150 mg/l	11V080BF 11V080DF 11V080EF 11V080HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 1 g/l and Methanol 200 mg/l	11V100BF 11V100DF 11V100EF 11V100HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 1.1 g/l and Methanol 250 mg/l	11V110BF 11V110DF 11V110EF 11V110HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 1.8 g/l and Methanol 300 mg/l	11V060BF 11V060DF 11V060EF 11V060HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 2 g/l and Methanol 500 mg/l	11V200BF 11V200DF 11V200EF 11V200HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 3 g/l and Methanol 750 mg/l	11V300BF 11V300DF 11V300EF 11V300HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml
Ethanol 4 g/l and Methanol 1000 mg/l	11V400BF 11V400DF 11V400EF 11V400HF	10 x 0.6ml 10 x 1.2ml 10 x 1.5ml 10 x 3ml

ISO Guide 34 congener and multi component alcohol related reference materials

Intended use

- Suitable for the development and validation of new analytical methodologies, for the verification of existing processes and for routine use as either calibration or control materials.

The ISO Guide 30 series of documents covers the production, certification and appropriate use of reference materials in the modern analytical laboratory. ISO Guide 34 specifically covers the requirements for the production of robust reference materials. The use of ISO Guide 34 reference materials is strongly encouraged under ISO/IEC 17025 and equivalent accreditation systems.

These mixed component ethanol reference materials produced under strict ISO Guide 34 certification processes have been specifically designed to satisfy these accreditation and other certification requirements. They have been manufactured in varying concentrations and varying pack sizes to meet the differing needs of analytical laboratories.



Concentration	Description	Part number	Pack size (Ampoules x volume)
100 µg/ml	Multi-component alcohol mix 100 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-076	1 x 1.2ml
500 µg/ml	Multi-component 1alcohol mix 500 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-057	1 x 1.2ml
1000 µg/ml	Multi-component 1alcohol mix 1000 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-056	1 x 1.2ml
4000 µg/ml	Multi-component alcohol mix 4000 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-061	1 x 1.2ml
Multi level calibration kit	Multi-component alcohol mix at three levels (500, 1000 and 4000 µg/ml) containing acetone, isopropanol, ethanol and methanol (1 ampoule of each material)	CERA-054	3 x 1.2ml

Congener and multi component alcohol related reference materials

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.

Human blood reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under robust ISO Guide 34 accredited processes. The standards are made by weighing in the components. Independent institutions of forensic medicine establish the assay values of the products by performing multiple analyses.

Aqueous congener and multi component alcohol reference materials

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Aqueous congener alcohols control Level 1	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	0.5 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 1500 mg/l 0.1 mg/l 1.0 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l	ME91311	10 x 1.2ml
Aqueous congener alcohols control Level 2	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 1500 mg/l 0.2 mg/l 2.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	ME91321	10 x 1.2ml
Aqueous congener alcohols control Level 3	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.5 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 1500 mg/l 0.3 mg/l 3.0 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l	ME91331	10 x 1.2ml
Aqueous congener alcohols control Level 4	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 1500 mg/l 0.4 mg/l 4.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l	ME91341	10 x 1.2ml

ISO Guide 34 congener and multi component alcohol related reference materials

Intended use

- Suitable for the development and validation of new analytical methodologies, for the verification of existing processes and for routine use as either calibration or control materials.

The ISO Guide 30 series of documents covers the production, certification and appropriate use of reference materials in the modern analytical laboratory. ISO Guide 34 specifically covers the requirements for the production of robust reference materials. The use of ISO Guide 34 reference materials is strongly encouraged under ISO/IEC 17025 and equivalent accreditation systems.

These mixed component ethanol reference materials produced under strict ISO Guide 34 certification processes have been specifically designed to satisfy these accreditation and other certification requirements. They have been manufactured in varying concentrations and varying pack sizes to meet the differing needs of analytical laboratories.



Concentration	Description	Part number	Pack size (Ampoules x volume)
100 µg/ml	Multi-component alcohol mix 100 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-076	1 x 1.2ml
500 µg/ml	Multi-component 1alcohol mix 500 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-057	1 x 1.2ml
1000 µg/ml	Multi-component 1alcohol mix 1000 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-056	1 x 1.2ml
4000 µg/ml	Multi-component alcohol mix 4000 µg/ml containing acetone, isopropanol, ethanol and methanol	CERA-061	1 x 1.2ml
Multi level calibration kit	Multi-component alcohol mix at three levels (500, 1000 and 4000 µg/ml) containing acetone, isopropanol, ethanol and methanol (1 ampoule of each material)	CERA-054	3 x 1.2ml

Congener and multi component alcohol related reference materials

Intended use

- Suitable for routine use as either calibration or control materials in combination with an ISO Guide 34 reference material following appropriate method validation.

Human blood reference materials

These reference materials are ready-to-use liquid aqueous standards that have not been manufactured under robust ISO Guide 34 accredited processes. The standards are made by weighing in the components. Independent institutions of forensic medicine establish the assay values of the products by performing multiple analyses.

Aqueous congener and multi component alcohol reference materials

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Aqueous congener alcohols control Level 1	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	0.5 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 1500 mg/l 0.1 mg/l 1.0 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l	ME91311	10 x 1.2ml
Aqueous congener alcohols control Level 2	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 1500 mg/l 0.2 mg/l 2.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	ME91321	10 x 1.2ml
Aqueous congener alcohols control Level 3	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.5 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 1500 mg/l 0.3 mg/l 3.0 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l	ME91331	10 x 1.2ml
Aqueous congener alcohols control Level 4	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 1500 mg/l 0.4 mg/l 4.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l	ME91341	10 x 1.2ml

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Aqueous congener alcohols control Level 5	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 1500 mg/l 0.5 mg/l 5.0 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l	ME91351	10 x 1.2ml
Aqueous congener alcohols control Level 6	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	5.0 mg/l 1.0 mg/l 1.0 mg/l 1.0 mg/l 1500 mg/l 1.0 mg/l 10.0 mg/l 1.0 mg/l 1.0 mg/l 1.0 mg/l 1.0 mg/l	ME91361	10 x 1.2ml
Aqueous congener alcohols control Level 7	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	10.0 mg/l 2.0 mg/l 2.0 mg/l 2.0 mg/l 1500 mg/l 2.0 mg/l 20.0 mg/l 2.0 mg/l 2.0 mg/l 2.0 mg/l 2.0 mg/l	ME91371	10 x 1.2ml



Serum congener and multi component alcohol reference materials

Ready-to-use liquid controls for accuracy monitoring of congener alcohols determinations in serum. Independent institutions of forensic medicine establish the assay values of the products by performing multiple analyses.

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Serum congener alcohols control Level 1	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	0.5 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 1500 mg/l 0.1 mg/l 1.0 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l	ME91111	10 x 1.2ml
Serum congener alcohols control Level 2	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 1500 mg/l 0.2 mg/l 2.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	ME91121	10 x 1.2ml
Serum congener alcohols control Level 3	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.5 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 1500 mg/l 0.3 mg/l 3.0 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l	ME91131	10 x 1.2ml
Serum congener alcohols control Level 4	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 1500 mg/l 0.4 mg/l 4.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l	ME91141	10 x 1.2ml
Serum congener alcohols control Level 5	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 1500 mg/l 0.5 mg/l 5.0 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l	ME91151	10 x 1.2ml

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Aqueous congener alcohols control Level 5	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 1500 mg/l 0.5 mg/l 5.0 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l	ME91351	10 x 1.2ml
Aqueous congener alcohols control Level 6	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	5.0 mg/l 1.0 mg/l 1.0 mg/l 1.0 mg/l 1500 mg/l 1.0 mg/l 10.0 mg/l 1.0 mg/l 1.0 mg/l 1.0 mg/l 1.0 mg/l	ME91361	10 x 1.2ml
Aqueous congener alcohols control Level 7	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	10.0 mg/l 2.0 mg/l 2.0 mg/l 2.0 mg/l 1500 mg/l 2.0 mg/l 20.0 mg/l 2.0 mg/l 2.0 mg/l 2.0 mg/l 2.0 mg/l	ME91371	10 x 1.2ml



Serum congener and multi component alcohol reference materials

Ready-to-use liquid controls for accuracy monitoring of congener alcohols determinations in serum. Independent institutions of forensic medicine establish the assay values of the products by performing multiple analyses.

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Serum congener alcohols control Level 1	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	0.5 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 1500 mg/l 0.1 mg/l 1.0 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l 0.1 mg/l	ME91111	10 x 1.2ml
Serum congener alcohols control Level 2	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 1500 mg/l 0.2 mg/l 2.0 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l 0.2 mg/l	ME91121	10 x 1.2ml
Serum congener alcohols control Level 3	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	1.5 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 1500 mg/l 0.3 mg/l 3.0 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l 0.3 mg/l	ME91131	10 x 1.2ml
Serum congener alcohols control Level 4	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 1500 mg/l 0.4 mg/l 4.0 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l 0.4 mg/l	ME91141	10 x 1.2ml
Serum congener alcohols control Level 5	Acetone 1-Butanol 2-Butanol 2-Butanone Ethanol Isobutanol Methanol 2-Methyl-1-butanol 3-Methyl-1-butanol 1-Propanol 2-Propanol	2.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 1500 mg/l 0.5 mg/l 5.0 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l 0.5 mg/l	ME91151	10 x 1.2ml

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Serum congener alcohols control Level 6	Acetone	5.0 mg/l	ME91161	10 x 1.2ml
	1-Butanol	1.0 mg/l		
	2-Butanol	1.0 mg/l		
	2-Butanone	1.0 mg/l		
	Ethanol	1500 mg/l		
	Isobutanol	1.0 mg/l		
	Methanol	10.0 mg/l		
	2-Methyl-1-butanol	1.0 mg/l		
	3-Methyl-1-butanol	1.0 mg/l		
	1-Propanol	1.0 mg/l		
	2-Propanol	1.0 mg/l		
Serum congener alcohols control Level 7	Acetone	10.0 mg/l	ME91171	10 x 1.2ml
	1-Butanol	2.0 mg/l		
	2-Butanol	2.0 mg/l		
	2-Butanone	2.0 mg/l		
	Ethanol	1500 mg/l		
	Isobutanol	2.0 mg/l		
	Methanol	20.0 mg/l		
	2-Methyl-1-butanol	2.0 mg/l		
	3-Methyl-1-butanol	2.0 mg/l		
	1-Propanol	2.0 mg/l		
	2-Propanol	2.0 mg/l		



Markers for identification of ethanol use

Along with the well established Carbohydrate Deficient Transferrin (CDT) marker, there are a number of minor metabolites of ethanol that are of interest to analytical laboratories. These include ethyl glucuronide, ethyl sulphate and the ethyl esters of some fatty acids.

The analysis of these compounds in hair, urine and other matrices can help elucidate an individual's drinking pattern. The Society of Hair Testing (SoHT, <http://www.soht.org/>) provide clear guidelines to the interpretation of such tests, in hair.

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Ethyl glucuronide and ethyl sulphate

Substance	Concentration	Part number	Pack size
Ethyl glucuronide	1.0 mg/ml	CERE-015	1 x 1ml ampoule
	0.1 mg/ml	CERE-016	1 x 1ml ampoule
Ethyl sulphate	1 mg/ml	CERE-064	1 x 1ml ampoule

Deuterium labelled ethyl glucuronide and ethyl sulphate

Substance	Concentration	Part number	Pack size
Ethyl glucuronide-D5	1.0 mg/ml	CERE-063	1 x 1ml ampoule
	0.1 mg/ml	CERE-048	1 x 1ml ampoule
Ethyl sulphate-D5	1.0 mg/ml	CERE-066	1 x 1ml ampoule

Solid reference materials

The following materials are solid materials for use in the preparation of solutions, to act as calibrators/controls or internal standards. These materials have not been manufactured under ISO Guide 34 accredited processes.

Description	Part number	Pack size
Ethyl-beta-D-6-glucuronide	ME70002	2 mg
	ME70010	10 mg

Description	Part number	Pack size
Ethyl-beta-D-6-glucuronide-D5	ME70502	2 mg
	ME70510	10 mg

Description	Component	Concentration	Part number	Pack size (Ampoules x volume)
Serum congener alcohols control Level 6	Acetone	5.0 mg/l	ME91161	10 x 1.2ml
	1-Butanol	1.0 mg/l		
	2-Butanol	1.0 mg/l		
	2-Butanone	1.0 mg/l		
	Ethanol	1500 mg/l		
	Isobutanol	1.0 mg/l		
	Methanol	10.0 mg/l		
	2-Methyl-1-butanol	1.0 mg/l		
	3-Methyl-1-butanol	1.0 mg/l		
	1-Propanol	1.0 mg/l		
	2-Propanol	1.0 mg/l		
Serum congener alcohols control Level 7	Acetone	10.0 mg/l	ME91171	10 x 1.2ml
	1-Butanol	2.0 mg/l		
	2-Butanol	2.0 mg/l		
	2-Butanone	2.0 mg/l		
	Ethanol	1500 mg/l		
	Isobutanol	2.0 mg/l		
	Methanol	20.0 mg/l		
	2-Methyl-1-butanol	2.0 mg/l		
	3-Methyl-1-butanol	2.0 mg/l		
	1-Propanol	2.0 mg/l		
	2-Propanol	2.0 mg/l		



Markers for identification of ethanol use

Along with the well established Carbohydrate Deficient Transferrin (CDT) marker, there are a number of minor metabolites of ethanol that are of interest to analytical laboratories. These include ethyl glucuronide, ethyl sulphate and the ethyl esters of some fatty acids.

The analysis of these compounds in hair, urine and other matrices can help elucidate an individual's drinking pattern. The Society of Hair Testing (SoHT, <http://www.soht.org/>) provide clear guidelines to the interpretation of such tests, in hair.

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Ethyl glucuronide and ethyl sulphate

Substance	Concentration	Part number	Pack size
Ethyl glucuronide	1.0 mg/ml	CERE-015	1 x 1ml ampoule
	0.1 mg/ml	CERE-016	1 x 1ml ampoule
Ethyl sulphate	1 mg/ml	CERE-064	1 x 1ml ampoule

Deuterium labelled ethyl glucuronide and ethyl sulphate

Substance	Concentration	Part number	Pack size
Ethyl glucuronide-D5	1.0 mg/ml	CERE-063	1 x 1ml ampoule
	0.1 mg/ml	CERE-048	1 x 1ml ampoule
Ethyl sulphate-D5	1.0 mg/ml	CERE-066	1 x 1ml ampoule

Solid reference materials

The following materials are solid materials for use in the preparation of solutions, to act as calibrators/controls or internal standards. These materials have not been manufactured under ISO Guide 34 accredited processes.

Description	Part number	Pack size
Ethyl-beta-D-6-glucuronide	ME70002	2 mg
	ME70010	10 mg

Description	Part number	Pack size
Ethyl-beta-D-6-glucuronide-D5	ME70502	2 mg
	ME70510	10 mg

Ethyl glucuronide and ethyl sulphate in human urine and serum

These reference materials are ready-to-use lyophilized controls for ethyl glucuronide and ethyl sulphate determinations in serum and urine. These materials have not been manufactured under ISO Guide 34 accredited processes. The indicated reference values were established through the proficiency testing programme "Ethyl glucuronide in Serum and Urine", operated by the GTFCh (Association of Toxicological and Forensic Chemistry).

Serum

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide and ethyl sulfate	0.84mg/l 0.97mg/l	Ethyl glucuronide, human serum control with reference values (Medidrug ETG 2/09-A S-plus)	ME41058	10 x 2.5ml

Urine

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide	0.35mg/l	Ethyl glucuronide in human urine (Medidrug ETG 1/08-B U-plus)	ME41079	10 x 2.5ml
Ethyl glucuronide and Ethyl sulphate	0.88mg/l 0.92mg/l	Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/10-B U-plus)	ME41081	10 x 2.5ml

Ethyl glucuronide and ethyl sulphate control materials

These reference materials are ready-to-use lyophilized controls for ethyl glucuronide and ethyl sulphate determinations in serum and urine. These materials have not been manufactured under ISO Guide 34 accredited processes. The indicated reference values were established through the proficiency testing programme "Ethyl glucuronide in Serum and Urine", operated by the GTFCh (Association of Toxicological and Forensic Chemistry).

Serum

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide and ethyl sulfate	0.64mg/l 0.91mg/l	Ethyl glucuronide in serum ETG 3/10-A SE, lyophilised	AC-SE015.010.001	10 x 2.5ml
Ethyl glucuronide and ethyl sulfate	1.77 mg/l 1.50mg/l	Ethyl glucuronide in serum ETG 2/12-A lyophilised	20SE212A	10 x 2.5ml

Urine

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide and ethyl sulfate	1.27mg/l 0.81mg/l	Ethyl glucuronide in Urine ETG 3/10-B UR, lyophilised	AC-UR015.010.001	10 x 2.5ml
Ethyl glucuronide and ethyl sulfate	0.556mg/l 1.070mg/l	Ethyl glucuronide in Urine ETG 2/12-B, lyophilised	20UR212B	10 x 2.5ml

Fatty acid ethyl esters

Substance	Part number	Pack size
Ethyl myristate	TRC- E925180	1 g
Ethyl oleate	TRC- E925325	1 g
Ethyl palmitate	TRC- E925480	1 g
Ethyl stearate	TRC- E925950	1 g

Stable isotope labelled fatty acid ethyl esters

Substance	Part number	Pack size
Ethyl myristate-ethyl-D5	TRC-E925182	10 mg
Ethyl oleate-ethyl-D5	TRC-E925327	10 mg
Ethyl palmitate-ethyl-D5	TRC-E925482	10 mg
Ethyl stearate-ethyl-D5	TRC-E925952	10 mg

Carbohydrate Deficient Transferrin (CDT)

Substance	Part number	Pack size
Serum control for CDT (carbohydrate deficient transferrin) lyophilised - level I	REC-21080	10 x 1ml
Serum control for CDT (carbohydrate deficient transferrin) lyophilised - level II	REC-21081	10 x 1ml
Serum control for CDT (carbohydrate deficient transferrin) lyophilised - level I and II	REC-21082	2 x 5 x 1ml
CDT (carbohydrate deficient transferrin) - test solution	REC-21014	1 x 15ml

Ethyl glucuronide and ethyl sulphate in human urine and serum

These reference materials are ready-to-use lyophilized controls for ethyl glucuronide and ethyl sulphate determinations in serum and urine. These materials have not been manufactured under ISO Guide 34 accredited processes. The indicated reference values were established through the proficiency testing programme "Ethyl glucuronide in Serum and Urine", operated by the GTFCh (Association of Toxicological and Forensic Chemistry).

Serum

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide and ethyl sulfate	0.84mg/l 0.97mg/l	Ethyl glucuronide, human serum control with reference values (Medidrug ETG 2/09-A S-plus)	ME41058	10 x 2.5ml

Urine

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide	0.35mg/l	Ethyl glucuronide in human urine (Medidrug ETG 1/08-B U-plus)	ME41079	10 x 2.5ml
Ethyl glucuronide and Ethyl sulphate	0.88mg/l 0.92mg/l	Ethylglucuronide, human urine control with reference values (Medidrug ETG 1/10-B U-plus)	ME41081	10 x 2.5ml

Ethyl glucuronide and ethyl sulphate control materials

These reference materials are ready-to-use lyophilized controls for ethyl glucuronide and ethyl sulphate determinations in serum and urine. These materials have not been manufactured under ISO Guide 34 accredited processes. The indicated reference values were established through the proficiency testing programme "Ethyl glucuronide in Serum and Urine", operated by the GTFCh (Association of Toxicological and Forensic Chemistry).

Serum

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide and ethyl sulfate	0.64mg/l 0.91mg/l	Ethyl glucuronide in serum ETG 3/10-A SE, lyophilised	AC-SE015.010.001	10 x 2.5ml
Ethyl glucuronide and ethyl sulfate	1.77 mg/l 1.50mg/l	Ethyl glucuronide in serum ETG 2/12-A lyophilised	20SE212A	10 x 2.5ml

Urine

Analyte	Conc	Description	Part number	Pack size (ampoules xml)
Ethyl glucuronide and ethyl sulfate	1.27mg/l 0.81mg/l	Ethyl glucuronide in Urine ETG 3/10-B UR, lyophilised	AC-UR015.010.001	10 x 2.5ml
Ethyl glucuronide and ethyl sulfate	0.556mg/l 1.070mg/l	Ethyl glucuronide in Urine ETG 2/12-B, lyophilised	20UR212B	10 x 2.5ml

Fatty acid ethyl esters

Substance	Part number	Pack size
Ethyl myristate	TRC- E925180	1 g
Ethyl oleate	TRC- E925325	1 g
Ethyl palmitate	TRC- E925480	1 g
Ethyl stearate	TRC- E925950	1 g

Stable isotope labelled fatty acid ethyl esters

Substance	Part number	Pack size
Ethyl myristate-ethyl-D5	TRC-E925182	10 mg
Ethyl oleate-ethyl-D5	TRC-E925327	10 mg
Ethyl palmitate-ethyl-D5	TRC-E925482	10 mg
Ethyl stearate-ethyl-D5	TRC-E925952	10 mg

Carbohydrate Deficient Transferrin (CDT)

Substance	Part number	Pack size
Serum control for CDT (carbohydrate deficient transferrin) lyophilised - level I	REC-21080	10 x 1ml
Serum control for CDT (carbohydrate deficient transferrin) lyophilised - level II	REC-21081	10 x 1ml
Serum control for CDT (carbohydrate deficient transferrin) lyophilised - level I and II	REC-21082	2 x 5 x 1ml
CDT (carbohydrate deficient transferrin) - test solution	REC-21014	1 x 15ml

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