



Scheme Description

Malt Analytes (MAPS) Proficiency Testing Scheme

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RECORD OF ISSUE STATUS AND MODIFICATIONS

Issue	Issue Date	Details	Authorised by
11	Sept 2013	Details for sample 3 updated. Methods for FAN and EBC reject fraction updated for 2014.	W.Gaunt
12	Jan 2014	Assigned value text updated. Methods updated for various parameters for 2014.	W.Gaunt
13	Aug 2014	Methods updated for various parameters.	W.Gaunt
14	Sep 2014	SDPA updated for colour in sample 4. Inclusion of subcontracting information in 'Test Materials' section.	W.Gaunt
15	Sep 2015	Black and crystal malt separated (now 4A and 4B) Removed Hard copy report information.	W.Gaunt A.McCarthy
16	Sept 2016	Details updated for TSN (EBC & IOB) and EBC fermentability	W.Gaunt
17	Sept 2017	IOB fermentability (unboiled 0.2) and IOB fermentability (boiled) removed for 2018. Kjeldahl and Dumas methods for Kolbach index deleted and replaced with 'Calculation'. Total UV digestion added to TSN (EBC Wort) & TSN (IoB wort). SDPA for EBC fermentability reduced to 1.0. New samples added for high DP (6) and malted wheat (7).	W.Gaunt
18	Oct 2017	Analytes amended for samples 6 and 7. Methods updated for Beta glucan (EBC & IOB)	W.Gaunt
19	Sep 2018	Analyte clarification for 0.2mm and FAN in malted wheat	W.Gaunt
20	Aug 2019	DPWK and DP (IoB) renamed, SDPA updated for DMSP (malt) SDPA revised for DMSP (malt)	W.Gaunt
21	July 2021	Updated email address and UKAS logo	A Collins
23	Sept 2022	Water sensitivity included for barley. Saccharification time added for malt.	W.Gaunt
24	Jan 2023	SDPA updated for colour in black and crystal malts	W.Gaunt
25	Apr 2024	Sieving test AVs updated, comment included for degrees of crystallisation (sample 4B). SDPA updated for total phenol in sample 1. Dry matter extract added to 4B.	W.Gaunt
26	July 2025	General update of technical tables to reflect the current approach to assessments.	W.Gaunt
27	May 2026	New UKAS logo added	A Collins
28	July 2027	Logo updated	A Collins

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

SCHEME INFORMATION

Scheme Aims and Organisation

The primary aim of the Malt Analytes Proficiency Testing Scheme (MAPS) is to enable laboratories performing the analysis of malt and barley to monitor their performance and compare it with that of their peers. MAPS also aims to provide information to participants on technical issues and methodologies relating to testing of malt and barley.

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

Test Materials

Details of test materials available in MAPS are given in the 'Samples Available' section. The test parameters are continually reviewed to ensure 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 deemed appropriate. Details of homogeneity tests performed and results are given in the MAPS Scheme Reports.

Some aspects of the scheme, such as test material production, homogeneity testing and stability assessment, can from time to time be subcontracted. When subcontracting occurs, it is placed with a competent subcontractor and LGC is responsible for this work. The planning of the scheme, the evaluation of performance and the authorisation of the final report will never be subcontracted.

Statistical Analysis

Information on the statistics used in MAPS 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 the 'Samples Available' section.

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

MAPS results are returned through our electronic reporting software, PORTAL, full instructions for which are provided by email.

MAPS 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.

DESCRIPTION OF ABBREVIATIONS USED

Assigned Value (AV)

The assigned value may be derived in the following ways:

- From the robust mean (median) of participant results (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 and indicated 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.

Traceability: Assigned values which are derived from the participant results, or a sub-set of the results are not traceable to an international measurement standard. The uncertainty of assigned values derived in this way is estimated from the participant results, according to ISO 13528.

- From a formulation value (Form). 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.

Traceability: Assigned values calculated from the formulation of the test sample are traceable, via an unbroken metrological traceability chain, to an international measurement standard. The measurement uncertainty of the assigned value is calculated using the contributions from each calibration in the traceability chain.

- 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.

Traceability: Assigned values calculated from the qualitative formulation of the test sample are traceable to a certified reference standard or a microbiological reference strain.

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

Traceability: Assigned values provided by an 'expert' laboratory may be traceable to an international measurement standard, according to the laboratory and the method used. The uncertainty of measurement for an assigned value produced in this way will be provided by the laboratory undertaking the analysis. Details of traceability and the associated uncertainty will be provided in the report for the scheme/round.

Range

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

SDPA

The 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 and 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 AVAILABLE

Sample PT-MP-01

Brewers and Distiller malt for chemical analysis

Supplied as:

2 x 1000ml pots of malt

1) Malt sample - Malt dependent tests

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven Method NIR (<i>Near Infrared</i>)	3 to 10	RMean (ISO oven)	0.15	% w/w	1
Diastatic Power (EBC)	Iodometric (reference method) Segmented flow (e.g. Skalar) Calculated value (from IOB)	≤350 350-500 >500	RMean (Iodometric)	20 25 30	WK units, dry basis	0
Diastatic Power (IoB)	Fehling's, Ferricyanide, Segmented flow (e.g. Skalar), Calculated value (from DPWK)	≤91 91-128 >128	Calculated value	9.1 10.4 11.6	IoB, as is basis	0
Alpha Amylase	International method – automated segmented flow (e.g. Skalar) International method – manual	≤60 >60	RMean	5.5 Robust SD	DU, dry basis	0
Total Nitrogen	Dumas	All	RMean	0.028	%, dry basis	2
	Kjeldahl	All	RMean	0.028		2
	NIR	All	RMean (Dumas)	0.04		2
Friability	Friability meter	All	Expert	1.7	%	1
Homogeneity	Friability meter	95 to 100	RMean	0.5	%	1
Glassy (Whole) Corns	Friability meter	All	RMean	0.4	%	1
Partly Unmodified Grains	Friability meter	All	RMean	0.52	%	1
Sieving Test <2.20mm	Steinecker/Glasblaserei	All	RMean	0.3	%	1
	Sortimat	All	RMean	0.3	%	1
	Other	All	RMean	0.3	%	1
Sieving Test 2.20 to 2.50mm	Steinecker/Glasblaserei (<i>EBC Fraction III</i>)	All	RMean	0.5	%	1
	Sortimat	All	RMean	0.5	%	1
	Other	All	RMean	0.5	%	1
Sieving Test 2.50 to 2.80mm	Steinecker/Glasblaserei (<i>EBC Fraction II</i>)	All	RMean	1.5	%	1
	Sortimat	All	RMean	1.5	%	1
	Other	All	RMean	1.5	%	1

Analyte	Method	Range	AV	SDPA	Units	DP
Sieving Test >2.80mm	Steinecker/Glasblaserei (EBC Fraction I)	All	RMean	1.8	%	1
	Sortimat	All	RMean	1.8	%	1
	Other	All	RMean	1.8	%	1
EBC Reject Fraction (EBC Fraction IV plus foreign matter)	Analytica EBC	All	RMean	0.5	%	1
EBC Fraction IV (<2.2mm + damaged corns from all other sieves)	Analytica EBC	All	RMean	0.5	%	1
Malt Modification	Image analyser Visual	All	RMean	1.6	%	1
Malt Mod Homogeneity	Image analyser Visual	All	RMean	8	%	1
DMSP (Malt) (Dimethyl Sulfide Precursor)	GC-FPD GC-FID	All	RMean	20% of AV (min 0.6)	mg/kg, as is basis	1
Free DMS (Malt) (Dimethyl Sulfide)	GC-FPD GC-FID	≤8 >8	RMean	1.0 Robust SD	mg/kg, as is basis	1
Total DMS (Malt) (Dimethyl Sulfide)	GC-FPD GC-FID	≤10 >10	RMean	1.2 Robust SD	mg/kg, as is basis	1
DMSP EBC Wort (Dimethyl Sulphide Precursor)	GC-FPD GC-FID	≤10 >10	RMean	0.5 Robust SD	mg/kg, as is basis	1
Residual Sulfur Dioxide	GC, Monier Williams Para Rosaniline, DTNB, Ripper, Enzymatic	≤10 >10	RMean	1 2	mg/kg, as is basis	1
Cold Water Extract	Cold water extract	All	RMean	0.5	% (m/m), as is basis	1
Hartong VZ45	VZ45	All	RMean	1.5	%, dry basis	1
NDMA (Nitrosodimeth ylamine)	GC-TEA GC-MS	≤ 2.5 > 2.5	RMean	0.5 1.0	µg/kg, as is basis	1
Glycosidic Nitrile	Distillation	All	RMean	0.11	g CN/tonne, as is basis	1

Analyte	Method	Range	AV	SDPA	Units	DP
Total Phenols	Chromatographic methods Colorimetric	<0.5 >=0.5	RMean RMean (all methods)	Robust SD 20% of AV	mg/kg, as is basis	1

2) Malt sample - EBC wort dependent tests

Analyte	Method	Range	AV	SDPA	Units	DP
Extract: 1.0mm	Paddle stirrer /Density Meter, Magnetic stirrer/Density Meter	All	RMean	0.4	%, dry basis	1
Extract: 0.2mm	Paddle stirrer /Density Meter, Magnetic stirrer/Density Meter	All	RMean	0.4	%, dry basis	1
EBC Extract Difference (0.2-1.0)	Calculation	All	RMean	0.3	%, dry basis	1
pH (EBC Wort)	pH meter	All	RMean	0.05	Units	2
Colour (EBC Wort)	Visual	≤6 >6	RMean	0.3 Robust SD	deg EBC	1
	Spectrophotometric	≤6 >6	RMean	0.4 Robust SD	deg EBC	1
Boiled Wort Colour (EBC Wort)	Visual – heating plate Visual – oil bath Spectrophotometer – heating plate Spectrophotometer – oil bath	≤9 >9	RMean	0.8 Robust SD	deg EBC	1
TSN (EBC Wort) (Total Soluble Nitrogen)	Dumas	All	RMean	0.025	% (m/m), dry basis	2
	Kjeldahl	All	RMean	0.025	% (m/m), dry basis	2
	Spectrophotometric	All	RMean (Kjeldahl)	0.025	% (m/m), dry basis	2
	Total UV digestion	All	RMean	0.025	% (m/m), dry basis	2
Kolbach Index	Calculation	All	RMean	1.4	%	1
FAN (Free Alpha Amino Nitrogen)	Manual Ninhydrin method Automated Ninhydrin method (e.g. Skalar) Automated other (e.g. Beermaster)	All	RMean	9	mg/L	0

Analyte	Method	Range	AV	SDPA	Units	DP
Viscosity (EBC Wort)	Falling Ball Viscometer, Rotary Viscometer, Glass Capillary Viscometer	All	RMean	0.02	mPas	2
EBC Fermentability (Boiled)	Dried yeast/Density meter Fresh (brewers/distillers) Yeast/ Density meter Fresh (bakers) Yeast/ Density meter	All	RMean (Fresh brewers/ distillers yeast)	1.0	%	1
Beta Glucan (EBC Wort)	Spectrophotometric – automated analyser (e.g. beermaster) Spectrophotometric – manual test kit	All	RMean	20	mg/L	0
	Fluorimetric – automated analyser (e.g. Skalar) Fluorimetric – manual injection	All	RMean	20	mg/L	0
	Enzymatic	All	RMean	20	mg/L	0
Saccharification time*	EBC 4.5.1 paragraph 8.1.5 and 8.1.6	All	RMean	-	Minutes	-

*Not currently included in LGC's UKAS Scope of Accreditation

3) Malt sample - IoB wort dependent tests

Analyte	Method	Range	AV	SDPA	Units	DP
IoB Extract 0.7mm	Paddle stirrer /Density Meter, Magnetic stirrer/Density Meter Manual stir/Density Meter	All	RMean	1.5	L deg/Kg, dry basis	1
IoB Extract 0.2mm	Paddle stirrer /Density Meter, Magnetic stirrer/Density Meter Manual stir/Density Meter	All	RMean	1.5	L deg/Kg, dry basis	1
IoB Extract Difference (0.2-0.7)	Calculation	All	RMean	1	L deg/Kg, dry basis	1
IoB Soluble Extract 1.0mm	Calculation	All	RMean	0.3	% sol ext, as is	1
IoB Soluble Extract 0.7mm	Calculation	All	RMean	0.3	% sol ext, as is	1

Analyte	Method	Range	AV	SDPA	Units	DP
IoB Soluble Extract 0.2mm	Calculation	All	RMean	0.3	% sol ext, as is	1
IoB Sol Extract Difference (0.2-0.7)	Calculation	All	RMean	0.3	% sol ext, as is	1
IoB Sol Extract Difference (0.2-1.0)	Calculation	All	RMean	0.35	% sol ext, as is	1
pH (IoB Wort)	pH meter	All	RMean	0.05	pH units	2
Colour (IoB Wort)	Visual	≤6 >6	RMean	0.3 Robust SD	deg EBC	1
	Spectrophotometric	≤6 >6	RMean	0.4 Robust SD	deg EBC	1
TSN (IoB Wort) (Total Soluble Nitrogen)	Dumas	All	RMean	0.025	% (m/m), dry basis	2
	Kjeldahl	All	RMean	0.025	% (m/m), dry basis	2
	Spectrophotometric	All	RMean	0.025	% (m/m), dry basis	2
	Total UV digestion	All	RMean	0.025	% (m/m), dry basis	2
SNR (Soluble Nitrogen Ratio)	Dumas	All	RMean	1.5	%	1
	Kjeldahl	All	RMean	1.5	%	1
FAN (IoB Wort) (Free Alpha Amino Nitrogen)	Manual Ninhydrin method Automated Ninhydrin method (e.g. Skalar) Automated other (e.g. Beermaster)	All	RMean	8	mg/L	0
Viscosity (IoB Wort)	Falling Ball Viscometer, Rotary Viscometer, Glass Capillary Viscometer	All	RMean	0.03	mPas	2
IoB Fermentability (Unboiled 0.7mm)	Dried yeast/Density meter Fresh (brewers/distillers) Yeast/ Density meter Fresh (bakers) Yeast/ Density meter	All	RMean	0.5	%	1
Predicted Spirit Yield (as is)	NIR Calculation from fermentability	All	RMean	3	L alcohol / tonne, as is	0

Analyte	Method	Range	AV	SDPA	Units	DP
Beta Glucan (IoB Wort)	Spectrophotometric – automated analyser (e.g. beermaster) Spectrophotometric – manual test kit Fluorimetric – automated analyser (e.g. Skalar) Fluorimetric – manual injection Enzymatic	All	RMean	10	mg/L	0

Sample PT-MP-02

Supplied as:

Barley for chemical analysis

1 x 1000ml pots of malt

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven (<i>ISO Method</i>)	4 to 20	RMean (ISO oven)	0.2	% w/w	1
	Moisture meter			0.3		
	NIR (<i>Near Infrared</i>)			0.2		
Total Nitrogen	Dumas	All	RMean	0.03	%, dry basis	2
	Kjeldahl		RMean	0.03	%, dry basis	2
	NIR (<i>Near Infrared</i>)		RMean (Dumas)	0.03	%, dry basis	2
Sieving Test <2.20mm	Steinecker/Glasbl aserei	All	RMean (per method)	0.3	%	1
	Sortimat					
	Other					
Sieving Test <2.25mm	Steinecker/Glasbl aseri	All	RMean (per method)	0.3	%	1
	Sortimat					
	Other					
Sieving Test 2.20 to 2.50mm	Steinecker/Glasbl aserei (<i>EBC Fraction III</i>)	All	RMean (per method)	1	%	1
	Sortimat					
	Other					
Sieving Test 2.25 to 2.50mm	Steinecker/Glasbl aserei	All	RMean (per method)	1	%	1
	Sortimat					
	Other					
Sieving Test >2.50mm	Steinecker/Glasbl aserei	All	RMean (per method)	1.5	%	1
	Sortimat					
	Other					

Analyte	Method	Range	AV	SDPA	Units	DP
Sieving Test 2.50 to 2.80mm	Steinecker/Glasblaserel (EBC Fraction II)	All	RMean (per method)	3	%	1
	Sortimat					
	Other					
Sieving Test >2.80mm	Steinecker/Glasblaserel (EBC Fraction I)	All	RMean (per method)	3.5	%	1
	Sortimat					
	Other					
EBC Reject Fraction (EBC Fraction IV plus Foreign Matter)	Analytica EBC	All	RMean	0.5	%	1
EBC Fraction IV (<2.2mm + damaged corns from all other sieves)	Analytica EBC	All	RMean	0.5	%	1
Thousand Corn Weight	EBC 3.4 (Automatic corn counter)	All	RMean	0.6	g, dry basis	1
	EBC 3.4 (Manual corn counter)					
Germinative capacity	Rapid (TET_M) staining	90 to 100	RMean	1.5	%	0
	Peroxide	90 to 100	RMean	1.5	%	0
Germinative energy	Aubry 5 day test	90 to 100	RMean	1	%	0
	Schonfeld 5 day test	80 to 100	RMean	1	%	0
	BRF 4ml Test (72hrs)	85 to 100	RMean	1.5	%	0
BRF 8ml Test	72hrs	≤90 >90	RMean	10 5	%	0
Water sensitivity	ASBC MEBAK	All	RMean	Robust SD	%	0
Hectolitre Weight	Chondrometer NIR	All	RMean	0.7	Kg/hectolitre	1

Sample PT-MP-03

Supplied as:

Mycotoxin – Malt flour for mycotoxin analysis

2 x 100g pots of malt flour (sample and blank*)

Analyte	Method	Range	AV	SDPA	Units	DP
Ochratoxin A	ELISA Lateral flow (e.g. Charm, Neogen) HPLC	All	RMean	25% of AV	µg/kg	1
Deoxynivalenol (DON)	ELISA Lateral flow (e.g. Charm, Neogen) HPLC	All	RMean	25% of AV	µg/kg	0

*Blank material supplied as a quality control material only (results are not required to be returned for this material).

Sample PT-MP-04A

Supplied as:

Black malt – Specialised malt for chemical analysis

1 x 300ml pot

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven Moisture meter	All	RMean	0.15	% w/w	2
Colour	EBC 5.6, Vis Col, 450g mixed mash	All	RMean	10% of AV	deg EBC	1
	EBC 5.10 / IoB 3.6, Vis Col, 450g boiled mash	All	RMean	10% of AV	deg EBC	1
	IoB 3.2.4, Vis Col, 515ml boiled mash	All	RMean	10% of AV	deg EBC	1
	EBC 5.6, 430nm Spec Col, 450g mixed mash	All	RMean	10% of AV	deg EBC	1
	EBC 5.10 / IoB 3.6, 430nm Spec Col, 450g boiled mash	All	RMean	10% of AV	deg EBC	1
	IoB 3.2.4, 430nm Spec Col, 515ml boiled mash	All	RMean	10% of AV	deg EBC	1

Sample PT-MP-04B

Supplied as:

Crystal malt – Specialised malt for chemical analysis

1 x 300ml pot

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven Moisture meter	All	RMean	0.15	% w/w	2
Colour	515ml Spec Wort Colour, (IoB 3.3, 2 hour extraction @ 65°C, 50/50 mixed mash) 515ml Visual Wort Colour (IoB 3.3, 2 hour extraction @ 65°C,	All	RMean	10% of AV	deg EBC	1

Analyte	Method	Range	AV	SDPA	Units	DP
	50/50 mixed mash) 450g Spec Wort Colour (IoB 3.3 / EBC 5.7, 2 hour extraction @ 65°C, 50/50 mixed mash) 450g Visual Wort Colour (IoB 3.3 / EBC 5.7, 2 hour extraction @ 65°C, 50/50 mixed mash) 450g Spec Wort Colour (EBC 5.5, 45 – 70°C extraction, 50/50 mixed mash) 450g Visual Wort Colour (EBC 5.5, 45 – 70°C extraction, 50/50 mixed mash)					
Dry matter extract	EBC 5.5 EBC 5.7	All	RMean	Robust SD	%	2
Degrees of crystallisation	Visual	All	Not assessed*	Not assessed*	%	1

*Results provided for information only

Sample PT-MP-05

Supplied as:

NDMA – Malt flour for NDMA analysis

1 x 200g malt flour matrix

Analyte	Method	Range	AV	SDPA	Units	DP
NDMA (Nitrosodimethylamine)	GC-TEA GC-MS	≤ 2.5 > 2.5	RMean	0.5 1.0	µg/kg, as is basis	1

Text written in *italics* is for reference purposes only and will not feature in the published report.

Sample PT-MP-06

Supplied as:

High diastatic power malt for chemical analysis

1 x 1000ml pot of high DP malt

1) Malt sample - High diastatic power malt dependent tests

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven Method	All	RMean	0.15	% w/w	1
DPWK (<i>Diastatic power</i>)	Iodometric (reference method) Segmented flow (e.g. Skalar) Calculated value (from IOB)	≤350 350-500 >500	RMean (Iodometric)	20 25 30	WK units, dry basis	0
Diastatic Power (<i>DP IoB</i>)	Fehling's Ferricyanide Segmented flow (e.g. Skalar) Calculated value (from DPWK)	≤91 91-128 >128	Calculated value	9.1 10.4 11.6	IoB, as is basis	0

Analyte	Method	Range	AV	SDPA	Units	DP
Alpha Amylase	International method – automated segmented flow (e.g. Skalar) International method – manual	≤60 >60	RMean	5.5 Robust SD	DU, dry basis	0
IoB Soluble Extract 0.7mm	Calculation	All	RMean	0.3	% sol ext, as is	1
TSN (IoB Wort) (Total Soluble Nitrogen)	Dumas Kjeldahl Spectrophotometric Total UV digestion	All	RMean	0.025	% (m/m), dry basis	2
FAN (IoB Wort) (Free Alpha Amino Nitrogen)	Manual Ninhydrin method Automated Ninhydrin method (e.g. Skalar) Automated other (e.g. Beermaster)	All	RMean	8	mg/L	0
Glycosidic Nitrile	Distillation	All	RMean	0.11	g CN/tonne, as is basis	1

Sample PT-MP-07

Malted wheat for chemical analysis*

Supplied as:

1 x 1000ml pot of malted wheat

1) Malt sample – Malted wheat dependent tests

Analyte	Method	Range	AV	SDPA	Units	DP
Moisture	Oven Method	All	RMean	0.15	% w/w	1
DPWK (Diastatic power)	Iodometric (reference method) Segmented flow (e.g. Skalar) Calculated value (from IOB)	≤350 350-500 >500	RMean (Iodometric)	20 25 30	WK units, dry basis	0
Diastatic Power (DP IoB)	Fehling's Ferricyanide Segmented flow (e.g. Skalar) Calculated value (from DPWK)	≤91 91-128 >128	Calculated value	9.1 10.4 11.6	IoB, as is basis	0
Alpha Amylase	International method – automated segmented flow (e.g. Skalar) International method – manual	≤60 >60	RMean	5.5 Robust SD	DU, dry basis	0

Analyte	Method	Range	AV	SDPA	Units	DP
Protein	Dumas	All	RMean	0.16	%, dry basis**	2
	Kjeldahl	All	RMean	0.16	%, dry basis**	2
	NIR	All	RMean (Dumas)	0.23	%, dry basis**	2
Extract: 0.2mm (EBC)	Paddle stirrer /Density Meter, Magnetic stirrer/Density Meter	All	RMean	0.4	%, dry basis	1
pH (EBC Wort)	pH meter	All	RMean	0.05	pH units	2
Colour (EBC Wort)	Visual	≤6 >6	RMean	0.3 Robus t SD	deg EBC	1
	Spectrophotometric	≤6 >6	RMean	0.4 Robus t SD	deg EBC	1
Boiled Wort Colour (EBC Wort)	Visual – heating plate Visual – oil bath Spectrophotometer – heating plate Spectrophotometer – oil bath	≤9 >9	RMean	0.8 Robus t SD	deg EBC	1
TSN (EBC Wort) (Total Soluble Nitrogen)	Dumas	All	RMean	0.025	%, (m/m), dry basis	2
	Kjeldahl	All	RMean	0.025	%, (m/m), dry basis	2
	Spectrophotometric	All	RMean (Kjeldahl)	0.025	%, (m/m), dry basis	2
Kolbach Index	Dumas Kjeldahl	All	RMean	1.4	%	1
FAN (EBC wort) (Free Alpha Amino Nitrogen)	Manual Ninhydrin method Automated Ninhydrin method (e.g. Skalar) Automated other (e.g. Beermaster)	All	RMean	9	mg/L	0
Viscosity (EBC Wort)	Falling Ball Viscometer, Rotary Viscometer, Glass Capillary Viscometer	All	RMean	0.02	mPas	2
EBC Fermentability (Boiled)	Dried yeast/Density meter Fresh (brewers/distillers) Yeast/ Density meter Fresh (bakers) Yeast/ Density meter	All	RMean (Fresh brewers/distillers yeast)	1.4	%	1

Analyte	Method	Range	AV	SDPA	Units	DP
Beta Glucan (EBC Wort)	Spectrophotometric – automated analyser (e.g. beermaster) Spectrophotometric – manual test kit	All	RMean	20	mg/L	0
	Fluorimetric – automated analyser (e.g. Skalar) Fluorimetric – manual injection	All	RMean	20	mg/L	0
	Enzymatic	All	RMean	20	mg/L	0
IoB Extract 0.7mm	Paddle stirrer /Density Meter, Magnetic stirrer/Density Meter Manual stir/Density Meter	All	RMean	1.5	L deg/Kg, dry basis	1
pH (IoB Wort)	pH meter	All	RMean	0.05	pH units	2
Colour (IoB Wort)	Visual	≤6 >6	RMean	0.3 Robus t SD	deg EBC	1
	Spectrophotometric	≤6 >6	RMean	0.4 Robus t SD	deg EBC	1
TSN (IoB Wort) (Total Soluble Nitrogen)	Dumas	All	RMean	0.025	% (m/m), dry basis	2
	Kjeldahl	All	RMean	0.025	% (m/m), dry basis	2
	Spectrophotometric	All	RMean (Kjeldahl)	0.025	% (m/m), dry basis	2
	Total UV digestion	All	RMean	0.025	% (m/m), dry basis	2
SNR (Soluble Nitrogen Ratio)	Dumas	All	RMean	1.5	%	1
	Kjeldahl	All	RMean	1.5	%	1
FAN (IoB Wort) (Free Alpha Amino Nitrogen)	Manual Ninhydrin method Automated Ninhydrin method (e.g. Skalar) Automated other (e.g. Beermaster)	All	RMean	8	mg/L	0
Viscosity (IoB Wort)	Falling Ball Viscometer, Rotary Viscometer, Glass Capillary Viscometer	All	RMean	0.03	mPas	2

Analyte	Method	Range	AV	SDPA	Units	DP
Beta Glucan (IoB Wort)	Spectrophotometric – automated analyser (e.g. beermaster) Spectrophotometric – manual test kit Fluorimetric – automated analyser (e.g. Skalar) Fluorimetric – manual injection Enzymatic	All	RMean	10	mg/L	0

*Not currently included in LGC's UKAS Scope of Accreditation

**Results may also be reported expressed as Nitrogen. These values will be converted to protein using the factor 5.7