



BAPS

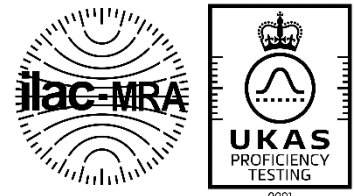
Brewing Analytes Proficiency Testing Scheme

Scheme Description

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LGC is the accredited PT provider of this scheme



BAPS Scheme Description

Record of issue status and modifications

| ISSUE | ISSUE DATE | DETAILS | AUTHORISED BY |
|-------|------------|--|------------------------|
| 11 | Sep 2013 | Included microbiological methods and codes, decimal places amended for various analytes. 'Trial' reference removed from samples 6A & 6B. | T.Noblett M.Whetton |
| 12 | Jan 2014 | Method updates in appendices. | W.Gaunt |
| 13 | Aug 2014 | Method updates in appendices. | W.Gaunt |
| 14 | Sep 2014 | Sample 7 Alcohol free/low alcohol beer added for 2015. Inclusion of subcontracting information in 'Test Materials' section. | W.Gaunt |
| 15 | Sept 2015 | Removed Hard copy report information Sample 6 removed. ABV added to sample 3 | A.McCarthy W.Gaunt |
| 16 | Oct 2015 | Additional information added for sensory testing | W.Gaunt |
| 17 | Sep 2016 | Method updates for level 3 and general revision of appendices. | W.Gaunt |
| 18 | Sep 2017 | Addition of aluminium, manganese and tin to 2L. SDPA updated for free diacetyl and free 2,3 pentanedione. Sample 8 added – gluten in beer. | W.Gaunt |
| 19 | Mar 2018 | ASBC/EBC method references added | W.Gaunt |
| 20 | Sep 2018 | RI (L1 & B1) removed, Dimethyl disulfide, methylthioacetate, hydrogen sulfide & maltotetraose removed. Diacetyl as VDK renamed. Chloride, phosphate & sulfate reduced to 1 decimal place. Updated method details to 'ALL' for microbiology samples and amended Methods paragraph. | W.Gaunt K. Carey |
| 21 | Aug 2019 | Minor description change for gluten in beer (sample 8) | W.Gaunt |
| 22 | Jan 2019 | General methods update | W.Gaunt |
| 23 | Sep 2020 | Total diacetyl added for 2L & 3 | W.Gaunt |
| 24 | July 2021 | Updated email address and UKAS logo Structure revised for sample 7 – now split into 7A and 7B (alcohol free & low alcohol samples) | A.Collins W.Gaunt |
| 25 | Sep 2022 | Arsenic, cadmium & lead added to L2. DP expanded for ABV in L7 (A&B). Colour @ 530nm removed from L3. | W.Gaunt |

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

Scheme Aims and Organisation

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

The BAPS 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.

The BAPS scheme is operated by LGC Standards in partnership with the Campden BRi (CBri), which is a world renowned company supporting food and drink businesses, through science, technology and information services. The CBri representatives are involved in the review of progress and performance of the scheme and provide advice on operation and future development of the scheme.

Test Materials

Details of test materials available in BAPS are given in Appendix A. 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 BAPS 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 BAPS can be found in the General Protocol and in the Scheme Report. Methods for determining assigned values and the values for SDPA used for individual samples are given in Appendix A.

Sensory Testing

Scoring is based on a 0 to 9 scale where 0 = absent, 1 = detected and 9 = intense.

Each attribute is to be scored using against the 0 – 9 scale.

The quantification of key flavours and aromas in beer will be compared with other tasters and taste panels and against a reference value determined by the sensory panel at Campden BRI

The following qualitative comparisons will also be provided for each available attribute based on the scores provided by participants.

- % Agreement within panel
- % Agreement with all tasters
- % Agreement with Campden BRI

Full details of the qualitative and quantitative assessments provided are described in the Sensory reports.

Methods

For most analytes, unless a specific method is stated, then any appropriate method can be used to perform the testing, 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

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

The reports for these test materials will be available on the website within 10 working days of round closure.

The results for BAPS sample 5 are submitted using report proformas. The reports for these test materials will be issued via email within 15 working days of round closure.

APPENDIX A - Description of abbreviations used

Assigned Value (AV) - *The assigned value may be derived in the following ways:*

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

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

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 - 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.

BAPS Scheme Description

Samples PT-BA-01L and PT-BA-01B: Lager/Ale (Bitter) for Chemical Analysis

Supplied as:

Four canned or bottled products (440mL or greater)

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA | Units | DP |
|--|--|--------------------------------------|---------------------------------|-------|------------------------|----------|----------------|
| Alcohol by Volume | Distillation/density meter Distillation/SG bottle SCABA, GC, NIR, RI | EBC 9.2.1/9.2.3/9.2.4 ASBC Beer-4 | 2-6% | RMean | 0.05 | % ABV | 2 |
| Original Gravity | Distillation/density meter Distillation/SG bottle SCABA, GC, NIR/density meter, Density meter/refractive index, RI | EBC 9.4 | 1030- 1050 | RMean | 0.30 | °Sacc | 2 (10xx.xx) |
| Original Extract | Distillation/density meter Distillation/SG bottle SCABA, GC, NIR/density meter, RI | EBC 9.4 | All | RMean | 0.10 | °Plato | 2 |
| Present Gravity | Density meter, SCABA, GC, NIR/density meter, Saccharometer | EBC 9.4 | All | RMean | 0.15 | °Sacc | 2 (10xx.xx) |
| Apparent Gravity (<i>Present Gravity</i>) | Density meter, SCABA, GC, NIR/density meter, Saccharometer | EBC 9.4 | All | RMean | 0.03 | °Plato | 2 |
| Bitterness (factor = 50) | Extract/ Spectrophotometer Beer-Gallery | EBC 9.8 ASBC beer-23A/23D | ≤20 >20 | RMean | 1.0 1.3 | BU | 1 |
| Colour @ 430 nm | Spectrophotometer Colorimetry | EBC 9.6 ASBC Beer-10A/10B | 0-10 >10-40 >40-80 >80 | RMean | 0.3 1.5 2.5 5 | EBC | 1 |
| pH | pH Meter | EBC 9.35 ASBC Beer-9 | All | RMean | 0.05 | pH Units | 2 |
| Haze at 0 °C | Hach, LG Auto Monitek, Dr Lange Haffmans/VOS, Sigrist, Optek | (EBC 9.29) ASBC Beer-27 | ≤1.0 >1.0 | RMean | 0.10 0.15 | EBC | 2 |
| Haze at 20 °C | Hach, LG Auto, Monitek, Dr Lange Haffmans/VOS, Sigrist, Optek | (EBC 9.29) | ≤1.0 >1.0 | RMean | 0.10 0.15 | EBC | 2 |

BAPS Scheme Description

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA | Units | DP |
|--------------------|---|--------------------------------------|--------------|---------------------|--------------------|-------|----|
| Carbon Dioxide | Volume expansion (e.g. Carbo QC) Pressure corrected (e.g. calculated value) Haffmans/VOS, Thermal conductivity (e.g. Corning), Titration, Zagreb | EBC 9.28.1 to 9.28.5 ASBC Beer-13 | ≤4.0 >4.0 | RMean (all methods) | Robust SD 0.155 | g/L | 2 |
| Total gas pressure | Pressure measurement (e.g. Haffmans, Zahn Nagel) Thermal conductivity (e.g. Hach, Orbisphere) | - | All | RMean (all methods) | Robust SD | g/L | 2 |
| Sulfur Dioxide | GC, Monier-Williams, Para-Rosaniline, DTNB, Ripper, Enzymatic | EBC 9.25.1 to 9.25.3 ASBC Beer-21 | All | RMean | 1 | mg/L | 0 |

Samples: PT-BA-02L:
Supplied as:

Lager for Chemical Analysis
Four canned or bottled products (440mL or greater)

| Analyte | Method | EBC/ASBC reference | Range | AV | SDPA | Units | DP |
|---|---------------------------------|----------------------------------|------------|-------|------------------|----------|----|
| Total Diacetyl | Gas Chromatography | - | All | RMean | 30% of AV | µg/L | 2 |
| Free Diacetyl | Gas Chromatography | EBC 9.24.2 ASBC Beer-25F | All | RMean | 30% of AV | µg/L | 2 |
| Free 2,3-Pentanedione | Gas Chromatography | EBC 9.24.2 ASBC Beer-25F | All | RMean | 30% of AV | µg/L | 2 |
| Total VDK (previously Diacetyl as VDK) | Distillation GC (calculated) | EBC 9.24.1 | <0.1 | RMean | 0.025 | mg/L | 3 |
| Dimethyl Sulfide | GC | EBC 9.39 | ≤35 >35 | RMean | 4.4 Robust SD | µg/L | 0 |
| Chloride | IC, Chloride meter | EBC 9.21/9.36 ASBC Beer-39/43 | All | RMean | 13.00 | mg/L | 1 |
| Phosphate | IC | EBC 9.36 ASBC Beer-43 | All | RMean | 20.00 | mg/L PO4 | 1 |
| Sulfate | IC | EBC 9.22/9.36 ASBC Beer-43 | All | RMean | 12.00 | mg/L | 1 |

BAPS Scheme Description

| Analyte | Method | EBC/ASBC reference | Range | AV | SDPA | Units | DP |
|-------------------------|---|---------------------------------------|--------------|-------|-------------------|---------|----|
| Nitrate | IC | EBC 9.23/9.36 | All | RMean | 2.50 | mg/L | 2 |
| FAN | Ninhydrin - manual, Ninhydrin - automatic Colorimetric, Titration, Spectroscopy, NOPA, Beer-Gallery | EBC 9.10.1/9.10.2 ASBC Beer-31 | All | RMean | 5.00 | mg/L | 1 |
| TSN | Kjeldahl Dumas Digestion/UV | EBC 9.9.1/9.9.2 ASBC Beer-11 | All | RMean | 15.50 | mg/L | 0 |
| Foam stability (HRV) | Rudin | EBC 9.42.1/9.42.2 | All | RMean | 7 | seconds | 0 |
| | NIBEM - 10mm | ASBC Beer-50 | All | RMean | 10 | seconds | 0 |
| | NIBEM - 20mm | | All | RMean | 15 | seconds | 0 |
| | NIBEM - 30mm | | All | RMean | 18 | seconds | 0 |
| | Steinfurth | | All | RMean | Robust SD | seconds | 0 |
| | LG Auto | | All | RMean | Robust SD | seconds | 0 |
| Acetaldehyde | GC | EBC 9.39 ASBC Beer-48 | All | RMean | 1.00 | mg/L | 2 |
| Ethyl Acetate | GC | EBC 9.39 ASBC Beer-48 | All | RMean | 2.00 | mg/L | 2 |
| n-Propanol | GC | EBC 9.39 | ≤14 >14 | RMean | 1.40 10% of AV | mg/L | 2 |
| iso-Butanol | GC | EBC 9.39 | ≤15 >15 | RMean | 1.50 10% of AV | mg/L | 2 |
| 2-Methyl Butanol | GC | - | ≤10 >10 | RMean | 1.00 10% of AV | mg/L | 1 |
| 3-Methyl Butanol | GC | EBC 9.39 ASBC Beer-48 | ≤58 >58 | RMean | 5.80 10% of AV | mg/L | 1 |
| 2+3 Methyl Butanol | GC | - | ≤36 >36 | RMean | 3.60 10% of AV | mg/L | 1 |
| iso-Amyl Acetate | GC | EBC 9.39 ASBC Beer-48 | ≤2 >2 | RMean | 0.20 10% of AV | mg/L | 2 |
| Ethyl Hexanoate | GC | - | ≤0.4 >0.4 | RMean | 0.04 10% of AV | mg/L | 2 |
| Iso-α-acids | HPLC Rigby & Bethune II | EBC 9.47 ASBC Beer-23B/23C/ 23E | All | RMean | 10% of AV | mg/L | 2 |

BAPS Scheme Description

| Analyte | Method | EBC/ASBC reference | Range | AV | SDPA | Units | DP |
|----------------------------|--|---|-----------------------|-------|--------------------|-----------|----|
| Tetra-iso- α -acids | HPLC | EBC 9.47 | All | RMean | 0.50 | mg/L | 2 |
| Total Polyphenols | Ferric method, Cinnamic acid method | EBC 9.11 ASBC Beer-35 | All | RMean | 9.00 | mg/L | 2 |
| Calcium | AAS, ICP-OES, ICP-MS, IC, Flame photometry, Colorimetry, Titration | EBC 9.19 ASBC Beer-20/38A | All | RMean | 7.5% of AV | mg/L | 2 |
| Magnesium | AAS, ICP-OES, ICP-MS, IC, Flame photometry, Colorimetry, Titration | EBC 9.18 ASBC Beer-38 | All | RMean | 5% of AV | mg/L | 2 |
| Potassium | Flame photometry, IC, AAS, Chloride analyser, Titration, ICP-OES | EBC 9.17 ASBC Beer-37 | All | RMean | 5% of AV | mg/L | 2 |
| Sodium | Flame photometry, IC, AAS, Chloride analyser, Titration, ICP-OES, Selective Ion Electrode | EBC 9.16 ASBC Beer-36 | All | RMean | 7.5% of AV | mg/L | 2 |
| Methanethiol | GC | - | All | RMean | Robust SD | μ g/L | 1 |
| Glucose | HPLC | EBC 8.7 | All | RMean | Robust SD | % | 2 |
| Maltose | HPLC | EBC 8.7 | All | RMean | Robust SD | % | 2 |
| Maltotriose | HPLC | - | All | RMean | Robust SD | % | 2 |
| Total carbohydrate | Calculation | EBC 9.26 ASBC Beer-6D/41 | All | RMean | Robust SD | % w/w | 2 |
| Energy value | Calculation | EBC 9.45 | All | RMean | 5 | kJ/100ml | 1 |
| Iron | AAS, ICP-OES, ICP-MS Spectrophotometer (1,10-phenanthroline) Spectrophotometer (Ferrozine) | EBC 9.13.1 to 9.13.3 ASBC Beer-18/45 | ≤ 0.1 > 0.1 | RMean | 0.015 Robust SD | mg/L | 3 |
| Copper | AAS, ICP-OES, ICP-MS | EBC 9.14.1 to 9.14.3 ASBC Beer-19/45 | ≤ 0.1 > 0.1 | RMean | 0.010 Robust SD | mg/L | 3 |
| Zinc | AAS, ICP-OES, ICP-MS | EBC 9.20 ASBC Beer-45 | All | RMean | Robust SD | mg/L | 3 |
| Aluminium | AAS, ICP-OES, ICP-MS | ASBC Beer-42/45 | All | RMean | Robust SD | mg/L | 3 |
| Tin | AAS, ICP-OES, ICP-MS | ASBC Beer-45 | All | RMean | Robust SD | mg/L | 3 |
| Manganese | AAS, ICP-OES, ICP-MS | ASBC Beer-45 | All | RMean | Robust SD | mg/L | 3 |
| Arsenic | AAS, ICP-OES, ICP-MS | - | All | RMean | Robust SD | mg/L | 3 |

BAPS Scheme Description

| Analyte | Method | EBC/ASBC reference | Range | AV | SDPA | Units | DP |
|---------|----------------------|--------------------|-------|-------|-----------|-------|----|
| Cadmium | AAS, ICP-OES, ICP-MS | - | All | RMean | Robust SD | mg/L | 3 |
| Lead | AAS, ICP-OES, ICP-MS | - | All | RMean | Robust SD | mg/L | 3 |

Sample: PT-BA-03
Supplied as:

Analysis of samples with high bitterness and/or high colour content
 One canned or bottled product (330mL or greater)

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA | Units | DP |
|--|---|---------------------------------------|---------------------------------|-------|------------------------|-----------|----|
| Alcohol by Volume | Distillation/density meter Distillation/SG bottle, Enzymatic, GC, RI, SCABA, NIR (e.g. alcolyser) | EBC 9.2.1/9.2.3/9.2.4 ASBC Beer-4 | 4-12% | RMean | 0.05 | % ABV | 2 |
| Bitterness | Extract/ Spectrophotometer Beer-Gallery | EBC 9.8 ASBC beer-23A/23D | All | RMean | 1.70 | BU | 1 |
| Colour at 430nm | Spectrophotometer Colorimetry | EBC 9.6 ASBC Beer-10A/10B | 0-10 >10-40 >40-80 >80 | RMean | 0.3 1.5 2.5 5 | EBC | 1 |
| Iso- α -acids | HPLC Rigby & Bethune II | EBC 9.47 ASBC Beer-23B/23C/ 23E | All | RMean | 10% of AV | mg/L | 2 |
| Tetra iso- α -acids | HPLC | EBC 9.47 | All | RMean | 0.50 | mg/L | 2 |
| Free Diacetyl | Gas Chromatography | EBC 9.24.2 ASBC Beer-25F | All | RMean | 9.00 | μ g/L | 2 |
| Total Diacetyl | Gas Chromatography | - | All | RMean | 30% of AV | μ g/L | 2 |
| Free 2,3- Pentanedione | Gas Chromatography | EBC 9.24.2 ASBC Beer-25F | All | RMean | 4.00 | μ g/L | 2 |
| Total VDK (previously Diacetyl as VDK) | Distillation GC (calculated) | EBC 9.24.1 | <0.1 | RMean | 0.025 | mg/L | 3 |

BAPS Scheme Description

Sample PT-BA-04:

Samples for Microbiological Analysis

Sample 4L:

Low-level sample for membrane filtration

Supplied as:

1 x 10ml freeze-dried vial to be resuscitated in 1000ml diluent (not supplied)

| Analyte | Method | Range | AV | SDPA | Units | DP |
|----------------------------------|--------|-------|-------|------|---------------|----|
| Total aerobic microbial count | ALL | <300 | RMean | 0.28 | cfu per 100ml | 0 |
| Total anaerobic microbial count | | <300 | RMean | 0.28 | cfu per 100ml | 0 |
| Total aerobic bacterial count | | <300 | RMean | 0.28 | cfu per 100ml | 0 |
| Wild yeast enumeration | | <300 | RMean | 0.28 | cfu per 100ml | 0 |
| Lactic acid bacteria enumeration | | <300 | RMean | 0.28 | cfu per 100ml | 0 |
| Identity of Organism | ALL | NA | NA | NA | NA | NA |

Sample 4H:

High-level sample for plate count (spread or pour)

Supplied as:

1 x 10ml freeze-dried vial to be resuscitated in 100ml diluent (not supplied)

| Analyte | Method | Range | AV | SDPA | Units | DP |
|----------------------------------|--------|-------|-------|------|------------|----|
| Total aerobic microbial count | ALL | <500 | RMean | 0.28 | cfu per ml | 0 |
| Total anaerobic microbial count | | <500 | RMean | 0.28 | cfu per ml | 0 |
| Total aerobic bacterial count | | <500 | RMean | 0.28 | cfu per ml | 0 |
| Wild yeast enumeration | | <500 | RMean | 0.28 | cfu per ml | 0 |
| Lactic acid bacteria enumeration | | <500 | RMean | 0.28 | cfu per ml | 0 |
| Identity of Organism | ALL | NA | NA | NA | NA | NA |

Sample PT-BA-05:
Supplied as:

Lager/Ale (Bitter) for Sensory Analysis
 Four canned or bottled products (440mL or greater)

| Descriptors (scored from 0-9) | Definition | Aroma | Taste | AV |
|-------------------------------|--|-------|-------|---|
| Fruity / Estery | Tropical / Summer fruits – Strawberry, Raspberry, Peach, Apricot, Kiwi fruit, Pineapple, Bananas, Pear drops, Mangoes, Candy sticks, Melon, Cherry, Blackberry | | | The materials supplied are assessed and all aroma/taste attribute assigned values are set by the Campden BRI Sensory Expert Panel |
| Alcoholic / Solvent | Ethanollic, Vinous, Warming, Raw, Higher alcohols | | | |
| Fruity / Citrus | Grapefruit, Lemon, Lime and Orange | | | |
| Hop | Fresh hop, Resinous, Grassy, Floral, Spicy and Herbal | | | |
| DMS | Sweetcorn, Baked beans, Tinned tomatoes | | | |
| Cereal | Cereal, Grainy, Hay, Straw, Worty, Bran | | | |
| Malty | Malty, Nutty, Liquorice, Chocolate, Vanilla | | | |
| Caramel | Toffee, Caramel, Treacle | | | |
| Burnt | Smokey, Peaty, Burnt Toast, Liquorice | | | |
| Other Sulfur | Sulfidic (eggs), Sulfitic (struck Match), Yeasty, Bready, Meaty, Drains, Garlic, Onions, Cooked Vegetable, Lightstruck | | | |
| Oxidised / Aged | Papery, Cardboard, Bready, Catty, Musty, Acetaldehyde, Metallic | | | |
| Sweet | Sugar, Saccharin, Honey, Syrupy, Cloying | | | |
| Bitter | Tonic water, Quinine | | | |
| Sour | Acidic | | | |
| Astringent | Tannic, Drying, Cold tea, Green tea | | | |
| Body | Thin, Watery, Thick, Full | | | |
| Linger | Length, Finish, Aftertaste – Duration & Quality | | | |
| Other | e.g. Diacetyl, , Rancid, Cheesy, Lactic acid, Acetic acid Phenolic, Chlorophenolic, etc. | | | |

 Not assessed

BAPS Scheme Description

Sample: PT-BA-07A
Supplied as:

Alcohol free for Chemical Analysis*
 One canned or bottled product (usually 330mL or greater)

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA % (fixed) | Units | DP |
|---------------------------------------|--|--------------------------------------|---------------------------------|-------|------------------------|----------|----|
| ABV (quantitative) | Distillation/density meter Distillation/SG bottle SCABA, GC, NIR, RI Alcolyser/densitometer (e.g. Anton Paar), | EBC 9.2.1/9.2.3/9.2.4 ASBC Beer-4 | 0 - 0.05** | RMean | Robust SD | % ABV | 3 |
| Apparent Gravity (Present Gravity) | Density meter, SG Bottle, SCABA, NIR/density meter, Saccharometer | EBC 9.4 | All | RMean | 0.03 | °Plato | 2 |
| Bitterness | Extract/ Spectrophotometer | EBC 9.8 ASBC beer-23A/23D | ≤20 >20 | RMean | 1.0 1.3 | BU | 1 |
| Colour @ 430 nm | Spectrophotometer Colorimetry | EBC 9.6 ASBC Beer-10A/10B | 0-10 >10-40 >40-80 >80 | RMean | 0.3 1.5 2.5 5 | EBC | 1 |
| pH | pH Meter | EBC 9.35 ASBC Beer-9 | All | RMean | 0.05 | pH Units | 2 |

*Defined as ABV ≤0.05%

Sample: PT-BA-07B
Supplied as:

Low alcohol beer for Chemical Analysis
 One canned or bottled product (usually 330mL or greater)

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA % (fixed) | Units | DP |
|---------------------------------------|--|--------------------------------------|--------------------------------------|-------|----------------|--------|----|
| ABV (quantitative) | Distillation/density meter Distillation/SG bottle SCABA, GC, NIR, RI Alcolyser/densitometer (e.g. Anton Paar), | EBC 9.2.1/9.2.3/9.2.4 ASBC Beer-4 | Low alcohol (0.05 to 0.5% ABV) | RMean | Robust SD | % ABV | 3 |
| Apparent Gravity (Present Gravity) | Density meter, SG Bottle, SCABA, NIR/density meter, Saccharometer | EBC 9.4 | All | RMean | 0.03 | °Plato | 2 |

BAPS Scheme Description

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA % (fixed) | Units | DP |
|-----------------|----------------------------------|------------------------------|---------------------------------|-------|------------------------|----------|----|
| Bitterness | Extract/ Spectrophotometer | EBC 9.8 ASBC beer-23A/23D | ≤20 >20 | RMean | 1.0 1.3 | BU | 1 |
| Colour @ 430 nm | Spectrophotometer Colorimetry | EBC 9.6 ASBC Beer-10A/10B | 0-10 >10-40 >40-80 >80 | RMean | 0.3 1.5 2.5 5 | EBC | 1 |
| pH | pH Meter | EBC 9.35 ASBC Beer-9 | All | RMean | 0.05 | pH Units | 2 |

**Alcohol may not be present above laboratory reporting limits in some of the test materials provided.

Sample: PT-BA-08*

Low level gluten beer for Chemical Analysis

Supplied as:

Two different canned or bottled products (usually 330mL or greater)

| Analyte | Method | EBC/ASBC reference** | Range | AV | SDPA | Units | DP |
|---------|--------|----------------------|-------|-------|-----------|-------|----|
| Gluten | ELISA | ASBC Beer-49 | - | RMean | Robust SD | mg/L | 1 |

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

**Methods references – where available.