

**The Appendix is an integral part of
Certificate of Accreditation No: 486/2024 of 18/09/2024**

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Výzkumný ústav pivovarský a sladařský, a.s.
CAB number 1309.2, Analytical Testing Laboratory – Malting Institute Brno
Mostecká 971/7, 614 00 Brno

The laboratory applies a flexible approach to the scope of accreditation.

The current list of activities carried out within the flexible scope is available on the laboratory's website <https://beerresearch.cz/download-category/sluzbyanalyzy/> in the form of the „List of activities within the flexible scope of accreditation“.

Detailed information on activities within the scope of accreditation (determined analytes / tested subject) is given in the section „Specification of the scope of accreditation“.

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Identification of variety by gel electrophoresis method	SOP 0110 (EBC Method 3.12)	Cereals	-
2	Determination of mass fractions, by gravimetric method	SOP 0210 (EBC Method 3.11.1)	Barley	-
3	Determination of mass fractions, impurities and foreign matters by gravimetric method	SOP 0220 (ČSN 46 1100-5)	Barley	-
4	Malt sieving test by gravimetric method	SOP 0230 (EBC Method 4.22)	Malt	-
5	Determination of impurities and foreign matters by gravimetric method	SOP 0300 (PSA 3.4.5)	Malt	-
6	Determination of chlormequat and mepiquat by LC-MS	SOP 4100 (ČSN EN 15055)	Grain crops, malt	A
7	Determination of bulk density by gravimetric method	SOP 0500 (MEBAK III R-200.10.020)	Barley, malt	-
8	Determination of thousand corn weight by gravimetric method	SOP 0600 (EBC Method 3.4; EBC Method 4.4)	Barley, malt	-
9	Visual determination of germinative energy in barley: BRF method visually	SOP 0710 (EBC Method 3.6.2)	Grain crops	-
10	Visual determination of germinative capacity by hydrogen peroxide	SOP 0720 (EBC Method 3.5.2)	Grain crops	-
11	Visual determination of germinative percentage and germinative index	SOP 0730 (EBC Method 3.7)	Grain crops	-
12	Visual determination of germinative rate	SOP 0740 (ČSN 46 1011-14; EBC Method 3.6.2)	Grain crops	-
13	Determination of protein content by Kjeldahl method	SOP 2240 (EBC Method 3.3.1; EBC Method 4.3.1; EBC Method 4.9.1)	Grain crops, malt, wort, sweet wort, beer	A

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Ordinal number¹	Test procedure / method name	Test procedure / method identification²	Tested subject	Degrees of freedom³
14	Visual determination of mealiness by farinatom	SOP 0900 (MEBAK I 3.1.3.5.1)	Malt	-
15	Determination of friability, glassy grains and homogeneity by friabilimeter	SOP 1000 (EBC Method 4.15)	Malt	-
16	Determination of mass fractions of grist on the Pfungstat sieve by gravimetric method	SOP 1100 (MEBAK II 1.1.1)	Grain crops, malt	-
17	Determination of grain moisture by gravimetric method	SOP 1200 (EBC Method 3.2; EBC Method 4.2)	Grain crops, malt	-
18	Determination of malt extract by densitometer (Congress Mash)	SOP 1310 (EBC Method 4.5.1)	Malt, wort	-
19	Determination of extract differences by densitometer	SOP 1320 (EBC Method 4.5.2)	Malt, wort	-
20	Determination of malt extract coloured malts by densitometer	SOP 1330 (EBC Method 5.2)	Special malt, wort	-
21	Determination of relative extract by densitometer at 45 °C	SOP 1340 (MEBAK I 3.1.4.11)	Malt, wort	-
22	Determination of extract by densitometer at 65 °C	SOP 1350 (EBC Method 4.6)	Malt, wort	-
23	Sensory determination of aroma and clarity and speed filtration	SOP 1400 (EBC Method 4.5.1)	Wort	-
24	Visual determination of saccharification rate	SOP 1500 (EBC Method 4.5.1)	Wort	-
25	Visual determination of colour by comparator	SOP 1610 (EBC Method 4.7.2)	Malt, wort	-
26	Visual determination of colour by comparator	SOP 1620 (EBC Method 5.6)	Special malt, wort	-
27	Chronometric determination of sprout damage by the Falling Number method	SOP 0750 (ČSN EN ISO 3093)	Grain crops	-
28	Visual determination of colour after boiling by comparator	SOP 1710 (EBC Method 4.19)	Malt, wort	-
29	Determination of diastatic power by SFA analyzer with photometric detector	SOP 1800 (EBC Method 4.12)	Malt	-
30	Determination of viscosity by viscometer	SOP 1900 (EBC Method 4.8)	Wort	-
31	Determination of pH by potentiometry	SOP 2000 (MEBAK III R-205.04.730)	Wort	-

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32	Determination of apparent final attenuation by densitometer	SOP 2110 (Vrtělová, H., Doležalová, A., Trkan, M.: Kvasny Prum 17, 1971, p. 10-13)	Wort	-
33	Determination of alfa-amylase content by SFA analyzer with photometric detector	SOP 2520 (EBC Method 4.13)	Barley, malt	A
34	Determination of acrylamide by GC - MS method	SOP 3700 (E. Tareke, P. Rydberg, P. Karlsson, S. Eriksoon, M. Törnqvist, J. Agric. Food Chem. 2002, 50, 4998)	Foods of plant origin, beverages	A
35	Determination of alpha-amino nitrogen content by ninhydrin method by SFA analyzer with photometric detector	SOP 2320 (EBC Method 4.10)	Wort, sweet wort, beer	A
36	Determination of beta-glucan content by SFA analyzer with fluorescence detector	SOP 2410 (ČSN 56 0187-1; EBC Method 8.13.2)	Grain crops, malt, wort, sweet wort, beer	A
37	Determination of water and protein content by NIRS method	SOP 2230 (EBC Method 3.13)	Grain crops	-
38	Determination of pesticide residues by LC-MS method	SOP 3800 (ČSN EN 15662)	Grain crops, malt	A, B
39	Photometric determination of modification and homogeneity of malt: Calcofluor method	SOP 2700 (EBC Method 4.14)	Malt	-
40	Determination of oxalates content by isotachopheresis	SOP 2800 (Offizorz, P., Krüger, E., Rubach, K.: Machr. Brauwiss. 37, 1984, p. 168)	Malt, beer, beverages	A
41	Determination of dimethylsulfide content by GC-FPD method and its precursors content by calculation from the measured values	SOP 3000 (EBC Method 9.39; MEBAK III R-200.29.153)	Malt, wort, beer	A
42	Determination of gliadin content by ELISA method and gluten by calculation from the measured values	SOP 3600 (RIDASCREEN Gliadin competitive R7021; Commission Regulation no. 828/2014/EU)	Wort, sweet wort, beer	A
43	Determination of malting yield by micromalting test using gravimetric method	SOP 3200 (MEBAK III R-110.00.008)	Grain crops	-
44	Determination of disinfectant efficiency by the GC-FID method	SOP 3302 (Methods companies Bayer AG; Syngenta)	Seed	B

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
45	Determination of mycotoxins by the LC-MS method	SOP 3400 (ČSN EN 17279)	Grain crops, malt, hops, kieselguhr	A, B
46	Determination of mycotoxins by the LC-MS method	SOP 3410 (ČSN EN 17279)	Beer production intermediate products, beer, non-alcoholic beverages and wine	A, B
47	Determination of ochratoxin A (OTA) and patulin by the UPLC method with FLR and PDA detection	SOP 3500 (Lopez-Diaz, T. M., Flannigan, B.: International Journal of Food Microbiology, 35, 1987, p. 129-136)	Grain crops, malt, hops, kieselguhr	A
48	Determination of ochratoxin A (OTA) and patulin by the UPLC method with FLR and PDA detection	SOP 3510 (Lopez-Diaz, T. M., Flannigan, B.: International Journal of Food Microbiology, 35, 1987, p. 129-136)	Beer production intermediate products, beer, non-alcoholic beverages and wine	A
49	Determination of wort clarity (haze) by nephelometry	SOP 1410 (EBC Method 9.29)	Wort, sweet wort, beer	A
50	Determination of pesticides residues by GC-MS	SOP 3900 (ČSN EN 15662)	Grain crops, malt	A, B
51	Determination of glyphosate by LC-MS	SOP 4000 (Demonte, L. D. et al. Science of the Total Environment, 2018, 645, 34-43)	Grain crops, malt, beer production intermediate products, beer, beer-based beverages	A
52	Determination of ergot alkaloids by LC-MS and their sum by calculation from the measured values	SOP 4200 (Boško, R. et al.. Food Anal. Methods, 17, 2024, p. 787–794)	Grain crops, malt, cereal products, feed, feed mixtures	A

¹ asterisk at the ordinal number identifies the tests, which the laboratory is qualified to carry out outside the permanent laboratory premises

² if the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest valid edition of the specified procedure is used (including any changes)

³ degrees of freedom: A – Flexibility concerning materials/products (subject of the test), B – Flexibility concerning components/parameters/characteristics, C – Flexibility concerning the performance of the method, D – Flexibility concerning the method

The laboratory can modify the test procedures with the specified degree(s) of freedom in the scope of accreditation while maintaining the principle of measurement. If no degree of freedom is specified, the laboratory cannot apply a flexible approach to the scope of accreditation for the test.

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
13	nitrogenous substances in dry matter, total nitrogen in dry mater, soluble nitrogenous substances, soluble nitrogen (mg/100g), soluble nitrogen (mg/100ml) and Kolbach index by calculation from measured values
38	3-hydroxycarbofuran, acephate, acetamiprid, acibenzolar-s-methyl, aldicarb, aldicarb sulfone, aldicarb sulfoxide, ametryn, aminocarb, azoxystrobin, benalaxyl, bendiocarb, benzoximate, bifenazate, bitertanol, boscalid, bromuconazole, bupirimate, buprofezin, butafenacil, butocarboxim, butoxycarboxim, carbofuran, carbofuran-3-hydroxy, carboxin, carfentrazone-ethyl, clethodim, clofentezine, clothianidin, cyazofamide, cycluron, cymoxanil, cyproconazole, cyprodinil, cyromazine, desmedipham, diclobutrazol, diclotophos, diethofencarb, difenconazole, diflubenzuron, dimethoate, dimethomorph, dimoxystrobin, diniconazole, dinotefuran, dioxacarb, diuron, doramectin, emamectin benzoate, epoxiconazole, eprinomectin, etaconazole, ethiofencarb, ethiprole, ethirimol, ethofumesate, famoxadone, fenamidone, fenarimol, fenazaquin, fenbuconazole, fenhexamide, fenobucarb, fenoxycarb, fenpropimorph, fenpyroximate, fenuron , fipronil, flonicamid, flubendamide, fludioxonil, flufenacet, fluomethuron, fluoxastrobil, fluquinconazole, flusilazole, flutolanil, flutriafol, forchlorfenuron, formetanate, fuberidazole, furalaxyl, furathiocarb, halofenozide, hexaconazole, hexythiazox, chlorantraniliprole, chlorfluazuron, chloroxuron, chlortoluron, imazalil, imidacloprid, indoxacarb, ipconazole, iprovalicarb, isoprocarb, isoproturon, ivermectin, kresoxim-methyl, linuron, lufenuron, mandipropamide, mefenacet, mepanipyrim, metaflumizone, metalaxyl, metconazole, methabenzthiazuron, methamidophos, methiocarb, methomyl, methoprotryne, methoxyfenozide, metobromuron, metribuzin, mevinphos, mexacarbate, monocrotophos, monolinuron, moxidectin, myclobutanil, neburon, nitenpyram, novaluron, nuarimol, omethoate, oxadixyl, oxamyl, paclobutrazol, penconazole, pencycuron, phenmedipham, picoxystrobin, piperonyl butoxide, pirimicarb, prochloraz, promecarb, prometon, prometryn, propamocarb, propargite, propham, propiconazole, propoxur, pymetrozine, pyracarbolide, pyraclostrobin, pyridaben, pyrimethanil, pyriproxyfen , quinoxifen, rotenone, secbumeton, symetryn, spinosad (sum a and d), spirodiclofen, spiromesifen, spirotetramat, spiroxamine, sulfentrazone, tebuconazole, tebufenozide, tebufenpyrad, tebuthiuron, teflubenzuron, temephos, terbumeton, terbutryn, tetraconazole, thiabendazole, thiacloprid, thiamethoxam , thidiazuron, thiobencarb, thiophanate methyl, triadimefon, triadimenol, tricyclazole, trifloxystrobin, triflumizole, triflumuron, trichlorfon, triticonazole, vamidothion, zoxamide
44	tebuconazole, difenoconazole, triticonazole, fludioxonil, carboxin, fuberidazole, cyproconazole, triadimenol, imidacloprid, prochloraz, metalaxyl-M, thiametoxam, ipconazol , beta-cyfluthrin, fluxapyroxad, cypermethrin, tefluthrin
45	aflatoxin B1, B2, G1, G2 and their sum by calculation from the measured values, deoxynivalenol, deoxynivalenol-3-glucoside, zearalenon, fumonisin B1, B2 and their sum by calculation from the measured values, T-2, HT-2 toxin and their sum by calculation from the measured values, nivalenol, ochratoxin A
46	aflatoxin B1, B2, G1, G2 and their sum by calculation from the measured values, deoxynivalenol, deoxynivalenol-3-glucoside, zearalenon, fumonisin B1, B2 and their sum by calculation from the measured values, T-2, HT-2 toxin and their sum by calculation from the measured values, nivalenol, ochratoxin A

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Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
50	2,3,5,6-tetrachloroaniline, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 2,4'-methoxychlor, 2,6-dichlorobenzonitrile (dichlobenil), 2-phenylphenol, 3,4-dichloroaniline, 4,4'-dichlorobenzophenone, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, 4,4'-methoxychlor olefin, acetochlor, acrinathrin, alachlor, aldrin, allidochlor, anthraquinone, atrazine, azinphos ethyl, azinphos methyl, benfluralin, bifenthrin, bioallethrin (sum of isomers calculated from measured values), biphenyl, bromfenvinphos-methyl, bromfenvinphos (sum of isomers calculated from measured values), bromophos ethyl, bromophos methyl, bromopropylate, bupirimate, carbophenothion, carfentrazone ethylchlorobenzilate, cis-chlordane, cis-nonachlor, cis-permethrin, clomazone, coumaphos, cycloate, cyfluthrin (sum of isomers calculated from measured values), cypermethrin (sum of isomers calculated from measured values), cyprodinil, DCPA methyl ester (chlorthal-dimethyl), deltamethrin, diallate (sum of cis and trans isomers calculated from measured values), dieldrin, dichlofluanid, dichloran, dimethachlor, diphenamide, diphenylamine, disulfoton, edifenphos, endosulfan ether, endosulfan I, endosulfan II, endosulfan sulfate, endrin ketone, endrin, EPN, ethalfluralin, ethion, ethylene, etofenprox, etridiazole, fenamiphos, fenarimol, fenchlorphos, fenitrothion, fenpropathrin, fenson, fenthion, fenvalerate (sum of isomers calculated from measured values), fipronil, fluazifop-p-butyl, flucythrinate (sum of isomers calculated from measured values), fludioxonil, fluchloralin, fluquinconazole, flusilazole, flutolanil, flutriafol, folpet, fonofos, heptachlor epoxide (isomer B), heptachlor, hexachlorobenzene, hexazinone, chlorbenzide, chlorfenapyr, chlorfensone, chlorfenvinphos (sum of isomers calculated from measured values), chloroneb, chlorothalonil, chlorpropham, chlorpyrifos methyl, diazinon, chlorpyrifos, chlorthiophos (sum of isomers calculated from measured values), chlozolate, iodofenphos, iprodione, isazophos, isodrin, isopropalin, lambda-cyhalothrin (sum of isomers calculated from measured values), lenacil, leptophos, linuron, malathion, metalaxyl, metazachlor, methacriphos, methoxychlor, methyl parathion, metolachlor, mevinphos (sum of isomers calculated from measured values), MGK-264 (sum of isomers calculated from measured values), mirex, myclobutanil, N-(2,4-dimethylphenyl)formamide, nitalin, nitrofen, norflurazon, oxadiazon, oxyfluorophenpendimethalin, paclobutrazol, parathion (ethyl parathion), pebulate, penconazole, pentachloroaniline, pentachloroanisole, pentachlorobenzene, pentachlorobenzonitrile, pentachloronitrobenzene (quintozene), pentachlorothioanisole, phenothrin (sum of cis and trans isomers calculated from measured values), phorate, phosalone, phosmet, piperonyl butoxide, pirimifos ethyl, pirimiphos methyl, pretilachlor, procymidon, prodiamine, profluralin, profenofos, propachlor, propanil, propargite (sum of isomers calculated from measured values), propisochlor, propyzamide, prothiophos, pyraclofos, pyrazofos, pyridaben, pyridafenthion, pyrimethanil, pyriproxyfen, quinalphos, resmethrin (sum of isomers calculated from measured values), sulfotepp, sulprofos, tau-fluvalinate (sum of isomers calculated from measured values), tebuconazole, tebufenpyrad, tefluthrin, terbacil, terbufos, terbuthylazine, tetradifon, tetrahydrophthalimide (sum of isomers calculated from measured values), tetrachloronitrobenzene (tecnazene), tetrachlorvinphos, tetramethrin (sum of isomers calculated from measured values), tolclofos-methyl, tolylfluanid, transfluthrin, trans-chlordane, trans-nonachlor, trans-permethrin, triadimefon, triadimenol (sum of isomers calculated from measured values), triallat, triazophos, triflumizole, trifluralin, vinclozolin, α -BHC, β -BHC, γ -BHC, δ -BHC
52	ergocornine, ergocorninine, ergocristine, ergocristinine, ergocryptine, ergocryptinine, ergometrine, ergometrinine, ergosine, ergosinine, ergotamine, ergotaminine and their sum by calculation from the measured values

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
1, 6, 9,10, 11, 12, 13, 16, 17, 27, 36, 37, 38, 43, 45, 47, 50, 51, 52	Grain crops: cereals, legumes, oilseeds

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Explanations:

SOP	Standard operation procedure
EBC	Analysis Committee: Analytica-EBC, Verlag Hans Carl Getränke-Fachverlag, Nürnberg, 2009.
MEBAK	Methodensammlung der Mitteleuropäischen Brautechnischen Analysenkommission. <i>Brautechnische Analysenmethoden</i> , Weihenstephan-Freising, Germany: MEBAK I (2011); MEBAK II (2013); MEBAK III (2018)
PSA	Brewing and malting analysis, Basařová a kol., Merkanta 1992.
BRF	British Research Foundation
FIA	Flow Injection Analysis
LC	Liquid Chromatography
MS	Mass Spectrometry
FLR	Fluorescence Detector
GC	Gas Chromatography
SFA	Segment Flow Analysis
FID	Flame Ionization Detector
FPD	Flame Photometric Detector
PDA	Diode Array Detector
ELISA	enzyme-linked immunosorbent assay
UPLC	Ultra Performance Liquid Chromatography
NIRS	Near-infrared Spectroscopy

"This document is an appendix to the certificate of accreditation. In case of any discrepancies between the English and Czech versions, the Czech version shall prevail, both for the certificate appendix and the certificate itself."