EA MLA Signatory
Český institut pro akreditaci, o.p.s.
(Czech Accreditation Institute)
Hájkova 2747/22, Žižkov, 130 00 Praha 3

issues

according to section 16 of Act No. 22/1997 Coll., on technical requirements for products and on changes and amendments to some Acts, as amended

CERTIFICATE OF ACCREDITATION

No. **502/2025**

Výzkumný ústav pivovarský a sladařský, a.s.
with registered office Lípová 511/15, Nové Město, 120 00 Praha 2
Company Registration No. 60193697

for the Testing Laboratory No. **1309**
Analytical Testing Laboratory – Brewing Institute Prague

Scope of accreditation:

Determination of basic quality parameters and foreign substances content in malt, hop, beer, its raw materials and intermediate products, beverages and other products to the extent as specified in the appendix to this Certificate.

This Certificate of Accreditation is a proof of accreditation issued on the basis of assessment of fulfillment of the accreditation criteria in accordance with

ČSN EN ISO/IEC 17025:2018

In its activities performed within the scope and for the period of validity of this Certificate, the abovementioned Accredited Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Accredited Body meets the specified accreditation requirements in accordance with the relevant regulations applicable to the activity of an accredited conformity assessment body.

This Certificate of Accreditation replaces, to the full extent, Certificate No.: 119/2025 of 13/03/2025, and/or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **29/05/2029**

Prague: 03/10/2025

Český institut pro akreditaci, o.p.s. «CAI»

Signed in the Czech original:
Jan Velíšek on 03/10/2025

Jan Velíšek
Director of the Department
of Testing and Calibration Laboratories
Czech Accreditation Institute

This translation of the Czech original has been issued by: Andrea Muzikářová

The Appendix is an integral part of
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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 / source literature) 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	Determination of apparent and real extract, relative density, alcohol, apparent and real attenuation, original beer extract by densitometric and NIR methods and energy value by calculation from measured data	SOP 2 (EBC, chap. 9.2.1, 9.2.6 and 9.4, 9.45)	Beer and flavoured beer, malt beverages, beercoolers	A
2	Determination of bitter substances by spectrophotometry	SOP 3 (EBC, chap. 9.8)	Beer	A
3	Determination of colour by spectrophotometry	SOP 4 (EBC, chap. 9.6)	Beer	-
4	Determination of pH by potentiometry	SOP 5 (EBC chap 9.35)	Beer, sweet-wort, wort	A
5	Determination of clarity (turbidity) by nephelometry	SOP 6 (EBC, chap 9.29; MEBAK, chap. 2.14.1.2)	Beer	A
6	Determination of carbon dioxide by the expansion method	SOP 7 (MEBAK, chap. 2.26.1.5)	Beer, carbonated beverages, sparkling wine, mineral water	A
7	Determination of foaming by a special method of measuring the drop in foam level using NIBEM	SOP 8 (MEBAK, chap. 2.18.2)	Beer	-
8	Determination of NDMA and other volatile N-nitrosamines by GC-NCD	SOP 9	Malt, cereals, beer, alcoholic beverages, water	A
9	Reserved			

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Ordinal number[1]	Test procedure / method name	Test procedure / method identification[2]	Tested subject	Degrees of freedom[3]
10	Determination of NDMA and other volatile N-nitrosamines by GC-NCD	SOP 9-B (ČSN EN 12868; ČSN EN 14350-2)	Rubber products	-
11	Determination of ATNC (total N-nitroso compounds) by NCD	SOP 10	Sweet-wort, wort, beer	A
12	Determination of nitrate by HPLC–UV	SOP 11	Malt, hops, hop products, beer and brewery intermediates, non-alcoholic and low-alcoholic beverages, brewing water	A
13	Determination of wt. % of α- and β-bitter acids by HPLC-UV	SOP 12 (EBC, chap. 7.2, 7.7)	Hops and hop products	-
14	Determination of the conductometric value of hops by titration	SOP 13 (EBC, chap. 7.2, 7.4, 7.5, 7.6)	Hops and hop products	-
15	Determination of metals by flame AAS	SOP 14 (EBC, chap. 9.13.3, 9.14.3, 9.16, 9.17, 9.18, 9.19, 9.20)	Beer, sweet-wort, wort, non-alcoholic and low-alcoholic beverages, water	A
16	Determination of metals by flame AAS	SOP 14A (MEBAK, chap. 1.1.1.4.2., 1.1.1.5.2, 1.1.1.6)	Diatomaceous earth, perlite	A
17	Determination of Hg using AMA single-purpose mercury analyser	SOP 15 (Single-purpose mercury analyser manual, AMA 254- HSC, ALTEC s.r.o.)	Beer, malt, sweet-wort, wort, hops and hop products, cereals, beverages, corn	A
18	Determination of lower aliphatic halocarbons by GC-ECD	SOP 16 (EPA Method 601)	Beer, non-alcoholic and low-alcoholic beverages	A
19	Reserved			
20	Determination of total polyphenols by spectrophotometry	SOP 18 (EBC, chap. 9.11)	Beer	-
21	Reserved			

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Ordinal number[1]	Test procedure / method name	Test procedure / method identification[2]	Tested subject	Degrees of freedom[3]
22	Determination of carbohydrates by HPLC-RI	SOP 20	Beer, sweet-wort, wort, flavoured beers, beercoolers, malt beverages, soft drinks and syrups	A, B
23	Determination of nitrogenous substances according to Kjeldahl	SOP 21 (EBC, chap. 8.9.1, 9.9.1)	Sweet-wort, wort, beer	A
24	Determination of nitrogenous substances coagulated by boiling according to Kjeldahl	SOP 21A (PSA, 6.8.2)	Wort, beer	A
25	Determination of achievable attenuation by densitometry	SOP 22 (EBC, chap. 8.6.1, 9.7)	Wort, beer	-
26	Determination of dimethyl sulphide and its precursors by GC-FID	SOP 24 (EBC, chap. 9.39)	Sweet-wort, wort, beer	-
27	Sensory evaluation	SOP 25 (ČSN 56 0186-2; ČSN EN ISO 5495; ČSN ISO 8587; ČSN EN ISO 4120)	Beer, beer-based mixed drinks	A
28	Determination of pesticide residues by LC-MS	SOP 26 (SANTE/11312/2021 V2)	Hops and hop products	A, B
29	Determination of pesticide residues by LC-MS	SOP 27	Beer, cider, beer-based mixed drinks	A, B
30	Determination of melamine by GC-MS	SOP 28	Beer, beer-based mixed drinks	-
31	Determination of biogenic amines by HPLC-FLD	SOP 29	Beer, alcoholic beverages	A, B
32	Determination of metals by ICP-MS	SOP 30A	Drinking water, beer, cider, lemonades, wort, alcoholic beverages	A, B
33	Determination of metals by ICP-MS	SOP 30B	Cereals, hops, hop products, yeasts, corn	A, B

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Ordinal number[1]	Test procedure / method name	Test procedure / method identification[2]	Tested subject	Degrees of freedom[3]
34	Determination of polyaromatic hydrocarbons by HPLC-FLD	SOP 31	Beer, beer-based alcoholic beverages, wine, soft drinks	A, B
35	Determination of polyaromatic hydrocarbons by HPLC-FLD	SOP 32	Cereals	A, B
36	Determination of fluorides by GC-FID	SOP 33	Spent grain, cereals, plant-based feed	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.

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
8	N-nitrosamines: N-nitrosodimethylamine (NDMA), N-nitrosodiethylamine (NDEA), N-nitrosodibutylamine (NDBA), N-nitrosopiperidine (NPIP), N-nitrosopyrrolidine (NPYR) and N-nitrosomorfoline (NMOR)
10	N-nitrosamines: N-nitrosodimethylamine (NDMA), N-nitrosodiethylamine (NDEA), N-nitrosodipropylamine (NDPA), N-nitrosodibutylamine (NDBA), N-nitrosopiperidine (NPIP), N-nitrosopyrrolidine (NPYR) and N-nitrosomorfolin (NMOR)
15	K, Na, Ca, Cu, Zn, Mg, Mn, Al, Fe, Cd, Pb, Ni, Cr, Sn
16	Ca, Al, Fe
18	Dichloromethane, 1,1-dichloroethane, 1,2-dichloroethane, trichloromethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1,2-trichloroethene, 1,1,2,2-tetrachloroethene, tetrachloromethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane
22	Glucose, fructose, total carbohydrates by enzymatic analysis

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Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
28	Acephate, Acetamiprid, Avamectin B1A, Azoxystrobin, Bifenthrin, Boscalid, Carbendazim, Chlorpyrifos, Clothianidin, Cyazofamid, Cymoxanil, Dimethomorph (sum of isomers), Etoxazole, Fenpyroximate, Flonicamid, Hexythiazox, Imazalil, Imidacloprid, Malaoxon, Malathion (sum of malathionu and malaoxonu expressed as malathion), Mandipropamid, Mepanipyrim, Metalaxyl, Myclobutanil, Dibrom/Naled, Oxadiazon, Penconazol, Pendimethalin, Pirimicarb, Propamocarb, Propargite, Propiconazole, Pymetrozin, Pyraclostrobin, Pyridaben, Quinoxyfen, Spirodiclofen, Spirotetramat, Spiroxamine, Tebuconazole, Tebufenpyrad, Thiabendazole, Thiamethoxam, Triadimefon, Triadimenol, Trifloxystrobin and Triflumizole
29	Acephate, Acetamiprid, Ametoctradin, Avamectin B1A, Azoxystrobin, Bifenthrin, Boscalid, Bupirimate, Carbendazim, Chlorpyrifos, Chlorantraniliprole, Clothianidin, Cymoxanil, Dimethomorph, Etoxazole, Fenarimol, Fenpropimorph, Fenpyroximate, Flonicamid, Hexythiazox, Imazalil, Imidacloprid, Indoxacarb, Mandipropamid, Mepanipyrim, Metalaxyl, Methoxyfenozid, Metrafenone, Myclobutanil, Oxadiazon, Penconazol, Pendimethalin, Pirimicarb, Propamocarb, Propargite, Propiconazole, Pymetrozin, Pyraclostrobin, Pyridaben, Quinoxyfen, Spiroxamine, Tebuconazole, Tebufenozide, Tebufenpyrad, Thiabendazole, Thiacloprid, Thiamethoxam, Triadimefon, Triadimenol, Trifloxystrobin and Triflumizole
31	Histamine, tyramine
32	Sn, Al, Cr, Co, Mn, Cu, Mo, Ni, Pb, Cd, Zn, Fe
33	Sn, Al, Cr, Co, Mn, Cu, Mo, Ni, Pb, Cd, Zn, Fe
34	Benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthrene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene
35	Anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[g,h,i]pepylene, benzo[a]pyrene, chrysene, dibenz[a,h]anthracene, fluorene, indenol[1,2,3-cd]pyrene, fenanthrene, pyrene

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (source literature)
1-4, 20, 23, 25, 26	EBC – European Brewery Convention Analysis Committee: Analytica-EBC, Verlag Hans Carl Getränke- Fachverlag, Nürnberg, 2009
5, 6, 7, 16	MEBAK (2013). Wort, Beer, Beer-based Beverages Methodensammlung der Mitteleuropäischen Brautechnischen Analysenkommission, MEBAK, Freising-Weihenstephan, Germany, ISBN 978-3-9805814-7-9, 2013
8	Egan, H.,Preussmann, R., O'Neill, I.K., Eisenbrand, G., Spiegelhalder, B., Bartsch, H., eds. (1982). Environmental Carcinogens: Selected Methods of Analysis Volume 6: N-Nitroso Compounds IARC Scientific Publication No. 45. ISBN 978-92-832-1145-7; Čulík, J., Kellner, V., Špinar, B., Prokeš, J., Basařová, G. (1989). Těkavé N-nitrosaminy ve sladu. I. Vliv pesticidů a dusíkatých hnojiv aplikovaných ve vegetačním období na obsah těkavých N-nitrosaminů ječmeni a sladu (Volatile N-nitrosamines in malt. I. Effect of pesticides and nitrogen fertilizers applied during the growing season on the volatile N-nitrosamines content of barley and malt). Kvasný průmysl, 35(10), 289–292. DOI 10.18832/kp1989037

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Ordinal test number	Detailed information on activities within the scope of accreditation (source literature)
11	Vrzal, T., Malečková, M. Olšovská, J. (2021). Miniaturized and improved method for Apparent Total N-Nitroso Compounds determination in beer. Kvasný průmysl, 67(5), 498–502. DOI 10.18832/kp2021.67.498
12	Garaj J., Bustin D., Hladký Z. (1987). Analytická chémia. Alfa, Bratislava, s. 158. ISBN 063-553-87; Čepička, J., Baudyš, P., Víznerová, E. Krausová, J. (1991). Obsah dusičnanů ve varních vodách a v pivech východočeských pivovarů (Nitrate content in brewing waters and beers of East Bohemian breweries). Kvasný průmysl, 37(8-9), 230–234. DOI 10.18832/kp1991024
22	Jurková, M., Čejka, P., Štěrba, K., Olšovská, J. (2014). Determination of Total Carbohydrate Content in Beer Using Its Pre-column Enzymatic Cleavage and HPLC-RI. Food Analytical Methods, 7, 1677–1686. DOI 10.1007/s12161-014-9805-y
29	Dušek, M., Jandovská, V., Olšovská, J. (2018). Tracking, Behavior and Fate of 58 Pesticides Originated from Hops during Beer Brewing. Journal of Agricultural and Food Chemistry, 66, 10113–10121. DOI 10.1021/acs.jafc.8b03416
30	Malečková, M., Vrzal, T., Olšovská, J. (2020). Development of a method for melamine determination in beer and beer-type beverages by GC-MS/MS. Kvasný průmysl, 66(5), 331–335. DOI 10.18832/kp2019.66.331
31	Zušťáková, V., Jurková, M, Olšovská, M. (2019). Stanovení biogenních aminů v pivu pomocí vysokoúčinné kapalinové chromatografie s fluorescenční detekcí (Determination of biogenic amines in beer by high-performance liquid chromatography with fluorescence detection). Kvasný, speciál, 71–75
32	Analytik Jena (2015). Analysis of Food and Agricultural Samples Using PlasmaQuant®MS, application note. https://www.analytik-jena.fr/fileadmin/content/pdf_analytical_instrumentation/ICP/ICP-MS/SpecialApp_ICP_MS_food_en.pdf
33	Analytik Jena (2015). Analysis of Food and Agricultural Samples Using PlasmaQuant®MS, application note. https://www.analytik-jena.fr/fileadmin/content/pdf_analytical_instrumentation/ICP/ICP-MS/SpecialApp_ICP_MS_food_en.pdf
34	Horák, T., Jurková, M., Čulík, J., Kellner, V. (1999). Stanovení polycyklických aromatických uhlovodíků a polychlorovaných bifenylů v pivě (Determination of polycyclic aromatic hydrocarbons and polychlorinated biphenyls in beer). Kvasný průmysl, 45, 190–192. DOI 10.18832/kp1999015
35	Restek Corporation [online]. EPA 8310 PAH Mix on Pinnacle® II PAH (FLD) [29-04-2024]. https://ez.restek.com/images/cgram/lc_ev0522.pdf; Anastassiades M., Lehotay, S.J. (2003). Fast and Easy Multiresidue Method Employing Acetonitrile Extraction/Partitioning and "Dispersive Solid-Phase Extraction" for the Determination of Pesticide Residues in Produce. Journal of AOAC INTERNATIONAL, 86(2), 412–431.

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Explanations:

LC-MS	Liquid Chromatography Mass Spectrometry
GC-FID	Gas Chromatography Flame Ionization Detector
GC-NCD	Gas Chromatography Nitrogen Chemiluminescence Detector
NIBEM	name of the instrument from Pentair Haffmans (Netherlands Institute for Brewery En Maltery); NIBEM method – the rate of foam drop is monitored using an electrode
NDMA	N-nitrosodimethylamine
HPLC-UV	High Performance Liquid Chromatography UltraViolet detection
HPLC-RI	High Performance Liquid Chromatography Refractive Index detector
HPLC-FLD	High Performance Liquid Chromatography Fluorescence Detector
AAS	Atomic Absorption Spectrometry
NCD	Nitrogen Chemiluminescence Detector
NIOSH	National Institute for Occupational Safety and Health