

**The Appendix is an integral part of  
Certificate of Accreditation No. 555/2024 of 16/10/2024**

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

**IKATES, s.r.o.**

CAB number 1139.2, Analytical Laboratory  
Tolstého 186, Řetenice, 415 03 Teplice

*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 [http://www.ikates.cz/al\\_cz.html](http://www.ikates.cz/al_cz.html) 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 <sup>1</sup>	Test procedure / method name	Test procedure / method identification <sup>2</sup>	Tested subject	Degrees of freedom <sup>3</sup>
1	Determination of silicon dioxide (SiO <sub>2</sub> ) by gravimetric method	SOP 5.1 (ČSN 70 0621-1)	Glass	-
2	Determination of boron (B) by titration method and expression of boron oxide (B <sub>2</sub> O <sub>3</sub> ) content by calculation	SOP 5.3 (ČSN 70 0623-2)	Glass	-
3	Determination of iron oxide (Fe <sub>2</sub> O <sub>3</sub> ) by photometric method	SOP 5.6 (ČSN 70 0626-1)	Glass	-
4	Determination of aluminium (Al) by titration method and expression of aluminium oxide (Al <sub>2</sub> O <sub>3</sub> ) content by calculation	SOP 5.9 (ČSN 70 0628-1)	Glass	-
5	Determination of titanium (Ti) by photometric method and expression of titanium dioxide (TiO <sub>2</sub> ) content by calculation	SOP 5.11 (ČSN 70 0629-1)	Glass	-
6	Determination of elements by FAAS method and expression of oxide content by calculation	SOP 5 (ČSN 70 0600)	Glass	-
7	Determination of sodium (Na) and potassium (K) by FAAS method and expression of oxide content by calculation	SOP 6.26 (ČSN 72 2071; ČSN 72 0100)	Silicates, fly ash	-
8	Determination of moisture content by gravimetric method	SOP 6.1 (ČSN 72 0102)	Silicates	-

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Ordinal number <sup>1</sup>	Test procedure / method name	Test procedure / method identification <sup>2</sup>	Tested subject	Degrees of freedom <sup>3</sup>
9	Determination of loss on ignition by gravimetric method	SOP 6.2 (ČSN 72 0103)	Silicates	-
10	Determination of silicon dioxide (SiO <sub>2</sub> ) by gravimetric method	SOP 6.3 (ČSN 72 0105-1; ČSN 72 0195-2)	Silicates	-
11	Determination of R <sub>2</sub> O <sub>3</sub> by gravimetric method	SOP 6.6 (ČSN 72 0108:1974)	Silicates	-
12	Determination of aluminium (Al) by titration method and expression of aluminium oxide (Al <sub>2</sub> O <sub>3</sub> ) content by calculation	SOP 6.7 (ČSN 72 0109-1)	Silicates	-
13	Determination of iron oxide (Fe <sub>2</sub> O <sub>3</sub> ) by photometric method	SOP 6.9 (ČSN 72 0110-2)	Silicates	-
14	Determination of titanium (Ti) by photometric method and expression of titanium dioxide (TiO <sub>2</sub> ) content by calculation	SOP 6.11 (ČSN 72 0112-2)	Silicates	-
15	Determination of calcium (Ca) by titration method and expression of calcium oxide (CaO) content by calculation	SOP 6.12 (ČSN 72 0113-1; ČSN 72 0113-3; ČSN 70 0638-1)	Silicates, glass	-
16	Determination of magnesium (Mg) by titration method and expression of magnesium oxide (MgO) content by calculation	SOP 6.17 (ČSN 72 0114-1)	Silicates	-
17	Determination of loss on ignition by gravimetric method	SOP 7.1 (ČSN 72 1216, cl. 7)	Limestone, dolomite	-
18	Determination of silicon dioxide (SiO <sub>2</sub> ) by gravimetric method	SOP 8.1 (ČSN 72 2030-2:1992)	Blast-furnace slag	-

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19	Determination of phosphorus (P) by gravimetric method and expression of phosphorus oxide (P <sub>2</sub> O <sub>5</sub> ) content by calculation	SOP 9.2 (PN02-00-02 BAS OssaBase-HA; PN03-00-03 Poresorb TCP)	Bioceramics	-
20	Determination of calcium (Ca) by titration method and expression of calcium oxide (CaO) content by calculation	SOP 9.4 (PN02-00-02 BAS OssaBase-HA; PN03-00-03 Poresorb TCP)	Bioceramics	-
21	Determination of sodium carbonate (Na <sub>2</sub> CO <sub>3</sub> ) by titration method	SOP 10.1 (ČSN 65 2080:1986)	Sodium carbonate	-
22	Determination of chlorides (Cl <sup>-</sup> ) by titration method	SOP 10.2 (ČSN 65 2081:1986)	Sodium carbonate	-
23	Determination of iron oxide (Fe <sub>2</sub> O <sub>3</sub> ) by photometric method	SOP 10.3 (ČSN 65 2082:1986)	Sodium carbonate	-
24	Determination of insoluble substances (IS) by gravimetric method	SOP 10.4 (ČSN 65 2083:1986)	Sodium carbonate	-
25	Determination of loss on ignition by gravimetric method	SOP 10.5 (ČSN 65 2084:1986)	Sodium carbonate	-
26	Determination of sulphur trioxide (SO <sub>3</sub> ) by gravimetric method	SOP 10.6 (ČSN 65 2085:1986)	Sodium carbonate	-
27	Determination of sodium sulphate (Na <sub>2</sub> SO <sub>4</sub> ) by calculation from annealing residue and impurities content	SOP 11.1 (ČSN 653126:1970)	Sulphate	-
28	Determination of chlorides (Cl <sup>-</sup> ) by titration method	SOP 11.2 (ČSN 653126:1970)	Sulphate	-
29	Determination of iron oxide (Fe <sub>2</sub> O <sub>3</sub> ) by photometric method	SOP 11.3 (ČSN 653126:1970)	Sulphate	-

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30	Determination of zinc (Zn) by FAAS and expression of zinc oxide (ZnO) content by calculation	SOP 11.4 (ČSN ISO 8288)	Sulphate	-
31	Determination of insoluble substances (IS) by gravimetric method	SOP 11.5 (ČSN 653126:1970)	Sulphate	-
32	Determination of iron (Fe) by titration method and expression of iron oxide (Fe <sub>2</sub> O <sub>3</sub> ) content by calculation	SOP 13.1 (ČSN ISO 2597:1993)	Iron ores	-
33	Determination of lead (Pb) and cadmium (Cd) by ICP-OES	SOP 16.1 (ČSN EN 1388-1; ČSN EN 1388-2; ISO 7086-1; ISO 6486-1; BS 6748:1986 Appendix A; ASTM C738; GOST R ISO 6486-1-2007; Regulation No. 38/2001, Annex 9)	Glass and ceramic ware leachate	A, B
34	Resistance of glass cullet to water at 98 °C by titration method	SOP 16.2 (ČSN ISO 719)	Glass	-
35	Determination of hexavalent chromium (Cr <sup>6+</sup> ) by photometric method	SOP 5.23 (Handbook of recommended analytical methods by ICG/TC 2, method 2)	Glass	-
36	Determination of mercury (Hg) by AAS method	SOP 5.25 (Handbook of recommended analytical methods by ICG/TC 2, method 5)	Glass	-

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Ordinal number <sup>1</sup>	Test procedure / method name	Test procedure / method identification <sup>2</sup>	Tested subject	Degrees of freedom <sup>3</sup>
37	Determination of lead (Pb) and cadmium (Cd) in trace concentrations by FAAS method	SOP 5.28 (Handbook of recommended analytical methods by ICG/TC 2, method 4)	Glass	A, B
38	Determination of elements by XRF method and expression of oxide content by calculation	SOP 27 (ČSN EN ISO 12677)	Glass, ceramics and raw materials for their production	A, B
39	Determination of elements by ICP-OES method and expression of oxide content by calculation	SOP 5.29 (ČSN EN ISO 11885)	Glass, ceramics, sand	A, B
40	Determination of density by gravimetric method	SOP 5.30 (ČSN 70 0513:1977, method B; ČSN EN ISO 1183-1, method A)	Glass	A
41*	Determination of temperature	SOP 17.44 (ČSN 75 7342)	Surface and waste water	-
42	Determination of conductivity	SOP 17.1 (ČSN EN 27888)	Surface and waste water	-
43	Determination of pH by potentiometric method	SOP 17.4 (ČSN ISO 10523)	Surface and waste water	-
44	Determination of ANC by titration method	SOP 17.5 (ČSN EN ISO 9963-1)	Surface and waste water	-
45	Determination of BNC by titration method	SOP 17.34 (ČSN 757372)	Surface and waste water	-
46	Determination of dissolved solids (DS) and dissolved inorganic salts (DIS) by gravimetry	SOP 17.2 (ČSN 75 7346; ČSN 75 7347)	Surface and waste water	-
47	Determination of insoluble substances (IS) by gravimetric method	SOP 17.3 (ČSN EN 872)	Surface and waste water	-

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48	Determination of fluoride (F <sup>-</sup> ) by photometric method after separation by distillation	SOP 15.3 (ČSN 83 4752-4)	Surface and waste water	
49	Determination of silver (Ag) by FAAS method	SOP 17.9 (ČSN 75 7400)	Surface and waste water, leachates	-
50	Determination of elements by ICP-OES method	SOP 17.45 (ČSN EN ISO 11 885; ČSN EN 71-3)	Surface and waste water, leachates	A, B
51	Determination of borates (BO <sub>3</sub> <sup>3-</sup> ) by photometric method	SOP 17.10 (ČSN ISO 9390)	Surface and waste water, leachates	-
52	Determination of nitrite nitrogen (N-NO <sub>2</sub> <sup>-</sup> ) by photometric method, nitrite (NO <sub>2</sub> <sup>-</sup> ) by calculation from measured values and inorganic nitrogen by calculation	SOP 17.23 (ČSN EN 26777)	Surface and waste water	-
53	Determination of nitrate nitrogen (N-NO <sub>3</sub> <sup>-</sup> ) by photometric method, nitrate (NO <sub>3</sub> <sup>-</sup> ) by calculation from measured values and inorganic nitrogen by calculation	SOP 17.24 (ČSN ISO 7890-3)	Surface and waste water	-
54	Determination of ammonia nitrogen (N-NH <sub>4</sub> <sup>+</sup> ) by photometric method, ammonium (NH <sub>4</sub> <sup>+</sup> ) by calculation from measured values and inorganic nitrogen by calculation	SOP 17.22 (ČSN ISO 7150-1)	Surface and waste water	-
55	Determination of total phosphorus (P) by photometric method and phosphate (PO <sub>4</sub> <sup>3-</sup> ) by calculation from measured values	SOP 17.26 (ČSN EN ISO 6878, cl. 7; TNV 75 7466)	Surface and waste water	-

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Ordinal number <sup>1</sup>	Test procedure / method name	Test procedure / method identification <sup>2</sup>	Tested subject	Degrees of freedom <sup>3</sup>
56	Determination of BOD <sub>5</sub> by electrochemical method	SOP 17.35b (ČSN EN 1899-1; ČSN EN ISO 5814)	Surface and waste water	-
57	Determination of BOD <sub>5</sub> by iodometric method	SOP 17.35a (ČSN EN 1899-1; ČSN EN 25813)	Surface and waste water	-
58	Determination of chlorides (Cl <sup>-</sup> ) by titration method	SOP 17.16 (ČSN ISO 9297)	Surface and waste water	-
59	Determination of hydrocarbons C <sub>10</sub> – C <sub>40</sub> by GC-FID method	SOP 17.43 (ČSN EN ISO 9377-2)	Surface and waste water	-
60	Determination of sulphate (SO <sub>4</sub> <sup>2-</sup> ) by gravimetric method	SOP 17.28 (TNV 75 7476)	Surface and waste water	-
61	Determination of COD <sub>Cr</sub> by photometry by tube method	SOP 17.31 (ČSN ISO 15705)	Surface and waste water	-

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

<sup>2</sup> 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)

<sup>3</sup> 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)
6	Ca, Na, K, Li, Mg, Zn, Pb
11	Al <sub>2</sub> O <sub>3</sub> , Fe <sub>2</sub> O <sub>3</sub> , TiO <sub>2</sub> , ZrO <sub>2</sub>
38	Al, Ba, Ca, Cr, Er, Fe, K, Mg, Mn, Na, Pb, S, Sb, Si, Sr, Ti, Zn, Zr
39	Al, As, Ba, Ca, Cd, Co, Cr, Cu, Er, Fe, K, Li, Mg, Mn, Na, Ni, Pb, Sb, S, Sr, Se, Sn, Ti, Zn, Zr
44	ANC-4,5, ANC-8,3
45	BNC-4,5, BNC-8,3
50	Ag, Al, As, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Sb, Sn, Zn

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Ordinal test number	Detailed information on activities within the scope of accreditation (tested object)
38	Glass, limestone, dolomite, blast furnace slag, feldspar, clinkstone, kaolin, clay, talc, CaSiO <sub>3</sub>
49, 50, 51	Leachates of ceramics, glass and porcelain in demineralized water, aqueous solutions or solutions of simulants according to GN 2.3.3.972-00
50	Leachates of ceramics, glass and porcelain in demineralized water, aqueous solutions or solutions of simulants according to SOP 16.1

**Sampling:**

Ordinal number	Sampling procedure name	Sampling procedure identification <sup>1</sup>	Subject of sampling
1	Waste water sampling (manual sampling)	SOP 55.1 (ČSN EN ISO 5667-1; ČSN EN ISO 5667-3; ČSN ISO 5667-10; ČSN EN ISO 5667-14; ČSN 75 7315)	Waste water

<sup>1</sup> if the document identifying the sampling procedure is dated, only these specific procedures are used. If the document identifying the sampling procedure is not dated, the latest edition of the specified procedure is used (including any changes)

Explanatory notes:

AAS – Atomic Absorption Spectrometry

ASTM – US standard

BS – British Standard

BOD<sub>5</sub> – Biochemical Oxygen Demand after five days

FAAS – Atomic Absorption Spectrometry with flame atomization

FTIR – Fourier Transformation Infrared Spectroscopy

GC-FID – Gas Chromatography with Flame Ionization Detector

GN – Russian Hygienic Standard

GOST – Russian Technical Standard

COD<sub>Cr</sub> – Chemical Oxygen Demand by potassium dichromate

ICP-OES – Inductively Coupled Plasma Optical Emission Spectrometry

ANC – Acid Neutralizing Capacity



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PN – Company Standard

XRF – X-ray fluorescence spectrometry

BNC – Base Neutralizing Capacity

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*"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. "*