

**The Appendix is an integral part of
Certificate of Accreditation No. 145/2021 of 01/03/2021**

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

IKATES, s.r.o.
Testing Laboratory 1139.2
Tolstého 186, Řetenice, 415 03 Teplice

The laboratory has a flexible scope of accreditation permitted as detailed in the Annex.

Updated list of activities provided within the flexible scope of accreditation is available at the laboratory website www.ikates.cz and from the Laboratory Manager.

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1	Determination of SiO ₂ by combined gravimetric and photometric method	SOP 5.1 (ČSN 70 0621-1)	Glass
2	Determination of B ₂ O ₃ by titration method (after separation on katex)	SOP 5.3 (ČSN 70 0623-2)	Glass
3	Determination of Fe ₂ O ₃ by photometric method with 2,2'-dipyridyl	SOP 5.6 (ČSN 70 0626-1)	Glass
4	Determination of Al ₂ O ₃ by titration method with chelaton 3	SOP 5.9. (ČSN 70 0628-1)	Glass
5	Determination of TiO ₂ by photometric method with tiron	SOP 5.11 (ČSN 70 0629-1)	Glass
6	Determination of ZnO by flame atomization AAS method	SOP 5.12 (ČSN 70 0631-3)	Glass
7	Determination of PbO by flame atomization AAS method	SOP 5.14 (ČSN 70 0632-3)	Glass
8	Determination of BaO by gravimetric method	SOP 5.16 (ČSN 70 0637-1)	Glass
9	Determination of CaO by titration method with chelaton 3	SOP 5.17 (ČSN 70 0638-1)	Glass
10	Determination of CaO by flame atomization AAS method	SOP 5.18 (ČSN 70 0638-2)	Glass
11	Determination of MgO by titration method with chelaton 3	SOP5.19 (ČSN 70 0639-1)	Glass
12	Determination of MgO by flame atomization AAS method	SOP 5.20 (ČSN 70 0639-2)	Glass
13	Determination of Na ₂ O and K ₂ O by flame atomization AAS method	SOP 5.22 (ČSN 70 0641-3)	Glass

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14	Determination of SO ₃ by gravimetric method	SOP 5.24 (ČSN 70 0648-1)	Glass
15	Determination of moisture content by gravimetric method	SOP 6.1 (ČSN 72 0102)	Silicates
16	Determination of loss on ignition by gravimetric method	SOP 6.2 (ČSN 72 0103)	Silicates
17	Determination of SiO ₂ by gravimetric method	SOP 6.3 (ČSN 72 0105-1)	Silicates
18	Determination of SiO ₂ by gravimetric method after defumigation with hydrofluoric acid	SOP 6.4 (ČSN 72 0105-2)	Silicates
19	Determination of R ₂ O ₃ by gravimetric method	SOP 6.6 (ČSN 72 0108:1974)	Silicates
20	Determination of Al ₂ O ₃ by titration method with chelaton 3	SOP 6.7 (ČSN 72 0109-1)	Silicates
21	Determination of Al ₂ O ₃ by titration method with chelaton 4	SOP 6.8 (ČSN EN 955-2:1997)	Glass sand
22	Determination of Fe ₂ O ₃ by photometric method with 2,2'-dipyridyl	SOP 6.9 (ČSN 72 0110-2)	Silicates
23	Determination of TiO ₂ by photometric method with tiron	SOP 6.11 (ČSN 72 0112-2)	Silicates
24	Determination of CaO by titration method with chelaton 3	SOP 6.12 (ČSN 72 0113-1)	Silicates
25	Determination of CaO by titration method with chelaton 3	SOP 6.14 (ČSN 72 0113-3)	Silicates
26	Determination of CaO by flame atomization AAS method	SOP 6.15 (ČSN 72 0113-4:1986)	Silicates
27	Determination of MgO by flame atomization AAS method	SOP 6.16 (ČSN 72 0113-4:1986)	Silicates
28	Determination of MgO by titration method with chelaton 3	SOP 6.17 (ČSN 72 0114-1)	Silicates

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29	Determination of SO ₃ by gravimetric method	SOP 6.23 (ČSN 72 0117)	Silicates
30	Determination of Na ₂ O and K ₂ O by flame atomization AAS method	SOP 6.26 (ČSN 72 0119-2:1974)	Silicates
31	Determination of loss on ignition by gravimetric method	SOP 7.1 (ČSN 72 1216, p. 7)	Limestone, dolomite
32	Determination of SiO ₂ by gravimetric method	SOP 7.2 (ČSN 72 1216, p. 8)	Limestone, dolomite
33	Determination of Fe ₂ O ₃ by photometric method with 2,2'-dipyridyl	SOP 7.3 (ČSN 72 1216, p. 14)	Limestone, dolomite
34	Determination of Al ₂ O ₃ by gravimetric method	SOP 7.4 (ČSN 72 1216, p.15,16,17)	Limestone, dolomite
35	Determination of TiO ₂ by photometric method with tiron	SOP 7.5 (ČSN 72 1216, p. 19)	Limestone, dolomite
36	Determination of CaO by titration method with chelaton 3	SOP 7.6 (ČSN 72 1216, p.20)	Limestone, dolomite
37	Determination of MgO by titration method with chelaton 3	SOP 7.7 (ČSN 72 1216, p.22)	Dolomite
38	Determination of SO ₃ by gravimetric method	SOP 7.8 (ČSN 72 1216, p.25)	Limestone, dolomite
39	Determination of SiO ₂ by gravimetric method	SOP 8.1 (ČSN 72 2030-2:1992)	Blast-furnace slag
40	Determination of P ₂ O ₅ by gravimetric method	SOP 9.2 (PN02-00-02 BAS, OssaBase-HA, PN03-00-03 Poresorb TCP)	Bioceramics
41	Determination of CaO by titration method with chelaton 3	SOP 9.4 (PN02-00-02 BAS, OssaBase-HA, PN03-00-03 Poresorb TCP)	Bioceramics
42	Determination of sodium carbonate content by titration method	SOP 10.1 (ČSN 65 2080:1986)	Sodium carbonate
43	Determination of chlorides by titration method	SOP 10.2 (ČSN 65 2081:1986)	Sodium carbonate

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44	Determination of Fe ₂ O ₃ by photometric method with 2,2'-dipyridyl	SOP 10.3 (ČSN 65 2082:1986)	Sodium carbonate
45	Determination of insoluble substances in water by gravimetric method	SOP 10.4 (ČSN 65 2083:1986)	Sodium carbonate
46	Determination of loss on ignition by gravimetric method	SOP 10.5 (ČSN 65 2084:1986)	Sodium carbonate
47	Determination of SO ₃ by gravimetric method	SOP 10.6 (ČSN 65 2085:1986)	Sodium carbonate
48	Determination of the content of Na ₂ SO ₄ by calculation from annealing residue and impurities content	SOP 11.1 (ČSN 653126:1970)	Sulphate
49	Determination of chlorides by titration method	SOP 11.2 (ČSN 653126:1970)	Sulphate
50	Determination of Fe ₂ O ₃ by photometric method with 2,2'-dipyridyl	SOP 11.3 (ČSN 653126:1970)	Sulphate
51	Determination of ZnO by flame atomization AAS method	SOP 11.4	Sulphate
52	Determination of insoluble substances in water by gravimetric method	SOP 11.5 (ČSN 653126:1970)	Sulphate
53	Determination of iron by titration method	SOP 13.1 (ČSN ISO 2597:1993)	Iron ores
54	Determination of lead and cadmium in 4% acetic acid extract of a product by flame atomization AAS method	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	Glass and ceramic ware
55	Resistance of glass cullet to water at 98 °C by titration method	SOP 16.2 (ČSN ISO 719)	Glass
56	Determination of temperature	SOP 17.44 (ČSN 75 7342)	Surface and waste water

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
57	Determination of hexavalent chromium in glass by spectrophotometric method with diphenylcarbazide	SOP 5.23 (Handbook of recommended analytical methods by ICG/TC 2, method 2)	Glass
58	Determination of mercury in glass by AAS method (cold vapour method)	SOP 5.25 (Handbook of recommended analytical methods by ICG/TC 2, method 5)	Glass
59	Determination of trace concentrations of lead and cadmium in glass by flame atomization AAS method	SOP 5.28 (Handbook of recommended analytical methods by ICG/TC 2, method 4)	Glass
60	Determination of elements by XRF spectrometry method ⁵	SOP 27 (ČSN EN ISO 12 677)	Glass, ceramics and raw materials for their production ⁷
61	Determination of elements by ICP-OES spectrometry method ⁴	SOP 5.29 (ČSN EN ISO 11 885)	Glass, ceramics and raw materials for their production ⁸
62	Determination of specific gravity by double weighing method	SOP 5.30 (ČSN 70 0513:1977, method B)	Glass
70	Determination of fluoride by photometric method after separation by distillation	SOP 15.3 (ČSN 83 4752-4)	Surface and waste water
71	Determination of conductivity	SOP 17.1 (ČSN EN 27888)	Surface and waste water
72	Determination of dried dissolved solids (DS) and dissolved inorganic salts (DIS) by gravimetric method	SOP 17.2 (ČSN 75 7346, ČSN 75 7347)	Surface and waste water
73	Determination of suspended solids by gravimetric method	SOP 17.3 (ČSN EN 872)	Surface and waste water
74	Determination of pH	SOP 17.4 (ČSN ISO 10523)	Surface and waste water
75	Determination of acid neutralizing capacity (ANC) by titration method	SOP 17.5 (ČSN EN ISO 9963-1)	Surface and waste water
76	Determination of cobalt, nickel, copper, zinc, cadmium and lead by flame atomization AAS	SOP 17.6 (ČSN ISO 8288)	Surface and waste water, extracts ³

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
77	Determination of calcium by flame atomization AAS method	SOP 17.7 (ČSN ISO 7980)	Surface and waste water, extracts ³
78	Determination of the sum of calcium and magnesium by titration, determination of magnesium by calculation from measured values	SOP 17.8 ČSN ISO 6058 ČSN ISO 6059)	Surface and waste water
79	Determination of silver by flame atomization AAS method	SOP 17.9 (ČSN 75 7400)	Surface and waste water, extracts ³
80	Determination of borate by spectrophotometric method with azomethine H	SOP 17.10 (ČSN ISO 9390)	Surface and waste water, extracts ³
81	Determination of calcium by titration method with chelaton 3	SOP 17.14 (ČSN ISO 6058)	Surface and waste water
82	Reserved		
83	Determination of chloride by argentometric titration method with chromate indicator	SOP 17.16 (ČSN ISO 9297)	Surface and waste water
84	Reserved		
85	Determination of C ₁₀ – C ₄₀ by gas chromatography method with FID detector	SOP 17.43 (ČSN EN ISO 9377-2)	Surface and waste water
86	Determination of ammonia nitrogen (N- NH ₄ ⁺) by photometric method and calculation of inorganic nitrogen from measured values	SOP 17.22 (ČSN ISO 7150-1)	Surface and waste water
87	Determination of nitrite nitrogen (N-NO ₂ ⁻) by photometric method	SOP 17.23 (ČSN EN 26777)	Surface and waste water
88	Determination of nitrate nitrogen (N-NO ₃ ⁻) by photometric method with sulphosalicylic acid	SOP 17.24 (ČSN ISO 7890-3)	Surface and waste water

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
89	Determination of phosphorus (P total) by photometric method with ammonium molybdate	SOP 17.26 (ČSN EN ISO 6878, p.7, TNV 75 7466)	Surface and waste water
90	Reserved		
91	Determination of sulphate (SO ₄ ²⁻) by gravimetric method	SOP 17.28 (TNV 75 7476)	Surface and waste water
92	Determination of nonpolar extractives by IR method	SOP 17.30 (ČSN 75 7505:1998)	Surface and waste water
93	Determination of elements by ICP-OES spectrometry ⁶	SOP 17.45 (ČSN EN ISO 11 885, ČSN EN 71-3, MoH CR Regulation No. 38/2001, Annex 9)	Surface and waste water, extracts ³
94	Determination of chemical oxygen demand (COD-Cr) by photometric method	SOP 17.31 (ČSN ISO 15705)	Surface and waste water
95	Determination of phenols by spectrophotometric method	SOP 17.32 (ČSN ISO 6439)	Surface and waste water
96	Determination of base neutralizing capacity (BNC)	SOP 17.34 (ČSN 757372)	Surface and waste water
97	Determination of biochemical oxygen demand (BOD ₅) by dilution method	SOP 17.35 (ČSN EN 1899-1, ČSN EN 25813)	Surface and waste water
98	Determination of manganese by flame atomization AAS method	SOP 17.37 (TNV 757385)	Surface and waste water, extracts ³
99	Determination of chromium by flame atomization AAS method	SOP 17.38 (ČSN EN 1233)	Surface and waste water, extracts ³
100	Chemical oxygen demand with permanganate (COD _{Mn}) by titration method	SOP 17.39 (ČSN EN ISO 8467)	Surface and waste water
101	Determination of iron by flame atomization AAS method	SOP 17.40 (ČSN 75 7385)	Surface and waste water, extracts ³
102	Reserved		
103	Reserved		

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
104	Determination of lithium by flame atomization AAS method	SOP 17.42 (Křest'an V. et al.: Analysis of glass materials and raw materials for their production – Methods guide)	Surface and waste water, extracts ³

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 edition of the specified procedure is used (including any changes)

Annex:

Flexible scope of accreditation

Ordinal numbers of tests
60, 61, 76, 93, 104

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.

Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Sampled object
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

¹ 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)

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Explanatory notes:

³Extract in demineralized water, aqueous solutions or solutions of simulants according to GN 2.3.3.972-00 and SOP 16.1

⁴Elements determined by the procedure SOP 5.29: 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

⁵Elements determined by the procedure SOP 27: Al, Ba, Ca, Cr, Er, Fe, K, Mg, Mn, Na, Pb, S, Sb, Si, Sr, Ti, Zn, Zr

⁶Elements determined by the procedure SOP 17.45: Ag, Al, As, Ba, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Pb, Sb, Sn, Zn

⁷Glass, limestone, dolomite, blast-furnace slag, feldspar, clinkstone, kaolin, clay, talc, CaSiO₃,

⁸Glass, sand

Abbreviations:

BS	British Standard
ASTM	US technical standard
GOST	Russian technical standard
TNV	Branch Technical Standard of Water Management published by the Ministry of Environment and Ministry of Agriculture
SOP	Standard Operating Procedure of the Laboratory detailing the test standard (indicated in parentheses) according to the conditions of the Testing Laboratory
AAS	Atomic Absorption Spectrometry
IR	Infrared Spectrometry
PN	Company Standard
GN	Russian Hygienic Standard
XRF	X-ray fluorescence spectrometry
ICP-OES	Inductively Coupled Plasma Optical Emission Spectrometry