

**The Appendix is an integral part of
Certificate of Accreditation No. 571/2024 of 25/10/2024**

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

VÚHŽ a.s.

CAB number 1053, Laboratories and Testing Laboratories
Dobrá 240, 739 51 Dobrá

Testing laboratory locations:

- | | |
|--|--------------------------------|
| 1. Chemical Laboratory | Dobrá, č. p. 240, 739 51 Dobrá |
| 2. Metallographic Laboratory | Dobrá, č. p. 240, 739 51 Dobrá |
| 3. Mechanical Properties Laboratory | Dobrá, č. p. 240, 739 51 Dobrá |
| 4. Corrosion Laboratory | Dobrá, č. p. 240, 739 51 Dobrá |

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

The current list of activities carried out within the flexible scope is available from the laboratory on request at lab@vuhz.cz in the form of the „List of activities within the flexible scope of accreditation“.

The laboratory provides opinions and interpretations of the test results.

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

1. Chemical Laboratory

Tests:

Ordinal number¹	Test procedure / method name	Test procedure / method identification²	Tested subject	Degrees of freedom³
1	Determination of elements by AAS-F method	PP 621-1.1 (ČSN EN ISO 10700; ČSN EN ISO 4943; ČSN EN 10136; ČSN EN 10181; ČSN ISO 9647; ČSN EN 10188)	Metallic materials	A, B, D
2	Determination of elements by OES method	PP 621-1.2 (LECO manual)	Metallic materials	A, B, D
3	Determination of the content of chromium (over 2 %) by potentiometric titration method	PP 621-1.3 (ČSN EN 24937)	Metallic materials	A, D
4	Determination of the content of silicon by gravimetric method	PP 621-1.4 (ČSN 420512)	Metallic materials	A, D
5	Determination of the content of elements by AAS-F method	PP 621-1.5 (ČSN ISO 7980; ČSN ISO 8288; ČSN EN ISO 5961)	Water and leachates	A, B, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
6	Determination of ammonia nitrogen N _{amon} by spectrophotometry, ammonia and ammonium by calculation and total inorganic ammonia nitrogen by calculation	PP 621-1.6 (ČSN ISO 7150-1)	Water and leachates	A, D
7	Determination of nitrite nitrogen by spectrophotometric method and nitrite by calculation	PP 621-1.7 (ČSN EN 26777)	Water and leachates	A, D
8	Determination of nitrate nitrogen by spectrophotometric method and nitrate by calculation	PP 621-1.8 (ČSN ISO 7890-3)	Water and leachates	A, D
9	Determination of total phosphorus by spectrophotometry	PP 621-1.9 (ČSN EN ISO 6878; TNV 75 7466)	Water and leachates	A, D
10	Determination of chloride by titrimetric method	PP 621-1.10 (ČSN ISO 9297)	Water and leachates	A, D
11	Determination of dissolved sulphate by gravimetry	PP 621-1.11 (TNV 75 7476)	Water and leachates	A, D
12	Determination of pH by electrometric method	PP 621-1.12 (ČSN ISO 10523)	Water and leachates	A, D
13	Determination of conductivity	PP 621-1.13 (ČSN EN 27888)	Water and leachates	A, D
14	Determination of chemical oxygen demand with potassium dichromate (COD _{Cr}) by titration	PP 621-1.14 (ČSN ISO 6060)	Water and leachates	A, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
15	Determination of suspended solids (SS), dissolved solids (DS) and dissolved inorganic salts (DIS) by gravimetry	PP 621-1.15 (ČSN EN 872; ČSN 75 7346; ČSN 75 7347)	Water and leachates	A, D
16	Determination of nitrogen content by inert gas reduction melting method	PP 621-1.16 (ČSN 42 0525)	Metallic materials	A, D

¹ asterisk at the ordinal number identifies the tests, which the laboratory is qualified to carry out outside the permanent laboratory premises; the numerical index at the test ordinal number identifies the location carrying out the test (the identification of the locations is given on the first page of this document)

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)
1	Mn, Cu, Ni, Pb, V, Cr
2	C, Mn, Si, P, S, Cr, Ni, Mo, V, W, Ti, Al, Cu, Co, B, Nb
5	Mg, Ca, Ni, Cu, Zn, Cd, Pb

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
1 – 4, 16	Steel, cast iron, technical iron
5 - 15	Surface, waste and process water, aqueous leachates

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2. Metallographic Laboratory

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Evaluation of microstructures	PP 622-2.1 (ČSN 42 0003; ČSN EN 10052:1996; ČSN 42 0015; ČSN 42 0461:1996; ČSN 42 1240; ČSN 42 0469; ČSN EN ISO 6520-1; ČSN EN ISO 945-1)	Metallic materials	A, D
2	Determination of grain size	PP 622-2.2 (ČSN EN ISO 643:2013; ČSN EN ISO 2624)	Metallic materials	A, D
3	Determination of the content of non-metallic inclusions	PP 622-2.3 (ČSN ISO 4967; DIN 50602: 1985)	Metallic materials	A, D
4	Determination of depth and thickness of surface-treated layers and depth of decarburization	PP 622-2.4 (ČSN EN ISO 3887; ČSN EN ISO 1463)	Metallic materials	A, D
5	Detection of defects	PP 622-2.5 (ČSN 42 1240; ČSN 42 0015; ČSN 42 0060; ČSN EN ISO 6520-1)	Metallic materials	A, D
6	Examination of corrosion failure	PP 622-2.6 (ČSN 03 8137)	Metallic materials	A, D
7	Testing of macrostructure by etching and sulphide imprints	PP 622-2.7 (ČSN 42 0467; ISO 4968; ISO 4969; ČSN EN ISO 17639)	Metallic materials	A, D

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- 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 (tested subject)
2, 3	Steel
4, 6, 7	Steel, cast iron
1, 5	Steel, cast iron, non-ferrous metals

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3. Mechanical Properties Laboratory

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Performance of tensile tests	PP 623-3.1 (ČSN EN ISO 6892-1; ČSN EN ISO 6892-2; ČSN EN ISO 6892-3; ČSN 42 0330; ASTM E8; ČSN EN ISO 5178; ČSN EN ISO 4136)	Metallic materials, welds	A, D
2*	Hardness tests	PP 623-3.2 (ČSN EN ISO 6506-1; ČSN EN ISO 6507-1; ČSN EN ISO 9015-1; ČSN EN ISO 6508-1; DIN 50190-3:1975; ČSN EN ISO 18203; ASTM A956:2017; ČSN EN ISO 18265; ČSN EN ISO 16859-1)	Metallic materials	A, D
3	Impact bend test	PP 623-3.3 (ČSN EN ISO 148-1; ČSN EN ISO 9016)	Metallic materials	A, D
4	Fracture toughness test	PP 623-3.4 (ČSN EN ISO 12737; ASTM E1820:2020; ASTM E1290:2002; ASTM E399)	Metallic materials	A, D
5	Drop weight test - DWTT test	PP 623-3.5 (API RP 5L3:2014; ČSN EN 10274; ASTM E436:2003; ČSN 42 0346)	Metallic materials	A, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
6	Bend test	PP 623-3.6 (ČSN EN ISO 7438; ČSN EN ISO 5173; ČSN EN ISO 178)	Metallic materials, plastics	A, D

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
1 - 4	Steel, cast iron, non-ferrous metals, welds
5	Steel
6	Steel, cast iron, non-ferrous metals, welds

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4. Corrosion Laboratory

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Determination of resistance to intergranular corrosion	PP 624-4.1 (ČSN EN ISO 3651-1; ČSN EN ISO 3651-2, Method A; ASTM A262, Methods C, E; GOST 6032:1989, Method AM)	Corrosion-resistant steel	A, D
2	Reserved			
3	Gravimetric determination of mass per unit area	PP 624-4.3 (ČSN EN ISO 1460; ČSN EN 10244-2; ČSN EN 10240; ČSN EN 10346)	Hot dip galvanized coatings	A, D
4	Corrosion test in condensation-water atmospheres	PP 624-4.4 (ČSN EN ISO 6270-2; ASTM D 2247; ČSN EN ISO 17872)	Metallic materials, coatings	A, D
5	Corrosion test in salt spray	PP 624-4.5 (ČSN EN ISO 9227, NSS method, AASS method; ASTM B 117; ČSN EN ISO 17872)	Metallic materials, coatings	A, D
6	Cyclic corrosion tests	PP 624-4.6 (ČSN EN ISO 11997-1, B cycle; PV 1210; ČSN EN ISO 17872)	Metallic materials, coatings	A, D
7	Chemical resistance tests	PP 624-4.7 (ČSN EN ISO 2812-1; ČSN EN ISO 2812-2; ČSN EN ISO 2812-3; ČSN EN ISO 2812-4; VDA 621-412:1985; ČSN EN ISO 17872)	Metallic materials, coatings	A, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
8	Evaluation of corrosion degradation	PP 624-4.8 (ČSN EN ISO 4628-1; ČSN EN ISO 4628-2; ČSN EN ISO 4628-3; ČSN EN ISO 4628-4; ČSN EN ISO 4628-5; ČSN EN ISO 4628-8; ČSN EN ISO 4628-10; ASTM D 610; ČSN EN ISO 10289)	Metallic materials, coatings	A, D
9	Cross-cut test	PP 624-4.9 (ČSN EN ISO 2409)	Paint and varnish coatings	A, D

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
4 - 8	Metallic materials: ferrous and non-ferrous metals Coatings: metallic, organic and inorganic, temporary protections and protective coatings

Explanatory notes:

DWTT - DROP WEIGHT TEAR TEST

NSS - Neutral Salt Spray

AASS - Acetic Acid Salt Spray

VDA - Standard of the German Association of the Automotive Industry

PV - Automotive Industry Standard – Volkswagen AG, SRN

API RP - American Petroleum Institute Recommended Practice

"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. "