



EA MLA Signatory
Český institut pro akreditaci, o.p.s.
Olšanská 54/3, 130 00 Praha 3

issues

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

CERTIFICATE OF ACCREDITATION

No. 41/2024

MATERIÁLOVÝ A METALURGICKÝ VÝZKUM s.r.o.
with registered office Pohraniční 693/31, Vítkovice, 703 00 Ostrava,
Company Registration No. 25870807

for the Testing Laboratory No. 1300
Laboratories

Scope of accreditation:

Chemical analysis of metal materials and waste, corrosion and metallographic tests, testing of mechanical, brittle fracture and fatigue properties, determination of mechanical and brittle fracture properties of metal materials and weld joints by penetration testing 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

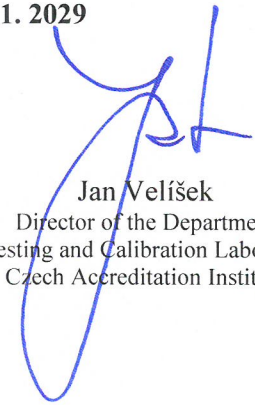
In its activities performed within the scope and for the period of validity of this Certificate, the Conformity Assessment Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Accredited Body meets the specified accreditation requirements in accordance 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.: 22/2023 of 24. 1. 2023, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **29. 1. 2029**

Prague: 29. 1. 2024




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

**The Appendix is an integral part of
Certificate of Accreditation No. 41/2024 of 29/01/2024**

Accredited entity according to ČSN EN ISO/IEC 17025:2005:

MATERIÁLOVÝ A METALURGICKÝ VÝZKUM s.r.o.

CAB number 1300, Laboratories
Pohraniční 693/31, Vítkovice, 703 00 Ostrava

Testing laboratory locations:

1. **LAB1 Chemical Laboratory** Pohraniční 693/31, Vítkovice, 703 00 Ostrava
2. **LAB2 Laboratory for Fatigue and Brittle Fracture Characteristics** Pohraniční 693/31, Vítkovice, 703 00 Ostrava
3. **LAB3 Metallography** Pohraniční 693/31, Vítkovice, 703 00 Ostrava

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	Chemical analyses			
1.1 ¹	Determination of elements (Mn, Si, P, Cu, Ni, Cr, Mo, V, Ti, Nb, W, Co, Zr, As, Sb, Sn) by X-ray spectrometry	QI-ISO-LAB1-10-04, cl. 6.1.1 (ThermoFisherScientific company manual) ASTM E 322-12; ASTM E 1621	Metallic materials	-
1.2 ¹	Determination of elements (Si, Al, Ca, Mg, Mn, P, Fe, Cr, V, Na, K, Ti, F, Ba, Cl) by X-ray spectrometry	QI-ISO-LAB1-10-04, cl. 6.1.2 (ThermoFisherScientific company manual) ASTM E 1621; ČSN EN ISO 12677	Slags, sludges, refractory materials, waste from metallurgical production	-
1.3 ¹	Determination of elements (Mn, Cr, V, Ti, Mo, Ni, Cu) by OES ICP spectrometry	QI-ISO-LAB1-10-03 (ČSN EN 10355; PERKIN ELMER company manual)	Metallic materials	-
1.4 ¹	Measurement of pH by potentiometry	QI-ISO-LAB1-10-13, cl. 6.1 (ČSN ISO 10523)	Test solutions	-
1.5 ¹	Measurement of conductivity by conductometry	QI-ISO-LAB1-10-13, cl. 6.2 (ČSN EN 27888)	Test solutions	-
1.6 ¹	Assessment of corrosion resistance of material by HIC and SCC tests in an aqueous solution saturated with hydrogen sulphide – visual method	QI-ISO-LAB1-10-12 (ANSI/NACE Standard; TM0284-2017 Item No. 21215; TM0177-2017 Item No. 21212)	Metallic materials	-
1.7 ¹	Determination of carbon and sulphur by IR spectrometry	QI-ISO-LAB1-10-09 (LECO company manual; ASTM E 1019)	Metallic materials, sludges, slags, waste from metallurgical production	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1.8 ¹	Determination of oxygen, nitrogen and hydrogen by IR spectrometry with thermal conductivity sensor	QI-ISO-LAB1-10-10 (LECO company manual; ASTM E 1019)	Metallic materials	-
1.9 ¹	Determination of forms of aluminium by ICP OES spectrometry and total aluminium by calculation from measured values	QI-ISO-LAB1-10-15 A (PERKIN ELMER company manual)	Metallic materials	-
1.10 ¹	Determination of forms of aluminium by flame AAS spectrometry and total aluminium by calculation from measured values	QI-ISO-LAB1-10-15 B (PERKIN ELMER company manual)	Metallic materials	-
1.11 ¹	Testing of resistance to intergranular corrosion of stainless steels – visual test	QI-ISO-LAB1-10-17 (ČSN EN ISO 3651-2; ASTM A 262; GOST 6032)	Metallic materials	-
2	Mechanical tests			
2.1 ²	Fracture toughness measurement	QI-ISO-LAB2-10-23 (ČSN 42 0347; ČSN EN ISO 15653; ČSN EN ISO 12737; ČSN ISO 12135; ASTM E 399; ASTM E 1820; ASTM E 1921)	Metallic materials	-
2.2 ²	Determination of nil ductility temperature	QI-ISO-LAB2-10-24 (ČSN 42 0349; ASTM E 208)	Metallic materials	-
2.3 ²	Fatigue test at constant stress amplitude	QI-ISO-LAB2-10-26 (ČSN 42 0363; ASTM E 466; ČSN ISO 1143; ČSN ISO 1099; ČSN ISO 12107)	Metallic materials	-
2.4 ²	Low-cycle fatigue test	QI-ISO-LAB2-10-27 (ASTM E 606)	Metallic materials	-
2.5 ²	Measurement of fatigue crack growth rate	QI-ISO-LAB2-10-28 (ČSN ISO 12108; ASTM E 647)	Metallic materials	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
2.6 ²	Performance of tensile tests	QI-ISO-LAB2-10-29 (ČSN EN ISO 6892-1; ČSN EN ISO 6892-2; ČSN EN ISO 6892-3; ČSN 42 0313; ČSN EN ISO 4136; ASTM E 8; ASTM E 21; ASTM E 111; ASTM E 646; GOST 1497; GOST 9651)	Metallic materials	-
2.7 ²	Hardness measurement according to Brinell	QI-ISO-LAB2-10-40, cl. 6.1 (ČSN EN ISO 6506-1; ASTM E 10)	Metallic materials	-
2.8 ²	Hardness measurement according to Vickers	QI-ISO-LAB2-10-40, cl. 6.2 (ČSN EN ISO 6507-1; ČSN EN ISO 642; ASTM E 384)	Metallic materials	-
2.9 ²	Hardness measurement according to Rockwell	QI-ISO-LAB2-10-40, cl. 6.3 (ČSN EN ISO 6508-1; ČSN EN ISO 642; ASTM E 18; ASTM A 255)	Metallic materials	-
2.10 ²	Impact bend test	QI-ISO-LAB2-10-41 (ČSN EN ISO 148-1; ČSN 42 0382; ČSN 42 0383; ČSN 42 0350; ČSN EN ISO 9016; ASTM E 23; GOST 9454)	Metallic materials	-
2.11 ²	Determination of strength and yield stress by small punch test	QI-ISO-LAB2-10-42 (ČSN EN 10371)	Metallic materials	-
2.12 ²	Bend test	QI-ISO-LAB2-10-25 (ČSN EN ISO 7438; ČSN EN ISO 5173)	Metallic materials	-
2.13 ²	Drop weight tear test	QI-ISO-LAB2-10-07 (ASTM E 436; ČSN EN 10274)	Metallic materials	-
2.14 ²	Determination of FATT transition temperature by small punch test	QI-ISO-LAB2-10-53 (ČSN EN 10371)	Metallic materials	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
2.15 ²	Determination of fracture toughness of steel at ambient temperature from the results of small punch tests	QI-ISO-LAB2-10-57 (ČSN EN 10371)	Metallic materials	-
2.16 ²	Instrumented indentation test for hardness	QI-ISO-LAB2-10-56 (ČSN EN ISO 14577-1)	Metallic materials	-
2.17 ²	Assessment of the resistance of weld joints to stress corrosion cracking in high-temperature and high-pressure water environment	QI-ISO-LAB2-10-58 (ČSN ISO 12135)	Metallic materials	-
2.18 ²	Determination of stress intensity factor of metallic materials in high pressure gaseous environment	QI-ISO-LAB2-10-67 (ČSN EN ISO 11114-4, method B and C; ASME BPVC, Sect. VIII-3 cl. KD-10; ASTM E 1681)	Metallic materials	-
3	Metallographic tests			
3.1 ³	Testing of macrostructure by etching	QI-ISO-LAB3-40-01 (ASTM E 340; GOST 10243)	Metallic materials	-
3.2 ³	Testing of macrostructure by sulphur prints	QI-ISO-LAB3-40-02 (ISO 4968; ASTM E 1180)	Metallic materials	-
3.3 ³	Determination of microstructure	QI-ISO-LAB3-40-03 (ČSN 42 0015; ČSN EN ISO 945-1; ČSN 42 0469; ČSN 42 1240; ASTM E 407)	Metallic materials	-
3.4 ³	Determination of ferritic/austenitic grain size	QI-ISO-LAB3-40-04 (ČSN EN ISO 643; ASTM E 112; GOST 5639)	Metallic materials	-
3.5 ³	Determination of the content of non-metallic inclusions in steel	QI-ISO-LAB3-40-05 (ČSN ISO 4967; DIN 50602:1985; ASTM E 45; GOST 1778)	Metallic materials	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
3.6 ³	Detection of defects in weld joints	QI-ISO-LAB3-40-06 (ČSN EN ISO 6520-1; ČSN EN ISO 6520-2; ČSN EN ISO 5817; ČSN EN ISO 15614-1; ČSN EN 1708-2; ČSN EN ISO 17639)	Metallic materials	-

- 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 the laboratory does not apply a flexible approach to the scope of accreditation

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
1.9, 1.10	Dissolved and bound aluminium

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
1.4, 1.5	Liquids not identifiable as aqueous solutions intended for downstream customer use
1.1, 1.3, 1.6-1.11, 2.1-2.18, 3.1-3.6	Ferrous and non-ferrous matrix materials

Explanations:

QI	Testing Procedure of the Laboratory
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
X-ray	X-ray fluorescence spectrometry
ICP OES	Inductively Coupled Plasma Optical Emission Spectrometer
AAS	Atomic Absorption Spectrometry
IR	Infrared Spectrometry
HIC	Hydrogen-Induced Cracking
SCC	Stress Corrosion Cracking
FATT	Fracture Appearance Transition-Temperature Test
BPVC	Boiler & Pressure Vessel Code

