

**The Appendix is an integral part of
Certificate of Accreditation No. 558/2016 of 30/09/2016**

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

Materiálové laboratoře Chomutov s.r.o.

MTL Testing Laboratory

Luční 4624, 430 01 Chomutov

The laboratory is qualified to update standards identifying the test procedures.

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

Updated list of activities provided within the required flexible scope of accreditation is available at the laboratory from the Quality Manager.

The Laboratory provides expert opinions and interprets test results.

Tests:

Ordinal number	Test procedure/method name	Test procedure/method identification	Tested object
1	Tensile test		
1.1	Tensile test	ČSN EN ISO 6892-1 ČSN EN ISO 6892-2 ASTM E8 ASTM E21 ASTM A370	Metallic materials
1.2	Tensile test of welded joints	ČSN EN ISO 4136 ČSN EN ISO 5178 ČSN EN ISO 14270 ČSN EN ISO 14273 ČSN EN 12814-2	Welded joints of metallic materials Welded joints of plastics
1.3	Reserved		
1.4	Torsion test	13-MTL-5.4/102 ČSN EN ISO 898-5 ČSN EN ISO 16047 ČSN EN ISO 17653	Structural and welded joints
2	Hardness tests		
2.1	Brinell hardness test	ČSN EN ISO 6506-1 ASTM A370 ASTM E10	Metallic materials
2.2	Vickers hardness test HV 0.1 ÷ HV 120	ČSN EN ISO 6507-1 ASTM E384, except HK - cl. 5.5	Metallic materials
2.3	Rockwell hardness test	ČSN EN ISO 6508-1 ASTM A370 ASTM E18	Metallic materials
2.4	Hardness tests of welded joints	ČSN EN ISO 9015-1 ČSN EN ISO 9015-2 ČSN EN ISO 14271	Welded joints of metallic materials
2.5	Determination and verification of the depth of carburized and hardened case	ČSN EN ISO 2639	Steel
2.6	Hardenability test	ČSN EN ISO 642	Steel

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Ordinal number	Test procedure/method name	Test procedure/method identification	Tested object
3	Impact bend tests		
3.1	Impact bending test	ČSN 42 0382 ČSN 42 0383 ČSN ISO 148-1 ASTM A370 ASTM E23 DIN 50 115	Metallic materials
3.2	Impact bending test of welded joints	ČSN EN ISO 9016	Welded joints
4	Technological tests		
4.1	Bend test	ČSN EN ISO 7438 ASTM A370	Metallic materials
4.2	Tube - Bend test	ČSN EN ISO 8491 ASTM A370	Metal tubes
4.3	Tube - Flattening test	ČSN EN ISO 8492 ASTM A370	Metal tubes
4.4	Tube - Widening test	ČSN EN ISO 8493 ASTM A370	Metal tubes
4.5	Tube - Flanging test	ČSN EN ISO 8494 ASTM A370	Metal tubes
4.6	Tube - Ring expanding test	ČSN EN ISO 8495	Metal tubes
4.7	Tube - Ring tensile test	ČSN EN ISO 8496	Metal tubes
4.8	Upsetting test	ČSN 42 0426 ASTM A370	Metallic materials
4.9	Bend test of welded joints	ČSN EN ISO 5173	Welded joints
4.10	Fracture test	ČSN EN ISO 9017	Welded joints
4.11	Weld bead bend test	SEP 1390	Welded joints
4.12	Peel and chisel testing	ČSN ISO 10447	Spot, seam and projection welds
4.13	Peel test by compression	ČSN EN 12814-4, Chapter 8	Welded joints of thermoplastics

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Ordinal number	Test procedure/method name	Test procedure/method identification	Tested object
5	Corrosion resistance tests		
5.1	Test of resistance to intergranular corrosion	ČSN EN ISO 3651-1 ČSN EN ISO 3651-2 ASTM A262 ASTM G28-02 GOST 6032, methods AMU, VU, DU	Corrosion-resistant steels and alloys
5.2	Test of resistance to pit and crevice corrosion	ASTM A923, method C ASTM G48	Corrosion-resistant steels and alloys
5.3	Testing of coatings, layers and corrosion resistance based on changes in mass and dimensions	13-MTL-5.4/502 (ČSN EN 8407)	Metallic materials
6	Metallographic tests		
6.1	Macroscopic examination	13-MTL-5.4/603 13-MTL-5.4/605 ASTM E340	Metallic materials
6.2	Determination of depth of decarburization	ČSN EN ISO 3887	Steel
6.3	Determination of apparent grain size	ČSN 42 0462 ČSN EN ISO 643	Metallic materials
6.4	Determination of the content of non-metallic inclusions (test of microcleanness)	ČSN ISO 4967 ASTM E45 DIN 50 602 GOST 1778-70	Steel
6.5	Determination of σ -phase and other harmful phases in duplex steel	13-MTL-5.4/601 ASTM A923, method A	Duplex steel
6.6	Determination of fraction of structural parts	ASTM E562	Metallic materials
6.7	Testing of microstructure of cast iron	ČSN 42 0461 ČSN EN ISO 945-1	Cast iron
6.8	Metallographic tests of coatings and corrosion failure	ČSN 03 8137 ČSN ISO 1463 ČSN ISO 11463	Metallic materials Corrosion-resistant steels and alloys
6.9	Test of macrostructure / microstructure	ČSN EN ISO 6520-1 ČSN EN ISO 14329 ČSN EN ISO 17639	Welded joints of metallic materials
6.10	Determination of ferrite content in austenitic steels	ČSN 42 0470	Austenitic steels

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Ordinal number	Test procedure/method name	Test procedure/method identification	Tested object
6.11	Testing and documentation of material structures	13-MTL-5.4/602 ASTM E407	Metallic materials
6.12	Microscopic measurement of lengths	13-MTL-5.4/604	Samples for measurement of dimensions at 10x ÷ 1000x magnification
7	Spectrometric analysis - OES method		
7.1	Analysis of carbon, low-alloy and medium-alloy steels	12-MTL-5.4/07 (programme Fe-10)	Carbon, low-alloy and medium-alloy steels and products made of them
7.2	Analysis of free-cutting steels	12-MTL-5.4/07 (programme Fe-15)	Free-cutting steels and products made of them
7.3	Analysis of ferritic and martensitic chromium steels	12-MTL-5.4/07 (programme Fe-30)	Alloy ferritic and martensitic chromium steels and products made of them
7.4	Analysis of austenitic chromium-nickel steels	12-MTL-5.4/07 (programme Fe-30 BS)	Alloy austenitic steels and products made of them
7.5	Analysis of austenitic-ferritic (duplex) chromium-nickel steels	12-MTL-5.4/07 (programme Fe-30 SAF)	Alloy chromium-nickel steels and products made of them
7.6	Analysis of tool steels	12-MTL-5.4/07 (programme Fe-40)	Tool steels and products made of them
7.7	Analysis of manganese steels	12-MTL-5.4/07 (programme Fe-50)	Manganese steels and products made of them
7.8	Analysis of cast iron	12-MTL-5.4/07 (programme Fe-70 A)	Cast iron
7.9	Reserved		
7.10	Analysis of copper alloys	12-MTL-5.4/07 (programme Cu-01, Cu-02, ČSN EN 15079)	Copper alloys and products made of them
7.11	Analysis of aluminium alloys	12-MTL-5.4/07 (programme Al-01, ČSN EN 14726)	Aluminium alloys and products made of them

Range of determined parameters for spectrometric analyses

Ordinal number	Identification of OES method - List of determined elements
7.1	Programme Fe-10: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al, Ti, Nb, Co, W, Sn, Zr, Sb, As, N, B, Bi, Pb, Ca
7.2	Programme Fe-15: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al, Ti, Nb, Co, W, Sn, Zr, Sb, As, N, B, Pb
7.3	Programme Fe-30: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al, Ti, Nb, Co, W, N, B

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Ordinal number	Identification of OES method - List of determined elements
7.4	Programme Fe-30 BS: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al, Ti, Nb, Co, W, N, B, Sn
7.5	Programme Fe-30 SAF: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al, Ti, Nb, W, N, B
7.6	Programme Fe-40: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Nb, Co, W
7.7	Programme Fe-50: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al
7.8	Programme Fe-70 A: C, Mn, Si, P, S, Cr, Ni, Mo, V, Cu, Al, Ti, Nb, Co, W, B, Mg, Sn, Zr, Sb, As
7.9	Reserved
7.10	Programme Cu-01, Cu-02: Zn, Pb, Sn, P, Mn, Fe, Ni, Si, Mg, Cr, As, Sb, Bi, Al, S
7.11	Programme Al-01: Si, Fe, Cu, Mn, Mg, Cr, Ni, Zn, Ti, Bi, Ca, P, Pb, Sb, Sn, V

Annex:

Flexible scope of accreditation

Ordinal numbers of tests
1.1, 1.2, 1.4, 2.1 ÷ 2.5, 3.1, 3.2, 4.1 ÷ 4.13, 5.1 ÷ 5.3, 6.1 ÷ 6.12, 7.1 ÷ 7.8, 7.10, 7.11

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.

Explanation of abbreviations:

ASTM	- American Society For Testing & Materials
DIN	- Deutsches Institut für Normung
SEP	- Stahl-Eisen-Prüfblatt
OES	- Optical Emission Spectrometry
12-MTL-5.4/xxx	- Directive - Internal Instruction of MTL Laboratory
13-MTL-5.4/xxx	- Procedure - Internal Instruction of MTL Laboratory