

**The Appendix is an integral part of
Certificate of Accreditation No. 605/2023 of 14/11/2023**

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

Tiyo a.s.

CAB number 1552, Accredited Testing Laboratory
Příčná 2071, Libonice, 508 01 Hořice

Testing Laboratory workplaces:

1. **Accredited Testing Laboratory - Příčná** Příčná 2071, Libonice, 508 01 Hořice
2. **Accredited Testing Laboratory - Havlíčkova** Havlíčkova 648, 508 01 Hořice

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

The current list of activities carried out within the flexible scope is publicly available on the laboratory's website <https://www.tiyo.cz/#certificates> in the form of a „List of activities within the flexible scope of accreditation”.

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

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Subject of the test	Degrees of freedom ³
1 ¹	Tensile lap-shear test	SOP-TST-01 (ČSN EN 1465; ČSN EN 923; ČSN ISO 10365; ČSN EN ISO 291)	Adhesives, bonded joints	-
2 ¹	Vibration test	SOP-TST-02 (ČSN EN 60068-2-6; IEC 60068-2-6; ČSN EN 60068-2-27; IEC 60068-2-27; ČSN EN 60068-2-47; IEC 60068-2-47; ČSN EN 60068-2-53; IEC 60068-2-53; ČSN EN 60068-2-57; IEC 60068-2-57; ČSN EN 60068-2-64- ed.2:04/2009; IEC 60068-2-64; ČSN EN 60068-2-80; IEC 60068-2-80; ISO 16750-3, art. 4.1, 4.2; ISO 16750-1; UN 38.3 Sec. T.3 a T.4)	Mechanical and electrotechnical parts and assemblies, primary and rechargeable batteries, primary and rechargeable cells	A, B, D
3 ¹	Resistance to damp heat test, cyclic	SOP-TST-03 (PV 1200; PV 2005-A; GMW 14124 Cycle M; ČSN EN 60068-2-30; IEC 60068-2-30; ČSN EN IEC 60068-2-38; IEC 60068-2-38;	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D

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		ISO 16750-4, art. 5.6; ISO 16750-1)		
4 ¹	Resistance to damp heat test, constant	SOP-TST-04 (ČSN EN 60068-2-67; IEC 60068-2-67- ed.1.1:07/2019; ČSN EN 60068-2-78; IEC 60068-2-78; ISO 16750-4, art. 5.7; ISO 16750-1)	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D
5 ¹	Dry heat test resistance	SOP-TST-05 (ČSN EN 60068-2-2; IEC 60068-2-2; ISO 16750-4, art. 5.1; ISO 16750-1)	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D
6 ¹	Cold test resistance	SOP-TST-06 (ČSN EN 60068-2-1; IEC 60068-2-1; ISO 16750-4, art. 5.1; ISO 16750-1)	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D
7 ¹	Rapid change temperature test resistance (air – air)	SOP-TST-07 (ČSN EN 60068-2-14 except for Nc test; IEC 60068-2-14; ISO 16750-4, art. 5.3; ISO 16750-1)	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D
8 ¹	Weathering test	SOP-TST-08 (PV 1303; PV 1306; PV 3929; PV 3930; PV 1502:11/2016; VDA 75202; GMW 14162; D27 1911:06/2007; D27 1389:07/2007; SAE J2412; SAE J2527; ČSN EN ISO 4892-1; ISO 4892-1; ČSN EN ISO 4892-2; ISO 4892-2; ČSN EN ISO 16474-2; ISO 16474-2; ČSN EN 20105-A02; ISO 105-A02;	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	-

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		ČSN EN ISO 105-A04; ISO 105-A04; ČSN EN ISO 105-A05; ISO 105-A05; ČSN EN ISO 105-B02; ISO 105-B02; ČSN EN ISO 105-B04; ISO 105-B04; ČSN EN ISO 105-B06; ISO 105-B06; ČSN EN ISO 2813; ISO 2813; DIN 53236-B)		
9 ¹	Solar simulation test resistance	SOP-TST-09 (DIN 75220; MIL STD 810E - Method No. 505.3 - Procedure II; MIL STD 810F - Method No. 505.4 - Procedure II; MIL STD 810G - Method No. 505.5 - Procedure I+II; PR 306.4:09/2001-art. 4.1.1.3; TP 306.4:09/2001-art. 4.1.1.3; ČSN EN IEC 60068-2-5; IEC 60068-2-5; ČSN EN 20105-A02; ISO 105-A02; ČSN EN ISO 105-A04; ISO 105-A04; ČSN EN ISO 105-A05; ISO 105-A05; DIN 53236-B; ČSN EN ISO 2813; ISO 2813)	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	-
10 ¹	Resistance to corrosion test in salt spray	SOP-TST-10 (PV 1210; GMW 3286; ČSN EN IEC 60068-2-52; IEC 60068-2-52; ČSN 345791-2-11; IEC 60068-2-11; ČSN EN ISO 9227 NSS; ISO 16750-4, art. 5.5; ISO 16750-1;	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D

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		ASTM B117; SAE J2334)		
11 ¹	Resistance to corrosion test in condensation-water atmospheres	SOP-TST-11 (ČSN EN ISO 6270-2; ASTM D 2247; GMW14729; TPJLR.52.351:02/2011; AA-0213: 04/2015)	Mechanical and electrotechnical parts and assemblies, surface coatings and protections	A, B, D
12 ¹	Evaluation of degradation of coatings	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	Mechanical and electrotechnical parts and assemblies with surface coatings and protections	-
13 ¹	Coating adhesion test – Cross-cut test and X-cut test	SOP-TST-13 (ČSN EN ISO 2409; ČSN EN ISO 16276-2; ASTM D 3359; AA-0180:03/2016; GMW 14829)	Parts and assemblies with surface coatings and protections	A, B, D
14 ¹	Determination of scratch resistance	SOP-TST-14 (PV 3952, PV 3974; GMW 14688; GS 97034-2:05/2007; GS 97034-3:05/2007; GS 97034-8:02/2008; GS 97034-9:09/2015; TPJLR.52.004:10/2009; TPJLR.52.008:01/2017)	Materials, parts and assemblies of motor vehicles, surface coatings and protections	A, B, D
15 ¹	Determination of scratch resistance - Laboratory car-wash	SOP-TST-15 (PV 3.3.3; ČSN EN ISO 20566; AA-0054:04/2016; VCS 1024, 369)	Materials, parts and assemblies of motor vehicles, surface coatings and protections	-
16 ¹	Test for colour fastness to rubbing	ČSN EN ISO 105-X12; ISO 105-X12; PV 3906	Textiles, materials, parts and assemblies of motor vehicles	-
17 ²	Static deployment airbag tests	SOP-TST-17 (PTL 15350; PV 3545; PV 3546; PV 3550)	Materials, parts and assemblies of motor vehicles	A, B, D

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18 ¹	Ball fall test resistance	PV 3905:04/2015; GMW 14093	Materials, parts and assemblies of motor vehicles, surface coatings and protections	-
19 ¹	Stress whitening test - Ball drop test.	PV 3966	Materials, parts and assemblies of motor vehicles, surface coatings and protections	-
20 ¹	Chemical resistance test	SOP-TST-20 (ČSN EN ISO 2812-1; ČSN EN ISO 2812-2; ČSN EN ISO 2812-3; ČSN EN ISO 2812-4; ISO 16750-5; PV 3964; GMW 14334; GMW 15891; TPJLR.52.154:10/2014; TPJLR.52.155:09/2009; TPJLR.52.161:06/2011; TPJLR.52.164:12/2015)	Materials, parts and assemblies of motor vehicles, surface coatings and protections	A, B, D
21 ¹	Flammability test	SOP-TST-21 (FMVSS 302; ČSN ISO 3795; DIN 75200; TL 1010; ISO 3795; GB 8410:01/2006; GMW 3232; VCS 5031,19; D45 1333:02/2005)	Motor vehicle materials, parts and assemblies	A, B, D
22 ¹	High-pressure water test resistance	PV 1503, DIN 55662:12/2009; ČSN EN ISO 16925	Parts and assemblies of motor vehicles, surface coatings and protections	A, B, D
23 ¹	Rapid temperature change test resistance (air – water); „Splash water resistance“	ISO 16750-4, art. 5.4.2	Parts and assemblies of motor vehicles, surface coatings and protections	A, B, D

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24 ¹	Test of degree of protection – dust protected IP5X, IP5KX, IP6X and IP6KX	SOP-TST-24 (DIN 40050-9:05/1993; ISO 20653; ČSN EN 60529; IEC 60529-ed.2.2:08/2013)	Electrotechnical and electronic products and equipment; electrical equipment of machines; measuring and control technology	A, B, D
25 ¹	Test of degree of protection – protection against water (IPX3 to IPX9)	SOP-TST-25 (DIN 40050-9:05/1993; ISO 20653; ČSN EN 60529; IEC 60529-ed.2.2:08/2013)	Electrotechnical and electronic products and equipment; electrical equipment of machines; measuring and control technology	A, B, D
26 ¹	Electrical loads test	ISO 16750-2 except for art. 4.13; VW 80000:06/2013, Sec. E-01 to E-20, except for E-19; VW 80000:10/2017, Sec. E-01 to E-20, except for E-19; VW 80000, Sec. E-01 to E-20, except for E-19; MBN LV 124-1:03/2013, Sec. E-01 to E-20, except for E-19; GS 95024-2-1:01/2010, Sec. E-01 to E-20, except for E-19; VW 80300:10/2016, Sec.EHV-01 to EHV-16, except for EHV-04, EHV-07, EHV-12 and EHV15; VW 80300, Sec.EHV-01 to EHV-17, except for EHV-04, EHV-07, EHV-12 and EHV15; VW 80303:06/2014, Sec.4.10.1 to 4.10.10; VDA 320, Sec.E48-01 to E48-21, except for E48-14 and E48-20	Electrical and electronic systems/components of vehicles	A, B, D
27 ¹	Determination of the volatile for of organic carbon with method of gas chromatography with FID detector by means of head space technique	SOP-TST-27 (PV 3341; VDA 277)	Motor vehicle materials, parts and assemblies	-

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Ordinal number¹	Test procedure / method name	Test procedure / method identification²	Subject of the test	Degrees of freedom³
28 ¹	Determination of releasable formaldehyde with spectrophotometric method	SOP-TST-28 (PV 3925; VDA 275)	Motor vehicle materials, parts and assemblies	-
29 ¹	Determination of condensable constituents with reflectometric method (Fogging test)	SOP-TST-29 (DIN 75201 - method A; SAE J1756; ISO 6452-A; GMW 3235-A; D45 1727:06/2009)	Motor vehicle materials, parts and assemblies	-
30 ¹	Determination of condensable constituents with gravimetric method (Fogging test)	SOP-TST-30 (DIN 75201 - method B; SAE J1756; ISO 6452-B; PV 3015; VW 50181; GMW 3235-B; D45 1727:06/2009)	Motor vehicle materials, parts and assemblies	-
31 ¹	Determination of odor intensity	SOP-TST-31 (PV 3900; VDA 270; SAE J1351; GMW 3205; DBL 5306:12/2008, art. 17; TPJLR.52458:07/2009; VCS 1027, 2729)	Motor vehicle materials, parts and assemblies	-
32 ¹	Flowing mixed gas corrosion test resistance	SOP-TST-32 (ČSN EN 60068-2-60; IEC 60068-2-60; ČSN EN ISO 10062; ISO 16750-4, art. 5.8)	Mechanical and electrochemical parts and assemblies, surface coatings and protection	-
33 ¹	Determination of stone-chip resistance of coatings	SOP-TST-33 (ČSN EN ISO 20567-1; SAE J 400; AA-0079:2014-09; TPJLR.52.599:2009-12; GMW 14700)	Materials, parts and assemblies of motor vehicles, surface coating and protection	-
34 ¹	Determination of tensile	SOP-TST-34 (ČSN EN ISO 527-1; ČSN EN ISO 527-2; ČSN EN ISO 527-3; ČSN EN ISO 527-4; ČSN EN ISO 527-5; ČSN EN ISO 291)	Plastics, plastic composites and plastic products	A, B, D

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Ordinal number¹	Test procedure / method name	Test procedure / method identification²	Subject of the test	Degrees of freedom³
35 ¹	Determination of flexural properties	ČSN EN ISO 178	Plastics, plastic composites and plastic products	A, B, D
36 ¹	Determination of Charpy impact properties	ČSN EN ISO 179-1	Plastics, plastic composites and plastic products	A, B, D
37 ¹	Determination of density – immersion (buoyancy) method	ČSN EN ISO 1183-1	Non-cellular plastics and products made from them	-
38 ¹	Determination of Vicat softening temperature	ČSN EN ISO 306	Plastics, plastic composites and plastic products	-
39 ¹	Determination of temperature and enthalpy of melting and crystallization and determination of glass transition temperature of plastics	ČSN EN ISO 11357-1; ČSN EN ISO 11357-3	Plastics, plastic composites and plastic products	-
40 ¹	Determination of inorganic filler content by method of thermogravimetry	ČSN EN ISO 11358-1; PV 3927, art. 7.1.4	Plastics, plastic composites and plastic products	-
41 ¹	Electrostatic discharge (ESD) resistance test	ISO 10605	Electric and electronic devices and equipment	A, B, D
42 ¹	EMC immunity test	ISO 7637-1; ISO 7637-2, art. 4.4; ISO 7637-3	Electric and electronic devices and equipment	A, B, D
43 ¹	EMC emission test	ISO 7637-1; ISO 7637-2, art. 4.3	Electric and electronic devices and equipment	A, B, D
44 ¹	Peel resistance test by floating roller method	SOP-TST-44 (ČSN EN 1464; PV 2034)	Adhesives, bonded joints, adhesive tapes	A, B, D
45 ¹	Determination of the volatile form of organic substances by the emission chamber method with GC- FID	SOP-TST-45 (PV 3942)	Materials, parts and assemblies of motor vehicles	A, B, D
46 ¹	Determination of organic substances by TD-GC-MS using sorption tubes ³	SOP-TST-46 (ISO 16000-6)	Materials, parts and assemblies of motor vehicles	A, B, D
47 ¹	Determination of aldehydes and ketones by HPLC with UV detector ⁴	SOP-TST-47 (ISO 16000-3)	Materials, parts and assemblies of motor vehicles	A, B, D
48 ¹	Thermal test	SOP-TST-48 (UN 38.3, Sec. T.2)	Primary and rechargeable batteries, primary and rechargeable cells	A, B, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Subject of the test	Degrees of freedom ³
49 ¹	External short-circuit test	SOP-TST-49 (UN 38.3, chap. T.5; UN R100, Annex 9F; UN R136, Annex 8F)	Primary and rechargeable batteries, primary and rechargeable cells	A, B, D
50 ¹	Overcharge test	SOP-TST-50 (UN 38.3, chap. T.7; UN R100, Annex 9G; UN R136, Annex 8G)	Primary and rechargeable batteries, primary and rechargeable cells	A, B, D
51 ¹	Over-discharge test	SOP-TST-51 (UN 38.3, chap. T.8; UN R100, Annex 9H; UN R136, Annex 8H)	Primary and rechargeable batteries, primary and rechargeable cells	A, B, D
52 ²	Pendulum impact test	SOP-TST-52 (ECE R.42; EP 83 300.90; LAH.3J0.807; FMVSS 581; GB 17354)	Mechanical parts and assemblies	A, B, D
53 ¹	Measurement of HF radiated disturbances	EN IEC 55025, art. 6.5; ČSN EN IEC 55025, art. 6.5	Electrical and electronic components and systems of vehicles	A, B, D
54 ¹	Measurement of HF conducted disturbances by voltage method	EN IEC 55025, art. 6.3; ČSN EN IEC 55025, art. 6.3	Electrical and electronic components and systems of vehicles	A, B, 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.

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Specification of the scope of accreditation:

Test ordinal number	Detailed information on activities within the scope of accreditation (determined analytes)
46	benzene, styrene, toluene, o-xylene, p-xylene, ethylbenzene
47	formaldehyde, acetaldehyde, acrolein, acetone, propionaldehyde, crotonaldehyde, butyraldehyde, benzaldehyde, isovaleraldehyde, valeraldehyde, o-tolualdehyde, p-tolualdehyde, m-tolualdehyde, hexaldehyde, 2,5-dimethylbenzaldehyde

Explanations:

AA	- BMW AG Standard
ASTM	- U.S. Technical Standard issued by ASTM International
D	- Renault and PSA Peugeot - Citroën Group Standard
DBL	- Daimler AG Standard (Mercedes-Benz Company Standard)
DIN	- German national standard issued by the German Institute for Standardization
ECE	- ECE - Economic Commission for Europe Regulation
EMC	- electro-magnetic compatibility
EP	- Volkswagen standard
ESD	- electrostatic discharge
FMVSS	- Federal Motor Vehicle Safety Standards
GB	- National Standard of the People's Republic of China
GC-FID	- gas chromatography with flame ionization detector
GMW	- General-Motors Worldwide Engineering Standards
GS	- BMW AG Standard (BMW Group Standard)
HPLC	- High Performance Liquid Chromatography
IP	- code defined by the IEC 529 standard expressing the degree of protection
LAH	- Volkswagen standard
MIL STD	- United States Military Standard
PR	- BMW AG Standard (Prüfvorschrift)
PTL	- Porsche Technische Lieferbedingung
PV	- Volkswagen Standard (Prüfvorschrift)
SAE	- Standard issued by SAE International (formerly Society of Automotive Engineers)
SOP-TST	- standard Operating Procedure – Internal testing procedure of the Accredited Testing Laboratory of Altran CZ a.s.
TD-GC-MS	- thermo-Desorption Gas Chromatography Mass Spectrometry
TL	- Volkswagen Standard
TP	- BMW AG Standard (Test Procedure)
TPJLR	- Jaguar Cars & Land Rover Standard (Test Procedure Jaguar Land Rover Limited)
UN	- United Nations standard
UV	- ultraviolet rays
VCS	- Volvo Car Corporation Standard
VDA	- standard issued by the German Association of the Automotive Industry (Verband der Automobilindustrie e.V.)
VW	- Volkswagen Standard