

## Deutsche Akkreditierungsstelle

### Annex to the Partial Accreditation Certificate D-PL-11166-01-01 according to DIN EN ISO/IEC 17025:2018

Valid from: 07.09.2022

Date of issue: 24.01.2023

This annex is a part of the accreditation certificate D-PL-11166-01-00.

Holder of partial accreditation certificate:

**Element Materials Technology Hamburg GmbH  
Tempowerkring 11, 21079 Hamburg**

with its testing laboratories

**Tempowerkring 11, 21079 Hamburg  
Lahnstraße 26, 45478 Mülheim a. d. Ruhr  
Siemensstraße 17, 73733 Esslingen**

The testing laboratory meets the minimal requirements of DIN EN ISO/IEC 17025:2018 and, if applicable, additional legal and normative requirements, including those in relevant sectoral schemes, in order to carry out the conformity assessment activities listed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of testing laboratories and confirm generally with the principles of DIN EN ISO 9001.

**mechanical and metallographic testing; selected corrosion protection testing and testing of chemical properties of metals such as steel and alloys using stationary and transportable vacuum emission spectrometers of metallic materials**

*This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.*

**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

**Within the scope of accreditation marked with \*, the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use test standards or equivalent normative test procedures listed here with different issue dates.  
The calibration laboratory maintains a current list of all test standards / equivalent normative test procedures within the flexible scope of accreditation.**

The test methods are indicated with the following symbols for the locations in which they are conducted:

MH = Mülheim, ES = Esslingen-Mettingen, HH = Hamburg

**1 Mechanical testing \***

DIN EN ISO 642 2000-01	Steel - Hardenability test by end quenching (Jominy test)	MH
DIN EN ISO 9016 2022-07	Destructive tests on welds in metallic materials - Impact tests - Test specimen location, notch orientation and examination	MH, ES, HH
DIN EN ISO 4136 2022-09	Destructive tests on welds in metallic materials - Transverse tensile test	MH, ES, HH
DIN EN ISO 5173 2021-03	Destructive tests on welds in metallic materials - Bend tests	MH, ES, HH
DIN EN ISO 9015-1 2011-05	Destructive tests on welds in metallic materials - Hardness testing - Part 1: Hardness test on arc welded joints	MH, ES, HH
DIN EN ISO 9015-2 2016-10	Destructive tests on welds in metallic materials - Hardness testing - Part 2: Microhardness testing of welded joints	MH, ES, HH
DIN EN ISO 9017 2018-04	Destructive tests on welds in metallic materials - Fracture test	MH, ES, HH
DIN EN 1561 2012-01	Founding - Grey cast irons	MH, ES, HH
DIN EN 1562 2019-06	Founding - Malleable cast irons	MH, ES, HH
DIN EN ISO 6506-1 2015-02	Metallic materials - Brinell hardness test - Part 1: Test method	MH, ES, HH
DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method	MH, ES, HH

Valid from: 07.09.2022

Date of issue: 24.01.2023

**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

DIN EN ISO 6508-1 2016-12	Metallic materials - Rockwell hardness test - Part 1: Test method (here: <i>Scale A, B, C, D, F and G</i> )	MH, ES, HH
DIN EN ISO 7438 2021-03	Metallic materials - Bend test	MH, ES, HH
DIN EN ISO 6892-1 2020-06	Metallic materials - Tensile testing - Part 1: Method of test at room temperature ( <i>Method B in MH, ES, HH</i> ) ( <i>Method A nur in MH</i> )	MH, ES, HH
DIN EN ISO 6892-2 2018-09	Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature ( <i>Method B in MH, ES, HH</i> ) ( <i>Method A nur in MH</i> )	MH, ES, HH
DIN EN ISO 148-1 2017-05	Metallic materials - Charpy pendulum impact test - Part 1: Test method	MH, ES, HH
DIN EN ISO 898-1 2013-05	Mechanical properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes - Coarse thread and fine pitch thread ( <i>here: Section 9 except 9.13</i> )	MH, ES, HH
DIN EN 10164 2018-12	Steel products with improved deformation properties perpendicular to the surface of the product - Technical delivery conditions	MH, ES, HH
DIN EN ISO 8492 2014-03	Metallic materials - Tube - Flattening test	MH, ES, HH
DIN EN ISO 8493 2004-10	Metallic materials - Tube - Drift-expanding test	MH, ES, HH
DIN EN ISO 8495 2014-03	Metallic materials - Tube - Ring-expanding test	MH, ES
DIN EN ISO 8496 2014-03	Metallic materials - Tube - Ring tensile test	MH, ES, HH
DIN EN ISO 2639 2003-04	Steels - Determination and verification of the depth of carburized and hardened cases	MH, ES, HH
DIN EN 10328 2005-04	Iron and steel - Determination of the conventional depth of hardening after surface heating	MH, ES, HH

Valid from: 07.09.2022

Date of issue: 24.01.2023

**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

DIN 50190-3 1979-03	Hardness depth of heat-treated parts; determination of the effective depth of hardening after nitriding	MH, ES, HH
DIN EN ISO 18203 2022-07	Steel - Determination of the thickness of surface-hardened layers	MH, ES, HH
SEP 1390 1996-07	Weld bead bend test	MH, ES, HH
ASTM E 10 2018	Standard Test Method for Brinell Hardness of Metallic Materials	MH, ES, HH
ASTM E 18 2022	Standard Test Methods for Rockwell Hardness of Metallic Materials	MH, ES, HH
ASTM E 8/ E 8Ma 2022	Standard Test Methods for Tension Testing of Metallic Materials	MH, ES, HH
ASTM E 21 2020	Standard Test Methods for Elevated Temperature Tension Tests of Metallic Materials	MH, ES, HH
ASTM A 370 2022	Standard Test Methods and Definitions for Mechanical Testing of Steel Products ( <i>here: Clauses 6 - 32</i> )	MH, ES, HH
ASTM A 770/ A 770M 2018	Standard Specification for Through-Thickness Tension Testing of Steel Plates for Special Applications	MH, ES, HH
ASTM E 384 2022	Standard Test Method for Microindentation Hardness of Materials	MH, ES
ASTM E 23 2018	Test Methods for Notched Bar Impact Testing of Metallic Materials ( <i>here: restricted to charpy testing only</i> )	HH, MH
DIN EN ISO 17660-1 2006-12 + Berichtigung 1 2007-08	Welding - Welding of reinforcing steel - Part 1: Load-bearing welded joints ( <i>here:</i> <i>Cl. 14: examination and testing of samples</i> <i>Cl. 14.2: tensile testing</i> <i>Cl. 14.3: shear test</i> <i>Cl. 14.4: bend test</i> )	MH, HH

Valid from: 07.09.2022

Date of issue: 24.01.2023

**Page 4 of 8**

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**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

DIN EN ISO 17660-2 2006-12 + Berichtigung 1 2007-08	Welding - Welding of reinforcing steel - Part 2: Non load-bearing welded joints	MH, HH
DIN EN 15048-2 2016-09	Non-preloaded structural bolting assemblies - Part 2: Fitness for purpose	MH, ES, HH
DIN EN ISO 5178 2019-05	Destructive tests on welds in metallic materials - Longitudinal tensile test on weld metal in fusion welded joints	MH, ES, HH
ASTM E 111 2017	Standard Test Method for Young's Modulus, Tangent Modulus, and Chord Modulus	MH
ASTM B 557 2015	Standard Test Methods for Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Products	MH
DIN EN 2002-001 2006-11	Aerospace series - Metallic materials - Test methods - Part 1: Tensile testing at ambient temperature	MH
ASTM E 92 2017	Standard Test Methods for Vickers Hardness and Knoop Hardness of Metallic Materials	MH
ASTM E 190 2021	Standard Test Method for Guided Bend Test for Ductility of Welds	MH
ASTM E 290 2022	Standard Test Methods for Bend Testing of Material for Ductility	MH
DIN EN ISO 9018 2016-02	Destructive tests on welds in metallic materials - Tensile test on cruciform and lapped joints	MH

**2 Metallographic tests \***

DIN EN ISO 945-1 2019-10	Microstructure of cast irons - Part 1: Graphite classification by visual analysis	MH, HH, ES
DIN EN ISO 1463 2021-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method	MH, ES, HH
DIN EN ISO 17639 2022-05	Destructive tests on welds in metallic materials - Macroscopic and microscopic examination of welds	MH, ES, HH

Valid from: 07.09.2022

Date of issue: 24.01.2023

**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

ISO 4968 2022-03	Steel; Macrographic examination by sulfur print (Baumann method)	MH, ES, HH
DIN EN ISO 3887 2018-05	Steels - Determination of the depth of decarburization	MH, ES, HH
DIN EN ISO 643 2020-06	Steels - Micrographic determination of the apparent grain size	MH, ES, HH
DIN 54150 1977-08	Non-destructive testing; impression methods for surface examination (Replica-technique)	MH, HH
ISO 3057 1998-03	Non-destructive testing - Metallographic replica techniques of surface examination	MH, ES, HH
ASTM E 1351 2012	Standard Practice for Production and Evaluation of Field Metallographic Replicas	MH, HH
DIN EN 10247 2017-09	Micrographic examination of the non-metallic inclusion content of steels using standard pictures	MH, ES, HH
ISO 4967 2013-07	Steel - Determination of content of non-metallic inclusions - Micrographic method using standard diagrams	MH
SEP 1520 1998-09	Microscopic examination of carbide structure in steels by means of diagram series	MH, ES, HH
ASTM E 112 2013	Standard Test Methods for Determining Average Grain Size	MH, ES, HH
ASTM E 340 2015	Standard Practice for Macroetching Metals and Alloys	MH, ES, HH
ASTM E 407 2015	Standard Practice for Microetching Metals and Alloys	MH, ES, HH
ASTM E 45a 2018	Standard Test Methods for Determining the Inclusion Content of Steel	MH, ES, HH
ASTM E 381 2022	Standard Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings	MH, ES, HH
DIN EN ISO 2624 1995-08	Copper and copper alloys - Estimation of average grain size	MH, ES, HH

Valid from: 07.09.2022

Date of issue: 24.01.2023

**Page 6 of 8**

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**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

ASTM E 562 2019	Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count	MH, ES, HH
ASTM A 923 2022	Standard Test Methods for Detecting Detrimental Intermetallic Phase in Duplex Austenitic/Ferritic Stainless Steels	MH, ES, HH
ASTM E 930 2018	Standard Test Methods for Estimating the Largest Grain Observed in a Metallographic Section (ALA Grain Size)	MH
ASTM E 1181 2002	Standard Test Methods for Characterizing Duplex Grain Sizes	MH
DIN 30901 2016-12	Heat treatment of ferrous materials - Determination of the depth and form of appearance of the internal oxidation	MH

**3 Chemical testing using stationary and mobile vacuum emission spectrometers**

EHH-3-002D 2021-03	Determination of C, Si, Mn, P, S, Ni, Cr, Mo, V, Al, Cu, W, Co, Nb, Ti, B, As, Zr, Ca, Pb, Te, Sb, Fe, Zn, Mg, Sn, N in Ni-, Al-, Cu-alloys, in low and high alloyed steels as well as in cold rolled cast iron (only S) and in Co-alloys (only S), Ti- and Mg-alloys (only HH, without gases) using vacuum emission spectrometer	MH, ES, HH
EHH-3-003 2021-04	Determination of C, Si, Mn, P, S, Ni, Cr, Mo, V, Al, Cu, W, Co, Nb, Ti, B, As, Zr, Ca, Pb, Te, Sb, Fe, Zn, Mg, Sn, in Ni-, Al-, Cu-alloys, in low and high alloyed steels using emission spectrometer- through means of spectral analyses with mobile Belec-Compactport A-instrument	ES
EHH-3-004D 2021-07	Determination of C, Si, Mn, P, S, Ni, Cr, Mo, V, Al, Cu, W, Co, Nb, Ti, B, As, Zr, Ca, Pb, Te, Sb, Fe, Zn, Mg, Sn, in Ni-, Al-, Cu-alloys, in low and high alloyed steels using emission spectrometer – by testing mixed up components and examining the chemical properties of iron and non-ferrous metals with mobile spectral analysis instrument "WAS PMI-MASTER PLUS"	MH, HH
EHH-3-005D 2017-01	Work instruction positive material identification (PMI) positive alloys materials identification (PAMI)	MH, ES, HH

**4 Corrosion testing \***

DIN EN ISO 3651-1 1998-08	Determination of resistance to intergranular corrosion of stainless steels - Part 1: Austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in nitric acid medium by measurement of loss in mass (Huey test)	MH, ES, HH
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Valid from: 07.09.2022

Date of issue: 24.01.2023

**Annex to the Partial Accreditation Certificate D-PL-11166-01-01**

DIN EN ISO 3651-2 1998-08	Determination of resistance to intergranular corrosion of stainless steels - Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in media containing sulfuric acid	MH, ES, HH
DIN 50915 1993-09	Testing the resistance of unalloyed and low alloy steels to intergranular stress corrosion cracking by attack of nitrate medium; welded and unwelded materials	MH, ES
SEP 1877 1994-07	Test of the resistance of high-alloy, corrosion-proof materials against intercrystalline corrosion	MH, ES, HH
DIN EN 10229 1998-11	Evaluation of resistance of steel products to hydrogen induced cracking (HIC)	ES
ASTM A 262 Prac. A, B, C + E 2015	Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels	MH, ES, HH
ASTM G 28 2015	Standard Test Methods for Detecting Susceptibility to Intergranular Corrosion in Wrought, Nickel-Rich, Chromium-Bearing Alloys	MH, ES, HH
ASTM G 48 2015	Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution	MH, ES, HH
DIN EN ISO 9400 1995-12	Nickel-based alloys - Determination of resistance to intergranular corrosion	MH, ES, HH

**5 Miscellaneous test methods \* MH**

DIN EN 2004-1 1993-09	Aerospace series - test methods for aluminium and aluminium alloy products - part 1: determination of electrical conductivity of wrought aluminium alloys
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**Abbreviations used:**

ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
DIN	German Institute for Standardization
EN	European Standard
ISO	International Organization for Standardization
SEP	Steel-Iron Test Methods - publication from German Steel Institute of the Association of German Iron Works (VDEh)
EHH	In house method of the Element Materials Technology Hamburg GmbH

Valid from: 07.09.2022

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