Deutsche Akkreditierungsstelle

Annex to the Partial Accreditation Certificate D-PL-18991-01-02 according to DIN EN ISO/IEC 17025:2018

Valid from: **30.04.2025**

Date of issue: 30.04.2025

This annex is a part of the accreditation certificate D-PL-18991-01-00.

Holder of partial accreditation certificate:

GWQ GmbH & Co. KG
Am Schürmannshütt 30s, 47441 Moers

with the location

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The testing laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The testing laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

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

Tests in the areas:

Mechanical-technological tests, hardness tests, metallographic examination and analytical tests, Corrosion tests on metallic materials; optical emission spectrometry (OES) on steel and ferrous materials

Within the areas marked with * the testing laboratory is permitted to use standardised or equivalent test methods listed here with different issue dates without being required to prior inform and obtain approval from DAkkS. The testing laboratory has an up-to-date list of all test methods within the flexible scope of accreditation.

1 Mechanical-technological tests *

1.1 Hardness tests

DIN EN ISO 6506-1 2015-02	Metallic materials - Brinell hardness test - Part 1: Test method
DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method
DIN EN ISO 6508-1 2016-12	Metallic materials - Rockwell hardness test - Part 1: Test method
DIN EN ISO 9015-1 2011-05	Destructive tests on welds in metallic materials - Hardness testing - Part 1: Hardness test on arc welded joints
DIN EN ISO 17945 2015-08	Petroleum, petrochemical and natural gas industries - Metallic materials resistant to sulfide stress cracking in corrosive petroleum refining environments
DIN EN ISO 15156-2 2015-12	Petroleum and natural gas industries - Materials for use in H_2S-containing environments in oil and gas production - Part 2: Cracking-resistant carbon and low-alloy steels, and the use of cast irons
ASTM E10 2023	Standard Test Method for Brinell Hardness of Metallic Materials
ASTM E18 2022	Standard Test Methods for Rockwell Hardness of Metallic Materials
ASTM E92 2023	Standard Test Methods for Vickers Hardness of Metallic Materials
ASTM E384 2022	Standard Test Method for Microindentation Hardness of Materials

DIN 50159-1 2022-06	Metallic materials Hardness testing with the UCI method - Part 1: Test method

1.2 Tensile tests

DIN EN ISO 4136 2022-09	Destructive tests on welds in metallic materials - Transverse tensile test
DIN EN ISO 5178 2019-05	Destructive tests on welds in metallic materials - Longitudinal tensile test on weld metal in fusion welded joints
DIN EN ISO 6892-1 2020-06	Metallic materials - Tensile testing - Part 1: Method of test at room temperature
DIN EN ISO 6892-2 2018-09	Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature
DIN EN ISO 9018 2016-02	Destructive tests on welds in metallic materials - Tensile test on cruciform and lapped joints
DIN EN 10164 2018-12	Steel products with improved deformation properties perpendicular to the surface of the product – Technical delivery conditions
DIN EN 1561 2012-01	Founding - Grey cast irons
DIN EN 1562 2019-03	Founding - Malleable cast irons
DIN EN 1563 2019-04	Founding - Spheroidal graphite cast irons
DIN EN ISO 14555 2017-10	Welding - Arc stud welding of metallic materials
DIN EN ISO 527-1 2019-12	Plastics - Determination of tensile properties - Part 1: General principles
DIN EN ISO 527-4 2023-07	Plastics - Determination of tensile properties - Part 4: Test conditions for isotropic and orthotropic fibre-reinforced plastic composites

ASTM E8/E8M 2022	Standard Test Methods for Tension Testing of Metallic Materials
ASTM E21 2017	Standard Test Methods for Elevated Temperature Tension Test of Metallic Materials
ASTM A770/A770M 2003 (2018)	Standard Specification for Through-Thickness Tension Testing of Steel Plates for Special Applications
RCC-M Section III - MC 2022	Design and Construction Rules for Mechanical Components of PWR Nuclear Islands - MECHANICAL, PHYSICAL, PHYSICO-CHEMICAL AND CHEMICAL TESTS

1.3 Impact tests

DIN EN ISO 148-1 2017-05	Metallic materials Charpy pendulum impact test - Part 1: Test method
ASTM E23 2018	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials
DIN EN ISO 9016 2022-07	Destructive tests on welds in metallic materials Impact tests - Test specimen location, notch orientation and examination

1.4 Technological tests

DIN EN ISO 5173 2023-05	Destructive tests on welds in metallic materials - Bend tests
DIN EN ISO 7438 2021-03	Metallic materials Bend test
DIN EN ISO 8492 2014-03	Metallic materials - Tube - Flattening test
DIN EN ISO 8493 2004-10	Metallic materials - Tube - Drift-expanding test
DIN EN ISO 8495 2014-03	Metallic materials - Tube - Ring-expanding test
DIN EN ISO 8496 2014-03	Metallic materials - Tube - Ring tensile test

DIN EN ISO 9017 2018-04	Destructive tests on welds in metallic materials - Fracture test
DIN EN ISO 17660-1 2006-12 Berichtigung 1 2007-08	Welding - Welding of reinforcing steel - Part 1: Load-bearing welded joints
SEP 1390 1996-07	Weld-on bending test
DIN 53769-1 1988-11	Testing of glass fibre reinforced plastics pipes - Determination of the longitudinal shear strength of type B pipe fittings
ASTM E190 2021	Standard Test Method for Guided Bend Test for Ductility of Welds
ASTM E290 2022	Standard Test Methods for Bend Testing of Material for Ductility

2 Analytical tests

2.1 Metallography*

DIN EN ISO 643 2020-06	Steels - Micrographic determination of the apparent grain size
DIN EN ISO 17639 2022-05	Destructive tests on welds in metallic materials - Macroscopic and microscopic examination of welds
DIN EN 1321 1996-12	Destructive tests of welds in metallic materials - Macroscopic and microscopic examination of welds
DIN EN ISO 1463 2021-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
DIN EN ISO 3887 2018-05	Steels - Determination of the depth of decarburization
DIN 50602 1985-09	Metallographic examination - Microscopic examination of special steels using standard diagrams to assess the content of non-metallic inclusions

ISO 4967 2013-07	Steel - Determination of content of non-metallic inclusions – Micrographic method using standard diagrams
DIN EN ISO 2639 2003-04	Steels - Determination and verification of the depth of carburized and hardened cases
DIN EN 10328 2005-04	Iron and steel - Determination of the conventional depth of hardening after surface heating
ASTM E45 2018	Standard Test Methods for Determining the Inclusion Content of Steel
ASTM E112 2013	Standard Test Methods for Determining Average Grain Size
DIN EN ISO 17781 2017-11	Petroleum, petrochemical and natural gas industries - Test methods for quality control of microstructure of ferritic/austenitic (duplex) stainless steels
DIN EN ISO 1172 1998-12	Textile-glass-reinforced plastics - Prepregs, moulding compounds and laminates - Determination of the textile-glass and mineral-filler content - Calcination methods
ASTM E562 2019	Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count
ASTM E340 2015	Standard Practice for Macroetching Metals and Alloys
ASTM E407 2007 (2015)	Standard Practice for Microetching Metals and Alloys
ASTM E381 2022	Standard Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings
ASTM A923 2014	Standard Test Methods for Detecting Detrimental Intermetallic Phase in Duplex Austenitic/Ferritic Stainless Steels
ASTM E1181 2002	Standard Test Methods for Characterizing Duplex Grain Sizes
ASTM E1245 2003 (2016)	Standard Practice for Determining the Inclusion or Second-Phase Constituent Content of Metals by Automatic Image Analysis

2.2 Corrosion tests*

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)
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
SEP 1877 1994-07	Testing the resistance of high-alloy, corrosion-resistant materials to intergranular corrosion
ASTM A262 2015	Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels
ASTM G28 2002 (2015)	Standard Test Methods for Detecting Susceptibility to Intergranular Corrosion in Wrought, Nickel-Rich, Chromium-Bearing Alloys
ASTM G48 2011 (2015)	Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution

2.3 Optical emission spectrometry

QMH-GWQ-A.0.10 2022-12	Optical emission spectrometry for the determination of 14 elements in steel and iron materials

2.4 Cross-procedure standards for mechanical-technological tests*

ASTM A370 2022	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASME BPVC.IX 2023	Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing and Fusion Operators

Abbreviations used:

ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
DIN	German Institute for Standardization
EN	European Standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardisation
SEP	Steel-iron test sheets of the Association of German ironworkers
QMH-GWQ	In house method of the GWQ GmbH & Co. KG
RCC-M	Design and construction rules for mechanical components of PWR nuclear islands of the Association française pour les règles de conception, de construction et de surveillance en exploitation des matériels des chaudières électro-nucléaires