

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-18478-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 01.09.2014 to 31.01.2018

Date of issue: 08.09.2014

Holder of certificate:

MT Laboratories GmbH
Am Eisenbrand 24a, 40667 Meerbusch

Tests in the fields:

manual non-destructive testing (radiographic-, ultrasonic-, magnetic particle-, penetration testing), automated ultrasonic testing; selected mechanical test and metallographical examination at metallic materials, optical emission spectrometry at low- and alloyed steels and nickel-based alloys as well as corrosion tests at metallic components of plant engineering and plant construction

Abbreviations used: see last page

The laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use standard test methods listed here with different issue dates or revision status updates. The laboratory maintains a current list of all test methods in a flexible scope of accreditation.

1 Non-destructive testing

1.1 Radiographic testing

ASME Code Sec. V Art. 2 Radiographic testing
Edition 2010 (*withdrawn document*)
Addenda 2011

ASME Code Sec. VIII Art. 1 Radiographic testing
Edition 2010 (*withdrawn document*)
Addenda 2011

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DIN EN ISO 17636-1 2013-05	Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film
DIN EN 10246-10 2001-07	Non-destructive testing of steel tubes - Part 10: Radiographic testing of the weld seam of automatic fusion arc welded steel tubes for the detection of imperfections <i>(withdrawn standard)</i>
DIN EN ISO 10893-6 2011-07	Non-destructive testing of steel tubes - Part 6: Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections
ISO 12096 1996-05	Submerged arc-welded steel tubes for pressure purposes - Radiographic testing of the weld seam for the detection of imperfections <i>(withdrawn standard)</i>
DIN EN 12681 2003-06	Founding - Radiographic examination
RCC-M Edition 2007 MC 34100 2007	Sect III Examination Methods - Radiographic Examination
ASME Code Sec. V Edition 2013	Radiographic Examination Article 2 and 22
ASME B 31.3 Edition 2012 2012	Radiographic Examination K 344.5

1.2 Ultrasonic testing

DIN EN 10228-3 1998-07	Non-destructive testing of steel forgings - Part 3: Ultrasonic testing of ferritic or martensitic steel forgings
DIN EN 10228-4 1999-10	Non-destructive testing of steel forgings - Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings
ASTM E 213 2009	Standard practice for ultrasonic testing of Metal pipe and Tubing <i>(withdrawn document)</i>

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ASTM A 577/A 577M 1990	Standard specification for ultrasonic angle-beam examination of Steel Plates <i>(withdrawn document)</i>
DIN EN 583-2 2001-04	Non-destructive testing - Ultrasonic examination - Part 2: Sensitivity and range setting <i>(withdrawn standard)</i>
DIN EN 583-3 1997-06	Non-destructive testing - Ultrasonic testing - Part 3: Transmission technique <i>(withdrawn standard)</i>
DIN EN 583-4 2002-12	Non-destructive testing - Ultrasonic examination - Part 4: Examination for discontinuities perpendicular to the surface <i>(withdrawn standard)</i>
	each in connection with:
	<i>DIN EN ISO 11666 2011-04</i>
	<i>Non-destructive testing of welds - Ultrasonic testing - Acceptance levels</i>
ISO 9303 1989-08	Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes - full peripheral ultrasonic testing for the detection of longitudinal imperfections <i>(withdrawn standard)</i>
ISO 9305 1989-07	Seamless steel tubes for pressure purposes; full peripheral ultrasonic testing for the detection of transverse imperfections <i>(withdrawn standard)</i>
ISO 9764 1989-08	Electric resistance and induction welded steel tubes for pressure purposes - ultrasonic testing of the weld seam for the detection of longitudinal imperfections <i>(withdrawn standard)</i>
ISO 9765 1990-12	Submerged arc-welded steel tubes for pressure purposes - ultrasonic testing of the weld seam for the detection of longitudinal and/or transverse imperfections <i>(withdrawn standard)</i>

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ISO 10124 1994-12	Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes - Ultrasonic testing for the detection of laminar imperfections <i>(withdrawn standard)</i>
ISO 11496 1993-11	Seamless and welded steel tubes for pressure purposes - ultrasonic testing of tube ends for the detection of laminar imperfections <i>(withdrawn standard)</i>
ISO 12094 1994-12	Welded steel tubes for pressure purposes - Ultrasonic testing for the detection of laminar imperfections in strips/plates used in the manufacture of welded tubes <i>(withdrawn standard)</i>
ISO 13663 1995-12	Welded steel tubes for pressure purposes - Ultrasonic testing of the area adjacent to the weld seam for the detection of laminar imperfections <i>(withdrawn standard)</i>
DIN EN 10246-6 2000-03	Non-destructive testing of steel tubes - Part 6: Automatic full peripheral ultrasonic testing of seamless steel tubes for the detection of transverse imperfections <i>(withdrawn standard)</i>
DIN EN 10246-7 2005-12	Non-destructive testing of steel tubes - Part 7: Automatic full peripheral ultrasonic testing of seamless and welded (except submerged arc welded) tubes for the detection of longitudinal imperfections <i>(withdrawn standard)</i>
DIN EN 10246-8 2000-03	Non-destructive testing of steel tubes - Part 8: Automatic ultrasonic testing of the weld seam of electric welded steel tubes for the detection of longitudinal imperfections <i>(withdrawn standard)</i>
DIN EN 10246-9 2000-06	Non-destructive testing of steel tubes - Part 9: Automatic ultrasonic testing of the weld seam of submerged arc-welded steel tubes for the detection of longitudinal and/or transverse imperfections <i>(withdrawn standard)</i>

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DIN EN 10246-14 2000-03	Non-destructive testing of steel tubes - Part 14: Automatic ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of laminar imperfections <i>(withdrawn standard)</i>
DIN EN 10246-16 2000-07	Non-destructive testing of steel tubes - Part 16: Automatic ultrasonic testing of the area adjacent to the weld seam of welded steel tubes for the detection of laminar imperfections <i>(withdrawn standard)</i>
DIN EN 10246-17 2000-07	Non-destructive testing of steel tubes - Part 17: Ultrasonic testing of tube ends of seamless and welded steel tubes for the detection of laminar imperfections <i>(withdrawn standard)</i>
DIN EN 10307 2002-03	Non-destructive testing - Ultrasonic testing of austenitic and austenitic-ferritic stainless steels flat products of thickness equal to or greater than 6 mm (reflection method)
DIN EN 10308 2000-03	Non-destructive testing - Ultrasonic testing of steel bars
DIN EN ISO 10893-8 2011-07	Non-destructive testing of steel tubes - Part 8: Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections
DIN EN ISO 10893-9 2011-07	Non-destructive testing of steel tubes - Part 9: Automated ultrasonic testing for the detection of laminar imperfections in strip/plate used for the manufacture of welded steel tubes
DIN EN ISO 10893-10 2011-07	Non-destructive testing of steel tubes - Part 10: Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections
DIN EN ISO 10893-11 2011-07	Non-destructive testing of steel tubes - Part 11: Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections

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DIN EN ISO 10893-12 2011-07	Non-destructive testing of steel tubes - Part 12: Automated full peripheral ultrasonic thickness testing of seamless and welded (except submerged arc-welded) steel tubes
DIN EN ISO 23279 2010-08	Non-destructive testing of welds - Ultrasonic testing - Characterization of indications in welds
DIN EN ISO 17640 2011-04	Non-destructive testing of welds - Ultrasonic testing - Techniques, testing levels, and assessment
DIN EN 10160 1999-09	Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)
DIN EN 10228-3 2012-12	Non-destructive testing of steel forgings - Part 3: Ultrasonic testing of ferritic or martensitic steel forgings
DIN EN 10228-4 2012-12	Non-destructive testing of steel forgings - Part 4: Ultrasonic testing of austenitic and austenitic-ferritic stainless steel forgings
DIN EN 12680-3 2012-02	Founding - Ultrasonic testing - Part 3: Spheroidal graphite cast iron castings
SEL 072 1977-12	Ultrasonically tested heavy plate - technical delivery specifications <i>(withdrawn document)</i>
SEP 1915 2. Ausgabe 1989-12	Ultrasonic testing for longitudinal defects in pipes <i>(withdrawn document)</i>
SEP 1918 2. Ausgabe 1992-01	Ultrasonic testing for transverse defects of pipes <i>(withdrawn document)</i>
SEP 1919 1977-06	Ultrasonic testing for laminations of pipes of creep-resistant steels <i>(withdrawn document)</i>

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SEP 1923 2. Ausgabe 2009-02	Ultrasonic testing of steel forgings to stringent standards, in particular for components in turbine and generator systems
SEP 1924 1989-10	Ultrasonic testing of castings made of cast iron with spheroidal graphite <i>(withdrawn document)</i>
DIN 54125 1989-01	Non-destructive testing - manual ultrasonic examination of welded joint <i>(withdrawn standard)</i>
ASTM A 745/A 745M 2012	Standard Practice for Ultrasonic Examination of Austenitic Steel Forgings
ASTM E 114 2010	Standard Practice for Ultrasonic Pulse-Echo Straight-Beam Contact Testing
ASTM E 164 2013	Standard Practice for Contact Ultrasonic Testing of Weldments
ASTM E 213 2014	Standard Practice for Ultrasonic Testing of Metal Pipe and Tubing
ASTM E 273 2010	Standard Practice for Ultrasonic Testing of the Weld Zone of Welded Pipe and Tubing
ASTM E 428 2008	Standard Practice for Fabrication and Control of Metal, Other than Aluminium, Reference Blocks Used in Ultrasonic Testing
ASTM E 587 2010	Standard Practice for Ultrasonic Angle-Beam Contact Testing
ASTM E797/E 797M 2010	Standard Practice for Measuring Thickness by Manual Ultrasonic Pulse-Echo Contact Method
API 5 L 2013-07	Ultrasonic Examination
API 5 LD 2009-09	Ultrasonic Examination

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ASME Code Sec. V Edition 2013 2013	Magnetic Particle Examination Article 7 and 25
DIN EN 10246-12 2000-07	Non-destructive testing of steel tubes - Part 12: Magnetic particle inspection of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections <i>(withdrawn standard)</i>
DIN EN 10893-5 2011-07	Non-destructive testing of steel tubes - Part 5: Magnetic particle inspection of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections
RCC-M Edition 2007-MC 5100 2007	Sect III Examination Methods - Magnetic Particle Examination
ASME B 31.3 Edition 2012 2012	Magnetic Particle Examination

1.4 Liquid penetrant testing

DIN EN 571-1 1997-03	Non-destructive testing - Penetrant testing - Part 1: General principles <i>(withdrawn standard)</i>
DIN EN 1371-1 2012-02	Founding - Liquid penetrant testing - Part 1: Sand, gravity die and low pressure die castings
DIN EN 10228-2 1998-06	Non-destructive testing of steel forgings - Part 2: Penetrant testing
ASME Code Sec. V Art. 6 Edition 2010 Addenda 2011	Liquid Penetrant Examination <i>(withdrawn document)</i>

each in connection with:

*DIN EN ISO 23277
2010-03*

*Non-destructive testing of welds -
Penetrant testing of welds -
Acceptance levels*

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DIN EN 10246-11 2000-06	Non-destructive testing of steel tubes - Part 11: Liquid penetrant testing of seamless and welded steel tubes for the detection of surface imperfections <i>(withdrawn standard)</i>
DIN EN 10228-2 2012-12	Non-destructive testing of steel forgings - Part 2: Penetrant testing
DIN EN ISO 10893-4 2011-07	Non-destructive testing of steel tubes - Part 4: Liquid penetrant inspection of seamless and welded steel tubes for the detection of surface imperfections
DIN 54152-1 1989-07	Non-destructive testing - penetrant inspection - procedure <i>(withdrawn standard)</i>
RCC-M Edition 2007 MC 4100 2007	Sect III Examination Methods - Liquid Penetrant Examination
ASME Code Sec. V Edition 2013 2013	Article 6 Liquid Penetrant Examination Article 24 Liquid Penetrant Standards
SE 165 - ASME B 31.3 Edition 2012 2012	Standard Practice for Liquid Penetration Examination for General Industry

Methods cross standards

AD 2000 - Merkblatt HP 5/3 2011-05	Manufacture and testing of joints - Non-destructive testing of welded joints
AD 2000 - Merkblatt HP 5/3 Anlage 1 2002-01	Manufacture and testing of joints - Non-destructive testing of welded joints
DIN EN ISO 17635 2010-08	Non-destructive testing of welds - General rules for metallic materials
DIN 1690-2 1985-06	Technical delivery conditions for castings made from metallic materials - steel castings - classification into severity levels on the basis of non-destructive testing <i>(withdrawn standard)</i>

DIN EN 1559-2
2000-04 Founding - Technical conditions of delivery - Part 2: Additional requirements for steel castings

2 Mechanical tests

ASTM E 384
2010 Standard Test Method for Vickers Hardness of Metallic Materials
(withdrawn document)

ASTM E 18
2011 Standard Test Methods for Rockwell Hardness of Metallic Materials
(withdrawn document)

ASTM A 370
2012 Standard Test Methods and Definitions for Mechanical Testing of Steel Products
(withdrawn document)

DIN EN ISO 6506-1
2006-03 Metallic materials - Brinell hardness test - Part 1: Test method

ASTM E 10
2012 Standard Test Method for Brinell Hardness of Metallic Materials

DIN EN ISO 6507-1
2006-03 Metallic materials - Vickers hardness test - Part 1: Test method

ASTM E 92
1982 Standard Test Method for Vickers Hardness of Metallic Materials
(withdrawn standard)

DIN EN ISO 6508-1
2006-03 Metallic materials - Rockwell hardness test - Part 1: Test method
(only scale C)

ASTM E 18
2014 Standard Test Methods for Rockwell Hardness of Metallic Materials

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 7438
2012-03 Metallic materials - Bend test

DIN EN ISO 7799
2000-07 Metallic materials - Sheet and strip 3 mm thick or less - Reverse bend test

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DIN EN ISO 6892-1 2009-12	Metallic materials - Tensile testing - Part 1: Method of test at room temperature (<i>procedure A and B</i>)
DIN EN ISO 6892-2 2011-05	Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature (<i>procedure A and B</i>)
DIN EN ISO 148-1 2011-01	Metallic materials - Charpy pendulum impact test - Part 1: Test method
DIN EN ISO 148-1 Beiblatt 1 2014-02	Metallic materials - Charpy pendulum impact test - Part 1: Test method - Supplement 1: Special test pieces
ASTM E 23a 2012	Standard Test Methods for Notched Bar Impact Testing of Metallic Materials (<i>withdrawn document</i>)
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 8494 2014-03	Metallic materials - Tube - Flanging 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 1561 2012-01	Founding - Grey cast irons
DIN EN 1563 2012-03	Founding - Spheroidal graphite cast irons
DIN 50115 1991-04	Notched bar impact testing of metallic materials using test pieces other than ISO test pieces (<i>withdrawn standard</i>)
ASTM A 370 2013	Standard Test Methods and Definitions for Mechanical Testing of Steel Products

3 Metallographic Examinations

DIN EN 1321
1996-12 Destructive tests of welds in metallic materials - Macroscopic and
microscopic examination of welds
(withdrawn document)

in connection with:

*DIN 50600 Testing of metallic materials - Metallographic
1980-03 Micrographs - Picture scales and formats*

DIN EN ISO 643
2003-09 Steels - Micrographic determination of the apparent grain size
Berichtigung 1
2004-07 *(withdrawn standard)*

DIN EN ISO 17639
2013-12 Destructive tests on welds in metallic materials - Macroscopic
and microscopic examination of welds

DIN 50600
1980-03 Testing of metallic materials - Metallographic Micrographs -
Picture scales and formats

ASTM E 562
2011 Standard Test Method for Determining Volume Fraction by
Systematic Manual Point Count

ASTM E 112
2013 Standard Test Methods for Determining Average Grain Size

DIN 50602
1985-09 Metallographic examination - microscopic examination of special
steels using standard diagrams to assess the content of non-
metallic inclusions
(withdrawn standard)

DIN EN ISO 945-1
2010-09 Microstructure of cast irons - Part 1: Graphite classification by
visual analysis

ISO 4968
1979-11 Steel - Macrographic examination by sulfur print
(Baumann method)

4 Corrosion tests

ASTM A 262 2010	Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels (only method E) <i>(withdrawn document)</i>
ASTM A 262 2013	Standard Practices for Detecting Susceptibility to Intergranular Attack in Austenitic Stainless Steels Practice: A and E (only method E)
ASTM A 923 2008	Standard Test Methods for Detecting Detrimental Intermetallic Phase in Duplex Austenitic/Ferritic Stainless Steels <i>(withdrawn document)</i>
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
ASTM G 28-02a 2002 (reapproved 2008)	Standard Test Methods for Detecting Susceptibility to Intergranular Corrosion in Austenitic Stainless Steels (only method A)
ASTM G 48 2011	Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution (only method A)
ASTM A 923 2014	Standard Test Methods for Detecting Detrimental Intermetallic Phase in Duplex Austenitic/Ferritic Stainless Steels

5 Spectroscopic analyses

AA 12 2012-10	Spectrometer
AA 13 2012-10	Spectrometer

Abbreviations used:

AD HP	Working group of pressure vessels - Production and testing
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
ASME	American Society of Mechanical Engineers
DNV	Det Norske Veritas
DVGW	German association of gas- and water industry
KTA	Nuclear Safety Standards Commission
RCC-M	Rules of French society for design and construction and in-service inspection rules for nuclear islands (afcen)
SEL	Stahl-Eisen Terms of delivery of the Association of German Steel manufactures
SEP	Stahl-Eisen Testing Guidelines of the Association of German Steel manufactures