

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-21039-03-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **01.03.2021**

Date of issue: 01.03.2021

Holder of certificate:

Framatome GmbH
Prüflaboratorium Werkstofftechnik
Paul-Gossen-Straße 100, 91052 Erlangen

Tests in the fields:

metallography, electron microscopy of steel and ferrous materials as well as non-ferrous materials; X-ray fluorescence analysis; corrosion tests; mechanical-technological material tests

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 standards or equivalent testing methods listed here with different issue dates.**

The testing laboratory maintains a current list of all testing procedures within the flexible scope of accreditation.

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

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
<https://www.dakks.de/en/content/accredited-bodies-dakks>*

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1 Metallography

1.1 Metallography according standards ***

ASTM E 45-18a 2018	Standard Test Methods for Determining the Inclusion Content of Steel
ASTM E 112-13 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 <i>(withdrawn standard)</i>
DIN EN 10247 2017-09	Micrographic examination of the non-metallic inclusion content of steels using standard pictures
DIN EN ISO 643 2020-06	Steels - Micrographic determination of the apparent grain size
DIN EN ISO 1463 2004-08	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
ISO 643 2019-12	Steels - Micrographic determination of the apparent grain size
ISO 1463 2003-03	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method
ISO 4967 2013-07	Steel - Determination of content of non-metallic inclusions - Micrographic method using standard diagrams

1.2 Metallography according in-house methods

AVS 63 2012-06	Determination content of the delta ferrite of ferrite-containing austenitic materials
FAW-M 0069 B 2019-12	Carrying out non-contact measurements for the determination of surface geometries

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4.2 Corrosion tests without mechanical load according in-house methods

FAW-M 0022 F 2020-11	Testing of the IK resistance of austenitic steels by means of the electrochemical, potentiokinetic reactivation method (EPR method)
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4.3 Corrosion tests with simultaneous mechanical load according standards ***

ASTM G 36-94(2018) 1994 (reapproved 2018)	Standard practice for Evaluating Stress-Corrosion-Cracking Resistance of Metals and Alloys in a Boiling Magnesium Chloride Solution
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DIN EN ISO 7539-4 1995-08	Corrosion of metals and alloys - Stress corrosion testing - Part 4: Preparation and use of uniaxially loaded tension specimens
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DIN EN ISO 7539-5 1995-08	Corrosion of metals and alloys - Stress corrosion testing - Part 5: Preparation and use of C-ring specimens
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DIN EN ISO 7539-7 2018-05	Corrosion of metals and alloys - Stress corrosion testing - Part 7: Method for slow strain rate testing
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ISO 7539-4 1989-12	Corrosion of metals and alloys - Stress corrosion testing - Part 4: Preparation and use of uniaxially loaded tension specimens
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ISO 7539-5 1989-12	Corrosion of metals and alloys - Stress corrosion testing - Part 5: Preparation and use of C-ring specimens
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ISO 7539-7 2005-02	Corrosion of metals and alloys - Stress corrosion testing - Part 7: Method for slow strain rate testing
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5 Mechanical-technological material tests ***

ASTM E 8/E8M-16ae1 2016	Standard Test Methods for Tension Testing of Metallic Materials
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ASTM E 21-17e1 2017	Standard Test Methods for Elevated Temperature Tension Tests of Metallic Materials
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ASTM E 399-20 2020	Standard Test Method for Linear-Elastic Plane-Strain Fracture Toughness of Metallic Materials
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ASTM E 1820-20ae1 2020	Standard Test Method for Measurement of Fracture Toughness
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ASTM E 1921-20 2020	Standard Test Method for Determination of Reference Temperature, T_0 , for Ferritic Steels in the Transition Range
DIN 50106 2016-11	Testing of metallic materials - Compression test at room temperature
DIN 50190-3 1979-03	Hardness depth of heat-treated parts - Determination of the effective depth of hardening after nitriding
DIN EN 10328 2005-04	Iron and steel - Determination of the conventional depth of hardening after surface heating
DIN EN ISO 148-1 2017-05	Metallic materials - Charpy pendulum impact test - Part 1: Test method
DIN EN ISO 2639 2003-04	Steels - Determination and verification of the depth of carburized and hardened cases
DIN EN ISO 4136 2013-02	Destructive tests on welds in metallic materials - Transverse tensile test
DIN EN ISO 5173 2012-02	Destructive tests on welds in metallic materials - Bend tests
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 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 (here: <i>Scales B and C</i>)
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 6892-3 2015-07	Metallic materials - Tensile testing - Part 3: Method of test at low temperature

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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 9016 2013-02	Destructive tests on welds in metallic materials - Impact tests - Test specimen location, notch orientation and examination
DIN EN ISO 9017 2018-04	Destructive tests on welds in metallic materials - Fracture test
DIN EN ISO 14556 2017-05	Metallic materials - Charpy V-notch pendulum impact test - Instrumented test method
ISO 148-1 2016-10	Metallic materials - Charpy pendulum impact test - Part 1: Test method
ISO 2639 2002-11	Steels - Determination and verification of the depth of carburized and hardened cases <i>(withdrawn standard)</i>
ISO 4136 2012-11	Destructive tests on welds in metallic materials - Transverse tensile test
ISO 5173 2009-06	Destructive tests on welds in metallic materials - Bend tests
ISO 5178 2019-01	Destructive tests on welds in metallic materials - Longitudinal tensile test on weld metal in fusion welded joints
ISO 6506-1 2014-10	Metallic materials - Brinell hardness test - Part 1: Test method
ISO 6507-1 2018-01	Metallic materials - Vickers hardness test - Part 1: Test method
ISO 6508-1 2016-08	Metallic materials - Rockwell hardness test - Part 1: Test method <i>(here: Scales B and C)</i>
ISO 6892-1 2019-11	Metallic materials - Tensile testing - Part 1: Method of test at room temperature
ISO 6892-2 2018-03	Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature

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ISO 6892-3 2015-04	Metallic materials - Tensile testing - Part 3: Method of test at low temperature
ISO 9015-1 2001-04	Destructive tests on welds in metallic materials - Hardness testing - Part 1: Hardness test on arc welded joints
ISO 9016 2012-11	Destructive tests on welds in metallic materials - Impact tests - Test specimen location, notch orientation and examination
ISO 9017 2017-11	Destructive tests on welds in metallic materials - Fracture test
ISO 14556 2015-09	Metallic materials - Charpy V-notch pendulum impact test - Instrumented test method

abbreviations used:

ASTM	American Society for Testing and Materials
AVS	Working instruction of Framatome GmbH
DIN	German Institut for Standardization
DVS	German Association for Welding and Related Processes r. a.
EN	European Standard
FAW	Technical Instruction of Framatome GmbH
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
SEP	Steel-iron test sheets from the Association of German Ironworkers