

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-19890-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 02.07.2020

Date of issue: 13.07.2020

Holder of certificate:

**Aktien-Gesellschaft der Dillinger Hüttenwerke
(Société Anonyme des Forges et Aciéries de Dilling)
Werkstraße 1, 66763 Dillingen**

Test in fields:

mechanic-technological testing, hardness testing, metallographic inspection, sour gas corrosion testing, manual non-destructive testing (ultrasonic testing, visual testing and magnetic particle testing) and mechanized ultrasonic testing within steel industry

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 methods within the flexible scope of accreditation.

This document is a translation. The definitive version is the original German annex to the accreditation certificate.

Abbreviations used: see last page

*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 Mechanic-technological testing

DIN EN ISO 6892-1 2017-02	Metallic materials - Tensile testing - Part 1: Method of test at room temperature
ASTM A 370 2019	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM E 8/E 8M 2016	Standard Test Methods for Tension Testing of Metallic Materials
DIN EN ISO 6892-2 2018-09	Metallic materials - Tensile testing - Part 2: Method of test at elevated temperature
ASTM E 21 2017	Standard Test Methods for Elevated Temperature Tension Tests of Metallic Materials
DIN EN ISO 148-1 2017-05	Metallic materials - Charpy pendulum impact test - Part 1: Test method
ASTM E 23 2018	Standard Test Methods for Notched Bar Impact Testing of metallic Materials
ASTM E 436 2014	Standard Test Method for Drop-Weight Tear Tests of Ferritic Steels
DIN EN 10274 1999-07	Metallic materials - Drop weight tear test
API RP 5L3 2014	Drop-Weight Tear Tests on Line Pipe
DIN EN ISO 7438 2016-07	Metallic materials - Bend test
SEP 1390 1996-07	Weld bead bend test
ASTM E 208 2019	Standard Test Method for Conducting Drop-Weight Test to Determine Nil-Ductility Transition Temperature of Ferritic Steels
SEP 1325 1982-12	Falling weight test according to W. S. Pellini

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ASTM E 9 2019	Standard Test Methods of Compression Testing of Metallic Materials at Room Temperature
DIN 50106 2016-11	Testing of metallic materials - Compression test at room temperature

2 Hardness testing

DIN EN ISO 6506-1 2015-02	Metallic materials - Brinell hardness test - Part 1: Test method (here: <i>method HBW 2,5/187,5; HBW 5/250; HBW 5/750; HBW 10/1000; HBW 10/3000</i>)
DIN EN ISO 6507-1 2018-07	Metallic materials - Vickers hardness test - Part 1: Test method (here: <i>method HV5, HV10, HV30</i>)
DIN EN ISO 6508-1 2016-12	Metallic materials - Rockwell hardness test - Part 1: Test method (here: <i>Scale B und C</i>)
DIN EN ISO 16859-1 2016-02	Metallic materials - Leeb hardness test - Part 1: Test method

3 Metallographic inspection

DIN EN 10247 2017-09	Micrographic examination of the non-metallic inclusion content of steels using standard pictures
ASTM E 45 2018	Standard Test Methods for Determining the Inclusion Content of Steel
DIN EN ISO 643 2013-05	Steels - Micrographic determination of the apparent grain size
ASTM E 112 2014	Standard Test Methods for Determining Average Grain Size
ASTM E 1268 2016	Standard Practice for Assessing the Degree of Banding or Orientation of Microstructures
DH test procedure P-D472-0105 14.02.2017	Deep etching - Hot etching method for samples from slabs

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DH test procedure V-D345-0035 22.02.2018	Testing of the solidification structure using macro etching
DH test procedure P-D472-0120 21.03.2017	Macro etching
DH test procedure P-D472-0121 26.08.2014	Sulphur print test (Baumann method)
DH test procedure P-D472-0107 14.02.2017	Deep etching - Hot etching method for samples from plates

4 Sour gas corrosion testing

NACE Standard TM0284 2016	Standard Test Method - Evaluation of Pipeline and Pressure Vessel Steels for Resistance to Hydrogen-Induced Cracking
NACE Standard TM0177 2016	Standard Test Method - Laboratory Testing of Metals for Resistance to Sulfide Stress Cracking and Stress Corrosion Cracking in H ₂ S Environments
ASTM G 39 2016	Standard Practice for Preparation and Use of Bent-Beam Stress-Corrosion Test Specimens
Saudi Aramco Material Systems Specification 01-SAMSS-016 2018-11	Qualification of Plates for Pressured Equipment and Storage Tanks for Resistance to Hydrogen-Induced Cracking

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5 Non-destructive testing

5.1 Manual ultrasonic testing

DIN EN 10160 1999-09	Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)
ASTM A 578/A 578M 2017	Standard Specification for Straight-Beam Ultrasonic Examination of Rolled Steel Plates for Special Applications
SEP 1927 2010-08	Ultrasonic immersion testing method of determining the macroscopic cleanliness rate of rolled or forged steel bars
DIN EN ISO 16809 2020-02	Non-destructive testing - Ultrasonic thickness measurement

5.2 Mechanized ultrasonic testing

DH test procedure V-D475-0003 14.12.2018	Ultrasonic-testing acc. to EN 10160 modified for automatic and manual testing with the Dillinger Hüttenwerke equipment
DIN EN 10160 1999-09	Ultrasonic testing of steel flat product of thickness equal to or greater than 6 mm (reflection method)

5.3 Visual testing

DIN EN 13018 2016-06	Non-destructive testing - Visual testing - General principles
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5.4 Magnetic particle testing

DIN EN ISO 9934-1 2017-03	Non-destructive testing - Magnetic particle testing - Part 1: General principles
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6 Fracture mechanical testing

ISO 12135 2016-11	Metallic materials - Unified method of test for the determination of quasistatic fracture toughness (here: <i>method CTOD</i>)
BS 7448-1 1991	Fracture mechanics toughness tests. Method for determination of K_{Ic} , critical CTOD and critical J values of metallic materials (here: <i>method CTOD</i>)
ASTM E 1820 2020	Standard Test Method for Measurement of Fracture Toughness (here: <i>method CTOD</i>)
DIN EN ISO 15653 2018-06	Metallic materials - Method of test for the determination of quasistatic fracture toughness of welds (here: <i>method CTOD</i>)
API RP 2Z Fourth edition 2005-09	Recommended Practice for Preproduction Qualification for Steel Plates for Offshore Structures (here: <i>method CTOD</i>)

Abbreviations used:

API	American Petroleum Institute
ASTM	American Society for Testing and Materials
BS	British Standard
DH	Dillinger Hütte, Test procedures of AG of Dillinger Hüttenwerke
DIN	Deutsches Institut für Normung e.V.
EN	European standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
NACE	National Association of Corrosion Engineers, Houston, Texas, USA
SEP	Stahl-Eisen-Prüfblatt, Test procedures of Steel Institute VDEh

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