DAkkS
Deutsche
Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV
Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

Accreditation

The Deutsche Akkreditierungsstelle GmbH attests that the testing laboratory

VDZ gemeinnützige GmbH
Tannenstraße 2, 40476 Düsseldorf

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

Chemical, chemical-physical and physical-technological analysis of building materials and materials such as concrete, binders, granulated blast furnace slag, clinker, mortar, cement, cementitious binders, solids, metallic materials, aqueous solutions

The accreditation certificate shall only apply in connection with the notice of accreditation of 15.08.2018 with the accreditation number D-PL-18403-01 and is valid until 25.05.2022. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 8 pages.

Registration number of the certificate: **D-PL-18403-01-00**

Berlin, 15.08.2018	Dr. Heike Manke Head of Division	Translation issued: 09.11.2018	Head of Division

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

See notes overleaf.

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Annex to the Accreditation Certificate D-PL-18403-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 15.08.2018 to 25.05.2022 Date of issue: 15.08.2018

Holder of certificate:

VDZ gemeinnützige GmbH
Tannenstraße 2, 40476 Düsseldorf

Tests in the fields:

Chemical, chemical-physical and physical-technological analysis of building materials and materials such as concrete, binders, granulated blast furnace slag, clinker, mortar, cement, cementitious binders, solids, metallic materials, aqueous solutions

Abbreviations used: see last page

Within the scope of accreditation marked *, the testing laboratory is permitted to apply the listed standardised or equivalent test methods with different versions without obtaining prior notification and consent from DAkkS.
The testing laboratory has an up-to-date list of all test methods within the flexible scope of accreditation.

Chemical and chemical-physical testing *

DIN EN 196-2 2013-10	Methods of testing cement – Part 2: Chemical analysis of cement
DIN EN 1911 2010-12	Stationary source emissions – Determination of mass concentration of gaseous chlorides expressed as HCl – Standard reference method
DIN EN 14789 2017-05	Stationary source emissions - Determination of volume concentration of oxygen - Standard reference method

DIN EN 14791 2017-05	Stationary source emissions - Determination of mass concentration of sulphur oxides - Standard reference method
DIN EN 15058 2017-05	Stationary source emissions - Determination of the mass concentration of carbon monoxide - Standard reference method: non-dispersive infrared spectrometry
DIN 1164-31 1990-03	Portland-, Iron Portland-, blast furnace- and trass cement; determination of granulated blast furnace slag content of iron Portland cement and blast furnace cement and trass content of trass cement *(standard withdrawn)*
VDI 2456 2004-11	Measurement of gaseous emissions – Reference method for the determination of the sum of nitrogen monoxide and nitrogen dioxide – Ion chromatographic method
VDI 2470 Blatt 1 1975-10	Measurement of gaseous emissions; Measurement of gaseous fluorine compounds / Absorption method
VDI 3496 Blatt 1 1982-04	Measurement of gaseous emissions; Determination of basic nitrogen compounds ascertainable in sulphuric acid by absorption

Chemical and chemical-physical testing – in-house methods

In-house method A-01-087 2015-12	X-ray fluorescence analysis for the determination of main and minor constituents in cement and other solids Determination of SiO_2, Al_2O_3, TiO_2, P_2O_5, Fe_2O_3, Mn_2O_3, CaO, MgO, SO_3, K_2O, Na_2O, S^{2-}, Cl^-, O_2 equivalent, C_3S, C_2S, C_3A, C_4AF, C_2F, KS, TM, SM, SG, CUE and calculation of the composition of cements with several main constituents
In-house method A-01-099 2016-03	Determination of the glass content of granulated blast furnace slag in accordance with ZKG International 47 (1994) issue 11, p. 658-661 Enumeration with the help of light microscopy
In-house method A-11-009 2014-12	Total N determination by the Kjeldahl method in biogenic input materials and materials from the clinker burning process
In-house method A-11-015 2018-01	Photometric ammonium determination in aqueous solutions

In-house method A-11-024 2016-12	Ion chromatographic bromide determination in aqueous and sodium alkaline solutions
In-house method A-14-001 2016-12	Phase analysis of cement by X-ray diffraction / Rietveld analysis
In-house method A-14-007 2011-07	Determination of granulated blast furnace slag content in cements by X-ray diffraction / Rietveld analysis

Physical-technological testing *

DIN EN ISO 6892-1 2017-02	Metallic materials – Tensile testing – Part 1: Method of test at room temperature (ISO 6892-1: 2016)
DIN EN 196-1 2005-05	Methods of testing cement – Part 1: Determination of strength
DIN EN 196-3 2017-03	Methods of testing cement – Part 3: Determination of setting times and soundness
DIN EN 196-6 2010-05	Methods of testing cement – Part 6: Determination of fineness
DIN EN 196-9 2010-07	Methods of testing cement - Part 9: Heat of hydration - Semi-adiabatic method
DIN EN 413-2 2005-08	Masonry cement – Part 2: Test methods Section 5.2: Determination of the consistency of fresh mortar with the consistometer (reference method) Section 5.3: Determination of the consistency of fresh mortar with the flow table (alternative method) Section 6: Determination of water retention capacity Section 7.2: Determination of air content; Pressure balance method
DIN EN 445 2008-01	Grout for prestressing tendons – Test methods
DIN EN 450-1 2012-10	Fly ash for concrete – Part 1: Definition, specifications and conformity criteria Section 5.3.2: Determination of the activity index Section 5.3.5: Determination of initial set after

DIN EN 932-1 1996-11	Test for general properties of aggregates – Part 1: Methods for sampling
DIN EN 933-10 2009-10	Tests for geometrical properties of aggregates – Part 10: Assessment of fines – Grading of filler aggregates (air jet sieving)
DIN EN 1097-5 2008-06 and Corrigendum 1 2008-09	Tests for mechanical and physical properties of aggregates – Part 5: Determination of the water content by drying in a ventilated oven
DIN EN 1097-7 2008-06 and Corrigendum 1 2008-09	Tests for mechanical and physical properties of aggregates – Part 7: Determination of the particle density of filler – Pyknometer method
DIN EN 12350-2 2009-08	Testing fresh concrete – Part 2: Slump test
DIN EN 12350-3 2009-08	Testing fresh concrete – Part 3: Vebe test
DIN EN 12350-4 2009-08	Testing fresh concrete – Part 4: Degree of compactability
DIN EN 12350-5 2009-08	Testing fresh concrete – Part 5: Flow table test
DIN EN 12350-6 2011-03	Testing fresh concrete – Part 6: Density
DIN EN 12350-7 2009-08	Testing fresh concrete – Part 7: Air content – Pressure methods
DIN EN 12390-3 2009-07 and Corrigendum 1 2011-11	Testing hardened concrete – Part 3: Compressive strength of test specimens
DIN EN 12390-5 2009-07	Testing hardened concrete – Part 5: Flexural strength of test specimens
DIN EN 12390-6 2010-09	Testing hardened concrete – Part 6: Tensile splitting strength of test specimens

DIN EN 12390-7 2009-07	Testing hardened concrete – Part 7: Density of hardened concrete
DIN EN 12390-8 2009-07	Testing hardened concrete – Part 8: Depth of penetration of water under pressure
DIN EN 12390-13 2014-06	Testing hardened concrete – Part 13: Determination of secant modulus of elasticity in compression
DIN EN 14651 2017-12	Test method for metallic fibre concrete – Measuring the flexural tensile strength (limit or proportionality (LOP), residual)
DIN EN 14790 2017-05	Stationary source emissions – Determination of the water vapour in ducts – Standard reference method
DIN EN 15167-1 2006-12	Ground granulated blast furnace slag for use in concrete, mortar and grout – Part 1: Definitions, specifications and conformity criteria Section 5.3.2.2: Determination of time to initial set Section 5.3.2.3: Determination of the activity index
DIN EN 15414-3 2011-05	Solid recovered fuels – Determination of moisture content using the oven dry method – Part 3: Moisture in general analysis sample
DIN 1048-1 1991-06	Test method for concrete, fresh concrete, fresh concrete temperature
DIN 1048-5 1991-06	Test method for concrete, modulus of elasticity
DIN 1048-5 1991-06	Test method for concrete, hardened concrete, specially prepared test specimens, moisture content
DIN 1048-5 1991-06	Test method for concrete, hardened concrete, specially prepared test specimens, impermeability to water
DIN 51718 2002-06	Testing of solid fuels – Determination of the water content and the moisture of analysis sample, method B
DIN 51904 2012-11	Testing of carbonaceous materials – Determination of water content – Solid matters

DIN 66133 1993-06	Determination of pore volume distribution and specific surface area of solids by mercury intrusion
DIN CEN/TS 12390-9 2017-03	Testing hardened concrete – Part 9: Freeze-thaw resistance with de-icing salts – Scaling
DIN Technical Report CEN/TR 15177 2006-06	Testing the freeze-thaw resistance of concrete – Internal structural damage Section 7: Beam test Section 9: CIF method
DAfStb Heft 422 1991	Testing of concrete, recommendation and notes as a supplement to DIN 1048 – Duration of the ultrasonic pulse – Resonance frequency – Determination of carbonation depth
DAfStb Alkali-Richtlinie 2007-02	DAfStb guideline – Preventive measures against harmful alkali reaction in concrete (alkali guideline) – Broken alkali sensitive aggregates Annex A: Mortar quick test (alternative method)
DAfStb Alkali-Richtlinie 2013-10	DAfStb guideline – Preventive measures against harmful alkali reaction in concrete (alkali guideline) – Broken alkali-sensitive aggregates Annex B.1: Quick test method (reference method) Annex B.2: Concrete test with mist chamber storage (40 °C) Annex C: Concrete test at 60 °C
DAfStb-Richtlinie BUmwS, March 2011 edition	DAfStb guideline on concrete construction when handling substances hazardous to water (BUmwS) Annex A.2 Ingress of water-polluting substances into non-cracked concrete, determination of the penetration depth of water-polluting substances
BAW leaflet on chloride penetration resistance 2012 edition	BAW leaflet on chloride penetration resistance of concrete, chloride penetration resistance of concrete, chloride migration test
NT BUILD 492 1999-11	Chloride migration test in accordance with NT BUILD 492
DIN EN 480-11:2005	Determination of air void characteristics in hardened concrete
DAfStb Heft 422: 1991	Determination of air void characteristics in hardened concrete – Microscopic air void analysis (1981 version)

Physical-technological testing – in-house methods

In-house method A-04-002 2016-11	60 °C concrete test without alkali supply
In-house method A-04-001 2016-11	60 °C concrete test with alkali supply
In-house method A-07-004 2014-02	Determination of grain-size distribution of fine-grained substances with the air jet sieve machine
In-house method A-07-006 2011-12	Determination of grain-size distribution of fine-grained substances with the tower sieve machine
In-house method A-07-007 2012-02	Determination of grain-size distribution of powdery substances with the laser diffraction spectrometer (CILAS)
In-house method A-10-001 2011-05	Determination of sieve residue and production of grain fractions
In-house method A-10-025 2006-02	Determination of initial set with the "ToniSET" machine
In-house method A-10-034 2014-01	Determination of fineness with the Blaine machine "Dyckerhoff system"
In-house method A-10-047 2011-11	Fineness of fly ash for concrete in accordance with test methods for geometric properties of aggregates as per DIN EN 933-10
In-house method A-14-034 2016-01	Testing of the sulphate resistance of cement using the Wittekindt, SVA and CEN methods

Abbreviations used:

BAW	Bundesanstalt für Wasserbau (Federal Waterways Engineering and Research Institute)
DAfStb	Deutscher Ausschuss für Stahlbeton (German Committee for Structural Concrete)
DIN	Deutsches Institut für Normung e.V. (German Institute for Standardisation)
EN	European standard
NT	Nordtest