

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

SABIC Polyolefine GmbH
Qualitätssicherung Labor und Technikum
Pawiker Straße 30, 45896 Gelsenkirchen

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

mechanical tests, structure analyses as well as determination of the thermal, rheological and optical properties of polymers on tubes, granulates, plates and other plastic specimens

The accreditation certificate shall only apply in connection with the notice of accreditation of 13.11.2014 with the accreditation number D-PL-18513-01 and is valid until 12.11.2019. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 5 pages.

Registration number of the certificate: **D-PL-18513-01-00**

Berlin, 20.01.2015

signed Ralf Egner
Head of Division

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

See notes overleaf.

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-18513-01-00 according to DIN EN ISO/IEC 17025:2005

Period of validity: 13.11.2014 to 12.11.2019

Date of issue: 20.01.2015

Holder of certificate:

SABIC Polyolefine GmbH
Qualitätssicherung Labor und Technikum
Pawiker Straße 30, 45896 Gelsenkirchen

Tests in the fields:

mechanical tests, structure analyses as well as determination of the thermal, rheological and optical properties of polymers on tubes, granulates, plates and other plastic specimens

Abbreviations used: see last page

Within the given testing field marked with *), the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the following the free choice of standard or equivalent testing methods. The listed testing methods are exemplary. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

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.

1 Static tests

ISO 16770
2004-02 Plastics - Determination of environmental stress cracking (ESC) of
polyethylene - Full-notch creep test (FNCT) *

DIN EN ISO 75-2
2013-08 Plastics - Determination of temperature of deflection under load -
Part 2: Plastics and ebonite

Annex to the accreditation certificate D-PL-18513-01-00

DIN EN ISO 306 2014-03	Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST)
DIN EN ISO 1167-1 2006-05	Polyolefin pipes for the conveyance of fluids - Determination of resistance to crack propagation - Test method for slow crack growth on notched pipes
DIN EN ISO 13479 2010-01	Polyolefin pipes for the conveyance of fluids - Determination of resistance to crack propagation - Test method for slow crack growth on notched pipes *
ASTM D 5397 2007	Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile - Load Test *

2 Mechanical tests

DIN EN ISO 178 2013-09	Plastics - Determination of flexural properties
DIN EN ISO 179-1 2010-11	Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test *
DIN EN ISO 180 2013-08	Plastics - Determination of Izod impact strength
DIN EN ISO 527-1 2012-06	Plastics - Determination of tensile properties - Part 1: General principles *

Applicable standards for the determination of tensile properties

ISO/DIS 18488 2014-06	Polyethylene (PE) materials for piping systems - Determination of Strain Hardening Modulus in relation to slow crack growth - Test method
DIN EN ISO 527-2 2012-06	Plastics - Determination of tensile properties - Part 2: Test conditions for moulding and extrusion plastics *

3 Rheological tests

DIN EN ISO 1133-1
2012-03 Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics - Part 1: Standard method *

4 Thermal analysis

DIN EN ISO 11357-1
2010-03 Plastics - Differential scanning calorimetry (DSC) - Part 1: General principles

DIN EN ISO 11357-6
2013-04 Plastics - Differential scanning calorimetry (DSC) - Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) *

DIN EN ISO 15512
2009-10 Plastics - Determination of water content

5 Optical properties

DIN EN ISO 11664-4
2012-06 Colorimetry - Part 4: CIE 1976 L*a*b* Colour space

6 Artificial irradiation test

DIN EN ISO 4892-3
2014-02 Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps

7 Crack propagation test of finished parts

DIN EN ISO 13477
2008-06 Thermoplastics pipes for the conveyance of fluids - Determination of resistance to rapid crack propagation (RCP) - Small-scale steady-state test (S4 test)

8 Structural analyses

ISO 6964 1986-12	Polyolefin pipes and fittings - Determination of carbon black content by calcination and pyrolysis - Test method and basic specification *
ISO 13320 2009-10	Particle size analysis - Laser diffraction methods
ISO 18553 2002-03	Method for the assessment of the degree of pigment or carbon black dispersion in polyolefin pipes, fittings and compounds *
DIN EN ISO 1183-1 2013-04	Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method *
DIN 51418-1 2008-08	X-ray spectrometry - X-ray emission- and X-ray fluorescence analysis (XRF) - Part 1: Definitions and basic principles
DIN 51418-2 1996-09	X-ray spectrometry - X-ray emission- and X-ray fluorescence analysis (XRF) - Part 2: Definitions and basic principles for measurements, calibration and evaluation of results

Flexible scope of category I

table 1: Flexibility regarding of performance of the testing methods				
type of test	measuring quantity/test parameter	test range	measurement uncertainty ¹	applicable standard test method
environmental stress cracking (Full Notch Creep Test, FNCT)	length <i>dimension</i> length <i>notch depth</i> temperature mass	10 - 15 mm 1,5 – 1,7 mm 80°C 0 - 6,0 kg	≤ 0,01 mm ≤ 0,005 mm ≤ 1 K ≤ 0,09 g	ISO 16770
Impact resistance, Charpy-impact tests	temperature temperature length <i>dimension</i> length <i>span</i>	-30°C 23°C 3 – 11 mm 60 - 65 mm	≤ 1 K ≤ 2 K ≤ 0,01 mm ≤ 0,01 mm	DIN EN ISO 179-1
melting flow properties (melting flow index, MFI)	melt mass-flow rate (MFR)	0 – 70 g/10 min	< 0,035 g/10min	DIN EN ISO 1133
environmental stress cracking (Notched Constant Tensile Load Test, NCTL)	length <i>dimension</i> temperature length <i>notch depth</i> mass	1 - 7 mm 60°C 1,80 – 2,20 mm 0 - 7,0 kg	≤ 0,01 mm ≤ 1 K ≤ 0,01 mm ≤ 0,09 g	ASTM D 5397
thermal stability (Oxidation Induction Time, OIT)	temperature time	180 -250 °C 20 – 80 min	≤ 0,2 K ≤ 0,01 min	ISO 11357-6

type of test	measuring quantity/test parameter	test range	measurement uncertainty ¹	applicable standard test method
pigment or carbon black dispersion	length <i>particle</i>	0 – 100 µm	≤ 1 µm	ISO 18553
crack propagation in Notched pipes	length	≤ 110 mm	≤ 0,03 mm	DIN EN ISO 13479
	<i>circumference</i>			
	length <i>thickness</i>	≤ 11 mm	≤ 0,01 mm	
	temperature	80°C	≤ 1 K	
	pressure	8,0 – 9,2 bar	≤ 0,5 %	
carbon black content by calcination	length <i>notch depth</i>	2,0 – 2,5 mm	≤ 0,01 mm	ISO 6964
	temperature	550 °C bzw. 900°C	≤ 1 K	
density	mass <i>sample rate</i>	0 – 1,1 g 100 ml/min	≤ 0,0005 g ≤ 2 %	DIN EN ISO 1183-1
	temperature	23°C	≤ 2 K	
tensile test	mass <i>sample</i>	0 – 3,0 g	≤ 0,0005 g	DIN EN ISO 527-2
	force	0 - 1500 N	≤ 1,0 %	
	length (bar)	0 - 25 mm	≤ 1,0 %	
	length <i>Lo</i>	50 mm	≤ 0,01 mm	
	length <i>dimension</i>	3 – 11 mm	≤ 0,01 mm	
	temperature	30°C – 120°C	≤ 1 K	
Young`s modulus	temperature	23°C	≤ 2 K	
	force	0 - 500 N	≤ 1,0 %	
	length (strain)	0 – 0,2 mm	≤ 1,0 %	

¹ The expanded uncertainty of measurements enclosure a probability of 95 % and a coverage factor of k = 2. Uncertainties without the SI-units belong to the measurand reparative values.

Abbreviations used:

ASTM	American Society for Testing and Materials
EN	European Standard
ISO	International Organization for Standardization
DIN	German Institute for Standardization