

TEST REPORT

No. 2430713/25 dated 12.05.2015



Stobitan® P 16 mm

Type of Testing:

Performance testing of a synthetic surface in accordance with DIN 18035-6:2014-12, the German standard for *Sports grounds – Part 6: Synthetic surfaces*

Applicant:

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2430713

The Institut für Sportstättenprüfung is an DIN EN ISO / IEC 17025:2005 accredited testing laboratory, by the German accreditation body DAkkS GmbH. The accreditation covers the test methods listed in the accreditation certificate.

Assessments and interpretations are not subject to the accreditation.

The test report includes 8 pages. Reproduction and publication of this document in shortened text and the use of advertising is permitted only with the written approval of the ISP.

The test results relate only to the tested measurement points.

1. Sample Description

The tested synthetic surface “Stobitan® P 16 mm” was a 2-layer synthetic surface manufactured and submitted by Stockmeier Urethanes GmbH & Co KG, Lemgo (Germany)
(surface type B according to annex A, table A.1 of EN 14877:2013)

The following samples have been delivered to the ISP by the applicant

2430713/4 Synthetic surface: **Stobitan® P 16 mm***
Sample dimensions:
2 samples 1.0 x 1.0 m each (received on 17.01.2014)

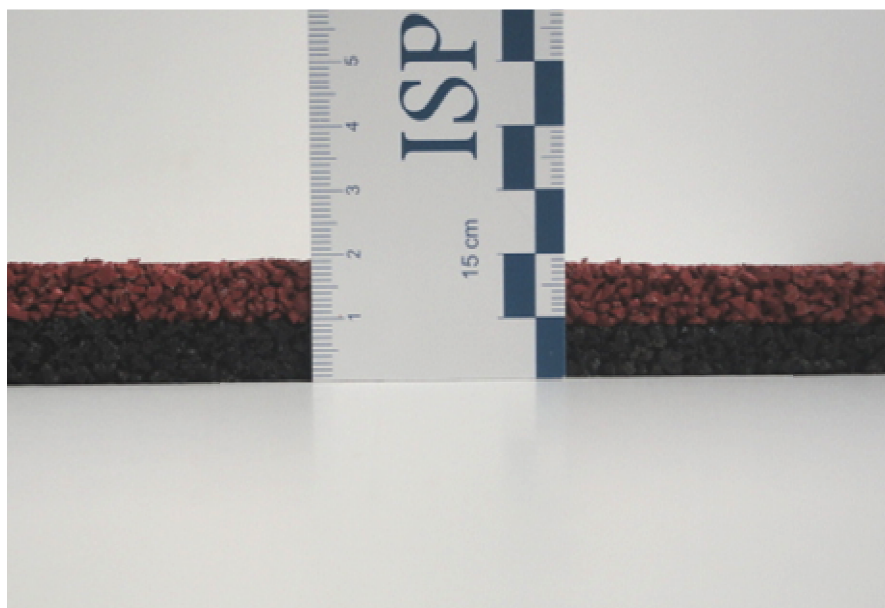
Surface: flat, smoothed

Top layer: approx. 8 mm
PUR-bound (Stobi elast S 131 / S 133 / S 135) EPDM
granules, red
(grain size 1 – 4 mm)

Bottom Layer: approx. 8 mm
PUR-bound (Stobi elast S 131 / S 133 / S 135) with
recycling rubber granules, black
(grain size 1 – 4 mm)

Overall thickness: approx. 16 mm

* All additional samples and data are stored in the ISP.



2. Test Procedure

The performance testing was carried out in accordance with DIN 18035-6:2014-12, the German standard for Sports grounds – Part 6: Synthetic surfaces.

The performance testing of the synthetic surface was carried out between the 17.01.2014 and the 30.06.2014.

Partial tests were carried out by the EN ISO/IEC 17025 accredited test institute of KIWA ISA Sport. The results were implemented in this report. All original reports are stored in the ISP archive.

All remaining tests were conducted by the ISP staff.

The test conditions of 23/50-2 meet the requirements of DIN EN ISO 291:2008-08.

All relevant test information e.g. technician, date of testing, conditioning period and test conditions were recorded and stored in the ISP archive.

3. Test Results

The test results were recorded according to the requirements of DIN 18035-6:2014. The following tables show the results of the performance and material characteristics testing.

3.1 Performance

3.2 Material Characteristics

3.3 Material Properties

3.4 Describing Characteristics

3.5 Environmental Requirements

3.1 Performance (Multi Sports Facilities)

In accordance with table 1 of DIN EN 14877:2013-12

Property	Test method	Testing conditions		Requirement	Results (Mean value)
Friction	EN 13036-4	(23 ± 2) °C	dry wet	80 to 110 55 to 110	83 57
Force reduction	EN 14808	(23 ± 2) °C	dry	25 to 70 %	51 %
		After accelerated aging			54 %
Vertical deformation	EN 14809	(23 ± 2) °C	dry	≤ 6 mm	2.6 mm
Vertical ball behavior	EN 12235	(23 ± 2) °C	dry	≥ 85 %	101 %

3.2 Material Characteristics (Multi Sports Facilities)

In accordance with table 1 of DIN EN 14877:2013-12

Property	Test method	Testing conditions		Requirement	Results (Mean value)
Water permeability	EN 12616	(23 ± 2) °C	---	≥ 150 mm/h	8172 mm/h
Resistance to wear	EN ISO 5470-1	(23 ± 2) °C	Not aged	≤ 4,0 g	1.60 g
		After artificial weathering			1.82 g
Color loss	EN ISO 20105-A02	After artificial weathering		≥ 3	4
Tensile properties	EN 12230	Not aged		Tensile strength ≥ 0.4 MPa	0.42 MPa
		After accelerated aging (23 ± 2) °C			0.41 MPa
				Elongation at break ≥ 40 %	54 %
Absolute thickness	EN 1969 (Method A)	(23 ± 2) °C		≥ 7 mm	16.0

3.3.1 Material Properties (Liquid Component, Base Layer)

In accordance with table 7 of DIN 18035-6:2014-12

Property	Result	Test Method
Product Name	Stobi elast S 135.00	-
Extraction	< 0.5 % ^a	ISO 1407
IR-absorption	deposited at ISP	DIN 51451
NCO-content ^b	9.5 – 10.5 % (Polyisocyanate)	DIN EN ISO 11909
OH-content ^b	–	DIN 53240-2
Water content ^b	–	DIN 51777-1
Non-volatile part ^c	98.5 – 99.5	DIN EN ISO 3251
Polymer content	–	DIN EN ISO 11358
^a Extraction with ethanol, n-hexane or other suitable solvents ^b After removal of colouring materials if necessary ^c After storing for 3 h at 105°C if necessary		

3.3.2 Material Properties (Infill Granules)

In accordance with 7 of DIN 18035-6:2014-12

Property	Result	Test Method
Product Name	GEZOFLEX EPDM rubber granules 062.1030	-
extraction	approx. 12 % ^a	ISO 1407
IR-absorption	deposited at ISP ^a	DIN 51451
Polymer content	20.4 %	DIN EN ISO 11358
^a Extraction with ethanol, n-hexane or other suitable solvents		

3.4.1 Describing Characteristics (Liquid Component, Base Layer and Bulk Layer)

In accordance with table 8 of DIN 18035-6:2014-12

Property	Result	Test Method
Product Name	Stobi elast S 135.00	-
Material type	Polyurethane-Prepolymer	-
Outer appearance	yellowish – brown liquid	-
Density or Bulk density	1.08 g/cm ³ , mixture	DIN EN ISO 2811-1, DIN ISO 697 or DIN EN ISO 60
Viscosity	3250 mPas (at 20 °C)	DIN 53019-1

3.4.2 Describing Characteristics (Base Layer Granules)

In accordance with table 8 of DIN 18035-6:2014-12

Property	Result	Test Method
Product Name	Rubber granules (recyclate)	-
Material type	SBR – rubber granules	-
Outer appearance	black, cut	-
Density or Bulk density	approx. 550 g/l	DIN EN ISO 2811-1, DIN ISO 697 or DIN EN ISO 60
Grain size distribution	Grain size 1 - 4 mm oversize < 1 % / undersize < 1 %	DIN EN 933-1

3.4.3 Describing Characteristics (Bulk Layer)

In accordance with 8 of DIN 18035-6:2014-12

Property	Result	Test Method
Product Name	GEZOFLEX EPDM rubber granules	-
Material type	EPDM – rubber granules	-
Outer appearance	red, cut	-
Density or Bulk density	1.59 g/cm ³	DIN EN ISO 2811-1, DIN ISO 697 or DIN EN ISO 60
Grain size distribution	Grain size 1 - 4 mm oversize < 2 % / undersize < 2 %	DIN EN 933-1
Stability	Tensile strength: approx. 5.3 N/mm ² Elongation at break: 650 % E-module: approx. 1.4 N/mm ²	DIN 53504
Shore-A-Hardness	62 ± 5 (Coat thickness approx. 6 mm)	DIN ISO 7619-1

3.5 Environmental Requirements

In accordance with table A.1 of DIN 18035-6:2014-12

Property	Requirement	Detection limit ^e	Result ^f	Test	
				Extract-/Eluate-extraction according to	Analytic method
DOC	≤ 50 mg/l ^a ≤ 100 mg/l ^a	3 mg/l	12.5 mg/l	7.1.2 and 7.1.3	7.1.5
EOX	≤ 100 mg/kg	5 mg/kg	< 5 mg/kg	7.1.4.2	7.1.4.3
Lead (Pb)	< 0.025 mg/l	0.002 mg/l	< 0.002 mg/l	7.1.2	7.1.6
Cadmium (Cd)	≤ 0.005 mg/l	0.0002 mg/l	< 0.0002 mg/l	7.1.2	7.1.6
Chrome (Cr) total	≤ 0.05 mg/l	0.001 mg/l	< 0.001 mg/l	7.1.2	7.1.6
Chrome VI (CrVI)	≤ 0.008 mg/l ^b	0.008 mg/l	< 0.008 mg/l	7.1.2	7.1.6
Mercury (Hg)	≤ 0.001 mg/l	0.001 mg/l	< 0.001 mg/l	7.1.2	7.1.6
Zinc (Zn)	≤ 0.5 mg/l ^c ≤ 1.0 mg/l ^c	0.004 mg/l	0.07 mg/l	7.1.2 and 7.1.3	7.1.6
Tin (Sn)	≤ 0.04 mg/l	0.02 mg/l	< 0.02 mg/l	7.1.2	7.1.6
Smell	Describe	-	typical	-	-
Outer appearance	Describe	-	red / black	-	-
Chlorinated paraffines	To determine ^d	15 mg/kg	Not detectable	7.1.7.1 and 7.1.7.2	7.1.7.1 and 7.1.7.2
Phthalates	To determine ^d	15 mg/kg	Not detectable	7.1.8	7.1.8

a DOC concentrations, which in aqueous 24-h eluate (prepared according to 7.1.2) exceed 100 mg/l fail to meet the requirements (knock-out criterion). In the event that the DOC concentrations in the 24-h eluate is in the range 50 mg/l to 100 mg/l, can be used for assessing compliance with the 50 mg / l criterion be used for DOC in the eluate 48h (prepared according to 7.1.3)

b As the standard method uses spectrophotometry (see DIN 38405-24) or ion chromatography (see DIN EN ISO 10304-3) only CrVI concentrations of ≥ 0.05 mg/l can be detected. Therefore only concentrations of ≤ 0.008 mg/l meet the requirements. If that is not possible, CrVI-concentrations of ≤ 0.008 mg/l are to be determined with not standardized methods.

c Zinc content in the aqueous eluate 24 (prepared according to 7.1.2) that exceed 1 mg/l do not meet the requirements (KO criterion). In the event that the zinc concentrations in 24-h eluate are in the range of 0.5 mg/l to 1 mg/l, the 0.5 mg/l criterion for zinc in 48 h eluate (prepared according to 7.1.3) can be used.

d Currently there are no limits for chlorinated paraffines and phthalates. The concentrations should be determined to Experience collection.

e Determination limits according to DIN 32645

f Test Report No.:114021243, chemical Laboratory Dr. Stegemann

4. Conclusion

The evaluation is based on the requirements of DIN EN 14877:2013 the European standard for synthetic surfaces for outdoor sports areas – Specification and DIN 18035-6:2014-12, the German standard for Sports grounds – Part 6: synthetic surfaces.

The tested synthetic surface **Stobitan® P 16 mm** fully meets the requirements for the **classification SA 45 to 70**, in accordance with DIN EN 14877:2013 and DIN 18035-6:2014.

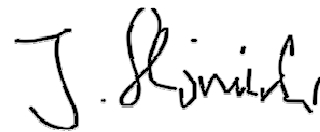
END OF THE REPORT

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Bad Laer, 12.05.2015



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