

Testing Artificial Turf DIN - EN - FIFA2006

	A	B	C	D	E	F	G
1	Prüfung von Kunststoffrasen-Belägen und -Flächen						
2	<b>Testing + Requirements</b>						
3	<b>Layer</b>	<b>Property</b>	<b>DIN 18035-7 Soccer</b>	<b>EN 15330 Soccer</b>	Test Procedures EN + FIFA	<b>FIFA 2006</b>	
4	Remarks		Index O = to be determined/declared	Index O = to be determined/declared	Test Procedures EN + FIFA	** = 2 Star Systems testing dry + wet * = 1 Star Systems testing dry only 1) only 1st drop relevant Requirements before + after Treatment	FIFA Testing Index
5	Sub-base	Load Capacity Permeability Slope Level Evenness	Deformation Modulus Infiltration Rate Slope in % Deviation from nominal Height Gap underneath Straight Edge			Tagfähigkeit : Hinweis	
6	Filter Layer	Particle Size :	Filter Rule				
7		Thickness	Content < 0.063mm				
8	Unbound Supporting Layer	Resistance to Frost	Individual Particles				
9		Particle Size :	Content <0.063mm				
10		Thickness	Thickness				
11		Compaction	Degree of Compaction				
12		Permeability	Infiltration Rate				
13		Slope	Slope				
14		Level	Deviation from nominal Level				
15	Evenness	Gap underneath Straight Edge					
16	Bound Supporting Layer	same as Unbound Supporting Layer +					
17	Binder		Type				
18	Curbings		Deviation from nominal Level				
19							

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20	Elastic Layer	Thickness	In-Place-Install: min. 25mm Elastic Supporting Layer 35mm otherwise as necessary for meeting Shock Absorption Requirement			see below	
21		Tolerance of Thickness	In-Place-Installation on top of unbound Supporting Layer: tolerance max. ±10mm at max. 10% of Measuring Locations In-Place-Installation on top of bound Supporting Layer: ±15% Roll Layer: ±1 mm Elastic Layers: Average of all Measuring Locations min. 35mm				
22		Strength	Tensile Strength min. 0.08 (0.1) N/mm <sup>2</sup>			see below	
23		Permeability	Permeability Coefficient min. 0.002 cm/s				
24	Synthetic Turf System	Give	Force Reduction 45 - 70%	Shock Absorption (Force Reduction) 55 - 70%	<a href="#">EN 14808</a>	Shock Absorption ** 60 - 70 % ** 60 - 70 % @ -5°C <sup>1)</sup> * 55 - 70 %	O+1+2
25				Deformation w/o catching drop weight 4 - 10 mm	<a href="#">EN 14809</a>	Deformation catching drop weight ** 4 - 8 mm * 4 - 9 mm	w/ O+1+2
26		Vertical Ball Rebound	max. 90%	Vertical Ball Rebound Δt=0 45 - 75 %	<a href="#">EN 12235</a>	Vertical Ball Rebound Δt=0.025 ** 0.60-0.85m ≈44-63% * 0.60-1.0m ≈44-74%	O+1+2
27		Linear Friction			FIFA	Stud Slide Value ** 130 - 210 * 120 - 220	O+1+2
28					FIFA	Stud Acceleration Value ** 3.0 - 5.5 g * 3.0 - 6.0 g	O+1+2
29		Horizontal Ball Rebound			FIFA	Horizontal Ball Rebound ** dry 45-60% ** wet 45-80% * dry 45-70% * wet 45-80%	O+1+2
30	Permeability	Permeability Coefficient min. 0.002 cm/s	Infiltration Rate min. 0.005 cm/s = 180mm/h	<a href="#">EN 12616</a>	Infiltration Rate min. 0.005 cm/s = 180mm/h	O+1+2	

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31	Synthetic Turf Layer/Carpet	Ballroll Distance		Ball Roll Distance 4 - 10 m	<a href="#">EN 12234</a>	Ballroll Distance ** 4 - 8 or 10 m (Index2) * 4 - 10 m	O+1+2	
32		Rotational Resistance		25-50 Nm	<a href="#">EN 15301</a>	** 30 - 45 Nm * 25 - 50 Nm	O+1+2	
33		Burning Behaviour	Flame Progress when ignited with Alcohol				Hint	
34		Skin-Surface-Friction				FIFA	Sliding Coefficient ** 0,35 - 0,75	O
35		Skin Abrasion				FIFA	Abrasion Skin ** ± 30 %	O
36		Shrink	after Heat and Humidity Treatment max. 1%					
37					Non-filled Surfaces: max. 2% Loss with Taber Test H18/1000g/2000U	<a href="#">EN 13672</a>		
38		Layer: Abrasion/Wear	Decrease of Shock Absorption after Wear Test (Cycle Test) ΔFR < 10%		Surfaces w/ and w/o Infill: Treatment with Lisport Device: then testing of Shock Absorption, Ball Rebound and Rotational Resistance; Requirements same as non-treated Surface	<a href="#">EN 15306</a>	Surfaces w/ Infill: Treatment with Lisport Device: then testing of Shock Absorption, Ball Rebound and Rotational Resistance; Requirements same as non-treated Surface	O
39		Pile Layer : Aging	Change of Colour Greyscale min. Class 4 and Increase of Melting Index (req.: <100%) or Decrease of Viscosity Index (req.: <50%) of Pile Fibres after 6 Month UV Exposure (Xenon)		Change of Colour and Strength after about 4 Month QUV-A Exposure: Grey Scale min. Class 4	<a href="#">EN 14836</a>	Change of Colour and Strength after about 4 Month QUV-A Exposure: Grey Scale min. Class 3	O
40		Compatibility Pile Fibres / Elastomeric Infill	Contact Diffusion : Exposure to Xenon Light dry 2.5 Month; Verbal Description of Changes of Colour and Strength				-----	
41		Pile Fibres: Aging			Tensile Strength min. 50 % after about 4 Month QUV-A Exposure Change of Colour Greyscale min. Class 4	<a href="#">EN 14836</a>	Tensile Strength min. 50 % after about 4 Month QUV-A Exposure Change of Colour Greyscale min. Class 3	O

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42	Infill Granules	Elastomeric Infill: Abrasion	Loss of Material max. 700 mm <sup>3</sup>				
43		Elastomeric Infill: Aging	only EPDM-Films: Exposure 7 days @ 100°C; <a href="#">Change of Strength</a> < 10% <a href="#">of Elongation @ Break</a> ≤ 20 % <a href="#">of Colour</a> Greyscale min. Class 4		EN 14836	after about 4 Month QUV-A Exposure <a href="#">Change of Colour</a> Greyscale min. Class 3	O
44		Mineral Infill: Particle Size	Particle Size Range 0.25/1.25mm Particle Shape min. rounded Content <0.063mm max. 2% Content of Lime 3 % Content of Water max. 0.5 %	see below	<a href="#">EN 933-1</a>	see below	
45		Elastomeric Infill: Particle Size	Particle Size 0.5 - 4.0 mm Particle Shape cubic Content <0.5mm max. 1 %	see below	<a href="#">EN 933-1</a>	see below	

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46	Synthetic Turf Pitch	Slope				≤ 2% @ any plane	1	
47		Level						
48		Evenness	Gap underneath 4m Straight Edge max. 10mm	Gap underneath 3m Straight Edge max. 15mm	<a href="#">EN 13036-7</a>	Gap underneath 3m Straight Edge max. 10mm	1	
49								
50	<b>Product Identification</b>							
51								
52	Pile Fibres	Type	O				O + 1	
53		Structure	O				O + 1	
54		Identification by DSC		O		ISO 11357-3	same Polymer	O + 1
55		Thickness						O
56		Width						O
57		Weight [detex]	O					
58		Length	O	O		ISO 2549	Deviation ≤5% from FIFA Lab Report	O + 1
59	Design of Artificial Turf Layer	Type	O				O	
60		Materialart	O				O	
61		Tuft System (gauge + stitch)		O		ISO 1763		O + 2
62		Weight per unit area	O	O		ISO 8543	Deviation ≤10% from FIFA Lab Report	O
63		Tufts per unit area	O	O		ISO 1763	Deviation ≤10% from FIFA Lab Report	O+1+2
64		Weight of Pile Layer per unit area	O			ISO 8543	Deviation ≤10% from FIFA Lab Report	O + 1
65		Height of Pile layer	O					2
66		Tuft Withdrawal Force		O		<a href="#">ISO 4919</a>	min. 90% of Manufacturer's Declaration	O + 1
67		Perforation of Backing	O					
68		Joint Strength Bonded				<a href="#">EN 12228</a>	≥ 25N/100mm	O
69		Joint Strength stitched				<a href="#">Meth. 1/2 + EN 13744</a>	≥ 1000N/100mm	O

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70	Elastomeric Infill Granules (Performance)	Type of Material	O	O			O
71		Amount per unit area	O	O			O
72		Height of Infill	O				O
73		Thermo-gravimetric Analysis: % organic / inorganic					O
74		Remaining Compression				FIFA	O
75		Particle Size		O		<a href="#">EN 933-1</a>	O + 1
76		Particle Shape		O		<a href="#">EN 14955</a>	O + 1
77		Bulk Density		O		<a href="#">EN 13041</a>	Deviation ≤15% from FIFA Lab Report O + 1
78	Infill Granules P+S	Height of Infill P + S					O
79		Particle Size largest sieve retaining at least 10% of infill				<a href="#">EN 933-1</a>	2
80	Stabilizing Infill Granules	Tape of Material					O
81		Amount per unit area		O			O
82		Height of Infill					O
83		Particle Size	O	O		<a href="#">EN 933-1</a>	O + 1
84		Particle Shape	O	O		<a href="#">EN 14955</a>	ähnliche Form O + 1
85	Bulk Density		O		<a href="#">EN 13041</a>	Deviation ≤15% from FIFA Lab Report O + 1	
86	Turf Backing	Primary Backing: Type					O
87		Primary Backing : Weight					O
88		Secondary Backing: Type					O
89		Secondary Backing: Weight					O
90	Joint Design	Type					O
91		Seam Tape: Type + Width					O
92		Adhesive Type					O
93		Adhesive: Amount					O

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94	Elastic Layer	Composition (Type, Material, Binder Content etc.)	O	O		O	O
95		Extraction + IR-Analysis Granules + Binder	O				
96		NCO Content	O				
97		Thermo-gravimetric Analysis: % organic / inorganic	O				
98		Viscosity MPa	O				
99		Strength Binder Film	O				
100		Thickness	O	O	<a href="#">EN 1969</a>	min. 90% of Reference Sample (FIFA Lab Report)	O
101		Bulk Density	O	O	<a href="#">EN 430</a>		O
102		Shock Absorption	O		EN 14808	Deviation ≤ 5% from Reference Sample (FIFA Lab Report)	O + 1
103		Compression Modulus	O prefabricated rolls only		<a href="#">EN 604</a>		
104	Tensile Strength		O	<a href="#">EN 12230</a>	0.15 N/mm2	O	
105	Health + Environment	Toxicology					
106		Environmental Compatibility	UVP Concept based on Elution Tests of Heavy Metals				
107							
108	Control Testing (Acceptance Testing)	Field Testing	Force Reduction without Assignment of specific Test Locations; additional testing if necessary	All System Tests at Test Locations acc. To Layout; Retesting every 2-3 years requirements	5 no	All System Tests at Test Locations acc. To FIFA Layout; Retesting after year * 3 years	6 ** 1
109			Testing acc. To Index: Index 1 = Field test after Installation Index 2 = Retesting after 1 or 3 Years Index O = Lab Testing				