

FLEX SAND™

RUBBER COATED SAND



The Next Generation of Synthetic Turf Infill

FLEX SAND™ is a newly developed product for use as infill material in artificial grass. The product consists of special graded silica sand coated with a proprietary kind of rubber, and is developed in cooperation with Risø National Laboratory.

FLEX SAND™ is characterized by a smooth surface based on the shape of the grains and the special type of rubber which gives a high level of flexibility. Another advantage of **FLEX SAND™** is that it can be custom-coated in virtually any color that the customer requests.

Environmentally, **FLEX SAND™** is a big improvement as it is totally free from any pollution from heavy

metals. The specialty rubber is UV-resistant and does not become hard or break down during the years of use. **FLEX SAND™** eliminates dust derived from sand fracturing. It is also fire resistant, making it highly recommended as infill material for indoor arenas.

The product and the process are patented and the product name **FLEX SAND™** is registered.

Several sports functional tests have been performed at both ISA-Sport in The Netherlands and The Danish Technological Institute. Based on these tests, **FLEX SAND™** achieved excellent results in various synthetic grass constructions.



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Synthetic Grass Construction

Layers	Materials	Layer thickness	Color
Top layer	rubber/sand filler synthetic grass	± 50 mm	black/green
Composition of fill	option 1: sand (bottom)	± 20 mm	
	Flex Sand (top)	± 10 mm	
	option 2: Flex Sand	± 30 mm	
-	geotextile	-	white
Base	Lava/rubber (94% / 6%)	± 70 mm	brown/black
Sub base	sub base drain sand	-	-

Summary Results Various Constructions

Characteristics	Results				Standard isa-knvb2-15.2
	Mono-bench fibers		Fibrillated fibers		
	Option 1	Option 2	Option 1	Option 2	
Vertical deformation	10.1 mm	11.4 mm	11.2 mm	12.0 mm	8 - 15 mm
Shock absorption	53%	56%	53%	55%	55 - 70 %
Energy restitution	38%	40%	39%	39%	20 - 50 %
Friction (rotational)	47 Nm	43 Nm	45 Nm	38 Nm	30 - 60 Nm
Friction (linear)	0.75	0.72	0.74	0.70	0.50 - 0.80
Ball rebound (vertical)	0.87 m	0.86 m	0.82 m	0.73 m	0.60 - 1.00 m

Summary Results of Options 2 Before and After Simulation and Wear (mono-bench fibers)

Characteristics	Results		Standard isa-knvb2-15.2
	Before tread simulation	After tread simulation	
Vertical deformation	11.4 mm	9.8 mm	8 - 15 mm
Shock absorption	56%	52%	55 - 70 %
Energy restitution	40%	43%	20 - 50 %
Friction (linear)	0.72 / 0.72 (dry / moist)	0.75 / 0.75 (dry / moist)	0.50 - 0.80
Friction (rotational)	43 Nm	51 Nm	30 - 60 Nm
Ball rebound (vertical)	0.86 m	0.76 m	0.60 - 1.00 m

Danish Technological Institute, in situ test on existing outdoor sand filled 2. generation field in Copenhagen, Oct. 2003. The silica sand was replaced in 2 areas of 1x1 meter and one was filled with rubber granules and the other with Flex Sand™, both 22 mm (pile height 30mm). Test method, UEFA may 2003.

Properties	UEFA krav (1.test)	Testresults	
		Rubber granulate	Flex Sand™
Shock absorption	> 60 %	59, 58	64, 62
Vertical deformation	< 8 mm	6.2, 6.2	5.5, 5.4
Friction rotational	30 - 45 Nm	30, 30	36, 36
Ball rebound	60 - 85 cm	95, 95	60, 60

- Results of shock absorption and vertical deformation are average values from 2. and 3. measurement.

