

SYSTEM POLYFLEX PU - IN

Total thickness of 6mm – 16mm

CERTIFIED BY LABOSPORT



Indoor highly resilient sports flooring system ideal for multipurpose halls, gym floors, tennis, basketball, volleyball, handball, futsal courts, as well as any other indoor sports court. Combination of prefabricated shock-pads and polyurethane materials in 6mm – 16mm average total thickness.

Certified by LABOSPORT according to EN 14904.

Steps :

- 1. PU FLEX 140 - Special, polyurethane, two-component adhesive.** It is applied, with a V-notch trowel, on dry waterproof surfaces of concrete, without rising humidity issues or asphalt. Used for the application of ISOPOL 854 shock-pads or other prefabricated shock-absorbent rolls made from recycled rubber or EPDM.
- 2. ISOPOL 854 - Shock-pad in rolls.** Elastic, prefabricated shock-pad made of recycled rubber providing shock-absorbency, in thickness of 4mm up to 12mm. Used as cushion substrate before the application of polyurethane or acrylic systems.
- 3. POLYSPORT STUCCO 950 - Polyurethane, elastic, two-component pore filler.** Used for sealing porous prefabricated subfloor of sports floorings such as ISOPOL 854 or wet-pour cushion shock-pads. Applied by flat trowel.
- 4. POLYSPORT PU 951 - Polyurethane, self-leveling, two-component coat for indoor sports surfaces.** It is combined with ISOPOL 854 as substrate to create multi-purpose shock-absorbent resilient sports flooring systems. Pore-filling with POLYSPORT STUCCO 950 precedes its application. Applied by V-notch trowel and the parallel use of spiked roller.
- 5. POLYSPORT 952 - Polyurethane, aliphatic, two-component top coating for indoor sport floorings.**

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Applied, in two crossing layers by airless sprayer or short haired mohair roller.

Preparation – Application

Applied only on dry waterproof concrete surfaces (over 40 days old from date of placement) without rising humidity issues and free of materials that might prevent bonding e.g. dust, loose particles, grease etc. The success in the application depends on the right preparation of the underlay and use of the material.

- **Good, dry** cleaning of the surface from dust and residues with vacuum cleaner and squeegees.
- Application of polyurethane glue, **PU FLEX 140**, with V-notch trowel with 2mm teeth. Consumption: 1kg/m².
- Place the **ISOPOL 854** rolls on the floor in their final positions without gluing them. Lift each side of each roll and apply the PU glue by a V-notch trowel with 2mm teeth and then glue the rolls immediately without waiting. In case there are small bulges (humps, swollen parts) on the roll after its application, you'll have to tear it around the edge of the hump without removing it completely, raise that small part, put some PU glue underneath and glue the hump part again, making sure this time it's flat. Weights such as sand bags have to be used on the edges, corners and seams of the shock absorbent roll surface installation until the PU glue is cured. Then you let everything dry. Do not overlap the rolls but bring them as close together as possible to eliminate gaps. The usage of a light cylinder (10-15kg maximum) will help to compact the rolls on the floor. It is recommended that the joints (only) are covered flush with ELASTOTURF 851 or PU FLEX 140 with a flat trowel (or a brush) along their whole length, so that the surface is leveled out. Next day the joints are ground lightly with sandpaper or other grinding device to smooth out the joints with the rest of the surface and create the required roughness.
- Sealing of prefabricated surface porosity using elastic pore sealer **POLYSPORT STUCCO 950**. Care should be taken that the porosity of prefabricated subfloor should be totally covered using **POLYSPORT STUCCO 950** to avoid surface defects on the final surface of **POLYSPORT PU 951**. Consumption on prefabricated shock-pads: 0,8 kg per square meter in two layers.
- The next day, depending ambient temperature, follows application of **POLYSPORT PU 951**. Components A (resin) & B (hardener). The mixed material must be used within 20-30 minutes of mixing at 25°C. The polyurethane mixture is poured on the floor and spread using a V-notch trowel with 5-5.2mm teeth. Consumption: 2,2 kg per square meter for 1 layer.
- Following the application of **POLYSPORT PU 951**, the self-leveling layer should be rolled using a special spiky-roller in order to release any possibly entrapped air and avoid the formation of bubbles. Sanding of the surface should be done after drying.
- The next day, depending ambient temperature follows application of finishing paint **POLYSPORT 952 in 2 crossing layers by a short-haired mohair roller or even better by airless spray**. Consumption: 0,25 kg per square meter in 2 layers.

Important Remarks

- In case our sport systems **POLYFLEX PU-IN & WET-POUR POLYFLEX PU-IN** are going to be used for events like school gatherings, speeches or any other event apart from sport events (games, sport contest etc) then the surface needs to be protected with special modular portable flooring above 20mm thickness. Same is valid in case of weight lifting areas in gyms.
- During temperatures over 40 degrees, ideal time for the application of **POLYFLEX PU - IN SYSTEM** is between 22:00 and 09:00 and the minimum bearing temperature during application and drying should be over 10°C.
- In case the second layer of PU pore filler is applied after more than 24 hours of the application of the first one then the whole surface must be sanded by a special sanding machine. After that the second layer can be applied.
- In case the layer of PU self-leveling is applied after more than 24 hours of the application of the last layer of PU pore filler then the whole surface must be sanded by a special sanding machine. After that the PU self-leveling can be applied.
- In case the second layer of PU top coat is applied after more than 24 hours of the application of the first one then the whole surface must be sanded by a special sanding machine. After that the second layer can be applied.
- The freshly coated surface should be protected from high temperatures, wind, rain and frost for at least the first 24 hours.
- In case it gets damaged, it is simply repaired and recoated on the spot.

Substrate

Asphalt is the safer subfloor for sport floorings for sure and must be always preferred than concrete surfaces.

A. Asphalt Substrate

The asphalt must have a slope of 0.7-1% and must dry for at least 30 days so that all solvents from the asphalt can evaporate.

The asphalt sub-floor should be applied on well compacted 150mm road base sub-floor and asphalt should be laid in one layer (and not 2) in 6 to 8cm with fine and coarse aggregates (up to 15mm granulometry) like the kind of asphalt used in road construction.

So, new road-grade asphalt will have to be laid (minimum 60mm) in one layer containing coarse aggregates and then mature for 30 days at least, before any application takes place on top of the asphalt to avoid bubbles on the final layer of the sport or rubber floorings.

Asphalt Infrastructure

	Fine asphalt base in thickness of 6cm with very fine aggregates by finisher
	Asphalt primer
	Good compaction by vibration
	Fine gravel 10cm
	Gravel stone in thickness of 15cm

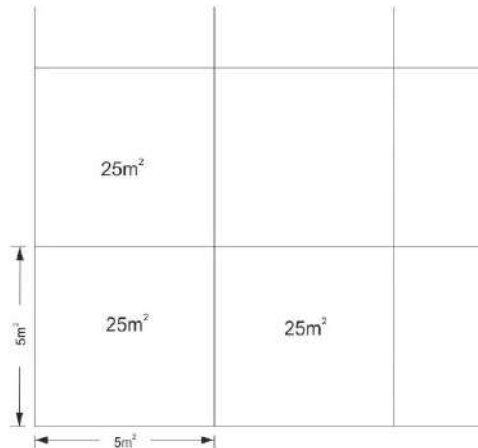
B. Concrete Surface

Concrete surface must be power-trowelled without cracks and must be smooth with a slope of 0.7-1% and humidity under 4% in 10cm depth of concrete.

Concrete must also be **dry at least for 40 days** and then the application takes place if there is no rising humidity for the sub-floor. Before the application takes place, there must be proper grinding of the surface by a grinding machine to open the pores accordingly and also a measurement by special instrument to measure humidity on the surface and in 10cm under the surface.

Generally concrete is a risky sub-floor and there may be problems with rising humidity, especially in areas where the sea level is really high and when the sea is close or in areas near greenery.

Always make expansion joints in large areas of concrete, in order to avoid uncontrollable cracks and failures.
Joints should be every 25 square meters creating a grid of 5x5 meters or close to that.



<u>SUBSTRATE REQUIREMENTS</u>	Concrete quality	at least C20/25
	Age:	at least 40 days
	Moisture content:	below 4%

Tools:



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Sports Flooring Systems & Building Materials
50 YEARS OF EXPERIENCE

Colors: Following colorchart.

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50 YEARS OF EXPERIENCE



The colors may vary slightly from the original due to digital representation.

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TEST REPORT

16-0132IT-P

Issued on March 01st 2016

CLIENT

KATASKEVES DAPEDON LTD - BUILDING SYSTEM

PRODUCT NAME

POLYFLEX PU SYSTEM

TYPE

SYNTHETIC FLOOR

Test according to:

EN 14904:2006 Surfaces for sports areas – Indoor surfaces for multi-sport use – Specification

This report may not be used for commercial purposes unless it is reproduced in its entirety.

The results are valid only for the submitted samples as described in this report.

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March 01st 2016

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SCOPE OF THE TEST PROGRAMME

The system (sample submitted) was tested in accordance to EN 14904:2006, using the following test procedures.

DOCUMENTS OF REFERENCE

STANDARDS USED

UNI EN 14904:2006 Surfaces for sports areas. Indoor surfaces for multi-sport use. Specification

UNI EN 14808:2006 - Surfaces for sports areas. Determination of shock absorption

UNI EN 14809:2006 - Surfaces for sports areas. Determination of vertical deformation

UNI EN 12235:2013 - Surfaces for sports areas. Determination of vertical ball behaviour

UNI EN 13036-4:2011 Road and airfield surface characteristics. Test methods. Method for measurement of slip/skid resistance of a surface. The pendulum test

UNI EN 1569:2001 Surfaces for sports areas. Determination of the behaviour under a rolling load

UNI EN ISO 5470-1:2001 Rubber or plastic coated fabrics. Determination of abrasion resistance. Taber abrader.

UNI EN ISO 2813:2001 Paints and varnishes. Measurement of specular gloss of non-metallic paint films at 20°, 60° and 85°

UNI EN 1516:2001 Surfaces for sports areas – Determination of resistance to indentation

UNI EN 1517:2001 Surfaces for sports areas – Determination of resistance to impact

STORAGE TIMES

Storage of documents 4 years and samples 1 month from the issue of the report

SAMPLING

Sampling is performed by the customer

ENVIRONMENTAL CONDITIONS IN THE LABORATORY

Air temperature	Relative humidity
23°C ± 2°C	50% ± 5%

CLIENT

COMPANY
ADDRESS

KATASKEVES DAPNDON LTD - BUILDING SYSTEM
5 Koromila Str.
54645 Thessaloniki

COUNTRY

Greece

DATA ACQUISITION

DATE OF RECEIPT OF ORDER	January 27 th 2016
DATE OF RECEIPT OF FIRST SAMPLE	February 02 nd 2016
DATE OF RECEIPT OF LAST SAMPLE	February 02 nd 2016
STARTING DATE OF THE TESTS	February 12 th 2016
ENDING DATE OF THE TESTS	

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March 01st 2016

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SAMPLE IDENTIFICATION

Product name	POLYFLEX PU SYSTEM
Type	<input type="checkbox"/> Permanent wooden floor <input type="checkbox"/> Mobile wooden floor <input checked="" type="checkbox"/> Synthetic <input type="checkbox"/> Surface <input type="checkbox"/> Other
Description (from manufacturer's data sheet)	From bottom layer: Shockpad ISOPOL 8mm, PU pore filler POLYSPORT STUCCO 950/1050 1mm (white), PU self levelling POLYSPORT PU 951/1051 1mm and protection PU protection coat POLYSPORT 952/1052. Total thickness 11mm.
Picture of the upper side	
Picture of the lower side	
Picture of the section	

TESTS RESULTS

Test	Wooden requirements	Synthetic requirements	Result	Unit	Uncertainty	Pass / Fail
Shock absorption	$\geq 25\% \leq 75\%$		30	%	$\pm 1.5\%$	Pass
Vertical deformation	$\leq 5.0\text{mm}$		0.9	mm	$\pm 0.10\text{mm}$	Pass
Vertical ball behaviour	$\geq 90\%$		94	%	$\pm 2.8\%$	Pass
Friction	80-110		80	-	± 5	Pass
Resistance to wear	$\leq 0.08\text{g}$	$\leq 1\text{g}$	0.16	g	$\pm 0.002\text{g}$	Pass
Resistance to impact	NA	$\leq 0.5\text{mm}$	In Progress	mm	$\pm 0.01\text{mm}$	
	No perceivable cracking, splitting, delamination or permanent indentation		In Progress	-	-	
Resistance to indentation	$\leq 0.5\text{mm}$ after 24h		0.23	mm	$\pm 0.01\text{mm}$	Pass
Specular gloss	$\leq 45\%$ lacquered surfaces	$\leq 30\%$ mat surface	40	%	$\pm 2\%$	Pass
Rolling load 1500N	$\leq 0.5\text{mm}$ under a 300mm straight edge		0.21	mm	$\pm 0.02\text{mm}$	Pass
	No perceivable damage		No damage	-	-	Pass

EQUIPMENT USED

UNI EN14808:2006 - Surfaces for sports areas. Determination of shock absorption

Device	Model	Serial number	Internal code
Datalogger	117-H1	01333640/702	STR018
Artificial athlete	Artificial athlete	-	STR016
Shock absorption spacer	NA	-	STR124
Vernier caliper	Digimatic	0133640/702	STR014
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127

UNI EN 14809:2006 - Surfaces for sports areas. Determination of vertical deformation

Device	Model	Serial number	Internal code
Datalogger	117-H1	01333640/702	STR018
Artificial athlete	Artificial athlete	-	STR016
Vertical deformation spacer	NA	-	STR125
Vernier caliper	Digimatic	0133640/702	STR014
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127

UNI EN 12235:2013 - Surfaces for sports areas. Determination of vertical ball behaviour

Device	Model	Serial number	Internal code
Laser meter	HD50	59294569	STR067
Vertical rebound structure	NA	-	STR115
Foot ball	NA	-	STR140
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127
Datalogger	117-H1	01333640/702	STR018

UNI EN ISO13036-4:2011 Road and airfield surface characteristics. Test methods. Method for measurement of slip/skid resistance of a surface. The pendulum test

Device	Model	Serial number	Internal code
Datalogger	117-H1	01333640/702	STR018
RRL Pendulum	NA	-	STR006
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127

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UNI EN ISO 5470-1:2001 Rubber or plastics coated fabrics. Determination of abrasion resistance. Taber abrader

Device	Model	Serial number	Internal code
Taber Test	5135 Abraser	20061249	STR093
Wheel reface	250	20061292	STR155
Kern libra	770	17111475	STR005
Air conditioning system	BXN0-A022 E	BX-CT0022AA001H	STR127
Datalogger	117-H1	01333640/702	STR018

UNI EN ISO 2813:2001 Paints and varnishes. Measurement of specular gloss of non metallic paint films at 20°, 60° and 85°

Device	Model	Serial number	Internal code
Gloss equipment	Novo-glossg	GFE07101732C	STR094
Air conditioning system	BXN0-A022 E	BX-CT0022AA001H	STR127
Datalogger	117-H1	01333640/702	STR018

UNI EN 1569:2001 Surfaces for sports areas. Determination of the behaviour under a rolling load

Device	Model	Serial number	Internal code
Load bearing equipment	NA	-	STR073
Mitutoyo caliber	NA	012243618	STR014
Air conditioning system	BXN0-A022 E	BX-CT0022AA001H	STR127
Datalogger	117-H1	01333640/702	STR018

ADDITIONAL INFORMATION

This is a temporary report.

CONCLUSIONS

None

Laboratory director
Roberto Armeni



Technician
Davide Giorgini



TEST REPORT

16-0227IT

Issued on March 07th 2016

CLIENT

KATASKEVES DAPEDON LTD - BUILDING SYSTEM

PRODUCT NAME

POLYFLEX PU SYSTEM

TYPE

SYNTHETIC FLOOR

Test according to:

FIFA Manual – Official Basketball rules 2014 – Basketball equipment

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The results are valid only for the submitted samples as described in this report.



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March 07th 2016

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SCOPE OF THE TEST PROGRAMME

The system (sample submitted) was tested in accordance to FIBA Manual – Official Basketball Rules 2014, using the following test procedures.

DOCUMENTS OF REFERENCE

STANDARDS USED

FIBA Manual- Official Basketball Rules 2014 – Basketball Equipment

EN 14808:2006 - Surfaces for sports areas. Determination of shock absorption

EN 14809:2006 - Surfaces for sports areas. Determination of vertical deformation

EN 12235:2013 - Surfaces for sports areas. Determination of vertical ball behaviour

EN 13036-4:2011 Road and airfield surface characteristics. Test methods. Method for measurement of slip/skid resistance of a surface. The pendulum test

STORAGE TIMES

Storage of documents 4 years and samples 1 month from the issue of the report.

SAMPLING

Sampling is performed by the customer.

ENVIRONMENTAL CONDITIONS IN THE LABORATORY

Air temperature	Relative humidity
23°C ± 2°C	50% ± 5%

CLIENT

COMPANY
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COUNTRY

Greece

DATA ACQUISITION

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ENDING DATE OF THE TESTS	March 01 st 2016

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March 07th 2016

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SAMPLE IDENTIFICATION

Product name	POLYFLEX PU SYSTEM
Type	<input checked="" type="checkbox"/> Synthetic Surface <input type="checkbox"/> Other
Description (from manufacturer's data sheet)	From bottom layer: Shockpad ISOPOL 8mm, PU pore filler POLYSPORT STUCCO 950/1050 1mm (white), PU self levelling POLYSPORT PU 951/1051 1mm and protection PU protection coat POLYSPORT 952/1052. Total thickness 11mm.
Picture of the upper side	
Picture of the lower side	
Picture of the section	

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TESTS RESULTS

Test	Synthetic requirements	Result	Unit	Pass / Fail
Shock absorption	Min. 25%	30	%	Pass
Vertical deformation	Max 3.5mm	0.9	mm	Pass
Vertical ball behaviour	Min. 90%	94	%	Pass
Sliding properties	Min. 80 - Max 110	80	-	Pass

EQUIPMENT USED

UNI EN14808:2006 - Surfaces for sports areas. Determination of shock absorption

Device	Model	Serial number	Internal code
Datalogger	117-H1	01333640/702	STR018
Artificial athlete	Artificial athlete	-	STR016
Shock absorption spacer	NA	-	STR124
Vernier caliper	Digimatic	0133640/702	STR014
Air conditioner	BXN0-A022 E	BX-CT0022AA0001H	STR127

UNI EN 14809:2006 - Surfaces for sports areas. Determination of vertical deformation

Device	Model	Serial number	Internal code
Datalogger	117-H1	0133640702	STR018
Artificial athlete	Artificial athlete	-	STR016
Vertical deformation spacer	NA	-	STR125
Vernier caliper	Digimatic	0133640702	STR014
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127

UNI EN 12235:2013 - Surfaces for sports areas. Determination of vertical ball behaviour

Device	Model	Serial number	Internal code
Laser meter	HD50	59294569	STR067
Vertical rebound structure	NA	-	STR115
Foot ball	NA	-	STR140
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127
Datalogger	117-H1	01333640/702	STR018

UNI EN ISO13036-4:2011 Road and airfield surface characteristics. Test methods. Method for measurement of slip/skid resistance of a surface. The pendulum test

Device	Model	Serial number	Internal code
Datalogger	117-H1	01333640702	STR018
RRL Pendulum	NA	-	STR006
Air conditioner	BXN0-A022 E	BX-CT0022AA001H	STR127

ADDITIONAL INFORMATION

None.

CONCLUSIONS

The tested sample "POLYFLEX PU SYSTEM" by Kataskeves Dapedon Ltd has been found to fully comply with the laboratory test requirements of FIBA Manual 2014 edition.

Laboratory director
Roberto Armeni

Technician
Davide Giordini



Test report 16-0227IT

March 07th 2016

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RESEARCH REPORT - LABORATORY


PROJECT	: badminton court synthetic floor "Polyflex PU system"
PURPOSE RESEARCH	: testing a badminton court mat in accordance with the Badminton World Federation (BWF) standard, Grade 3: BWF Basic (A - used as badminton floor surface)
PRINCIPAL	: Kataskeves Dapedon Ltd. Thessaloniki, Greece Contact: Mr. S. Bakalis
EXECUTION	: Kiwa ISA Sport B.V. Arnhem, The Netherlands Project Manager: Mrs. N. Siemes
TEST PERIOD	: October 2017
RESEARCH DESCRIPTION	: page 2
RESEARCH RESULTS	: page 3

CONCLUSION

The research results show that the badminton court synthetic floor "Polyflex PU system" meets the requirements for Grade 3-A for badminton court mats in accordance with the Badminton World Federation (BWF) standard.

22nd November 2017

Kiwa ISA Sport B.V.


T.A. Joosten
General Manager

Kiwa ISA Sport B.V.
Project number: 170901190
Page 1 of 3





DESCRIPTION RESEARCH

Kataskeves Dapedon Ltd. asked Kiwa ISA Sport B.V. to conduct a test on a badminton court mat in accordance with the Badminton World Federation requirements for Grade 3-A for badminton court mats.

BWF Grade 3-A contains the following test:

- Shock absorption **(Q)**, EN 14808;
- friction **(Q)**, EN 13036-4.

As described in the Badminton World Federation standard, EN 14904 criteria's are used.

Kiwa ISA Sport B.V. is accredited by the Dutch Accreditation Council (RvA) in accordance with standard ISO/IEC 17025 under number L417 for the tests marked with **(Q)**.

The results in this report are applicable for the tested sample, unless otherwise mentioned. More information regarding the assessment of testing, measurement uncertainty and reporting is available when requested. Without written confirmation of Kiwa ISA Sport B.V. it is not allowed to copy parts of this report.

Sampling was not conducted by Kiwa ISA Sport B.V. The sample was provided by the principal to Kiwa ISA Sport B.V. for the purpose of research. Kiwa ISA Sport B.V. can therefore not report data on sampling and preparation / storage of the specimens until the time of receipt.

The opinions / interpretations mentioned in this report fall outside the scope of accreditation.





RESEARCH RESULTS

The composition of the badminton court synthetic floor "Polyflex PU system" is summarised in table 1.

Table 1: composition of the badminton court synthetic floor "Polyflex PU system"

Layer	Material	Layer thickness [mm]
top layer	PU	± 3
second layer	foam	± 7



Figure 1: top view



Figure 2: side view

In table 2 the results of the research are summarised.

Table 2: laboratory result

Characteristic	Result	Standard EN 14904
Shock absorption	36%	25 – 75%
Friction	95	80 – 110

From the results listed in table 1 it is concluded that the badminton court synthetic floor "Polyflex PU system" meets the requirements for BWF Grade 3-A for badminton court synthetic floors.





CERTIFICATE

Management system as per
ISO 9001 : 2015
Quality Management Systems-Requirements

In accordance with TÜV HELLAS (TÜV NORD) S.A., procedures, it is hereby certified that

KATASKEVES DAPEDON L.T.D.
Head Quarters: 19, Mitropoleos Str.
546 24 Thessaloniki
Branch: Lakkoma
630 80 Chalkidiki
Hellas



KDF
Sports Flooring Systems & Building Materials
45 YEARS OF EXPERIENCE

applies a management system in line with the above standard for the following scope

Production and Sale of Sports Flooring Systems.

Certificate Registration No. 041 17 0182
Audit Report No. E-2997/2018

Valid from 2017-12-20
Valid until 2020-12-19
Initial certification 2017


 TÜV HELLAS (TÜV NORD) S.A. Certification Body

Athens, 2018-10-20

This certification was conducted in accordance with the TÜV HELLAS (TÜV NORD) S.A. auditing and certification procedures and is subject to regular surveillance audits.




MS Certification
No. of certificate 183



TÜV HELLAS S.A. 282, Mesogeion Ave., 155 62 Cholargos, Athens, Greece