Laboratory Test Report

FIBA Approval Programme for Basketball Equipment

Handbook of Test Methods and Requirements for
3x3 and Outdoor Basketball Equipment – November 2020 Edition V1.0

Manufacturer Name: **Hebei Enlio Sports Goods Co., Ltd**
Model Name: **SES Battle 3**

3x3 Flooring	*Level 1*	*10/10/2024*	*PASS*

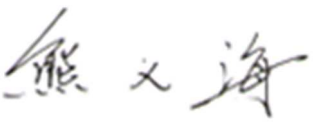
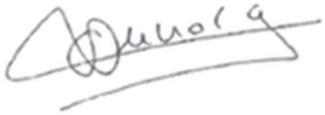
This is not a Certificate of Approval

Introduction

Test results, in accordance with the FIBA Equipment & Venue Centre Approval Programme for Basketball Equipment, are presented in full within this report. This report does not imply FIBA approval or certification regardless of its contents or compliance to the FIBA requirements. FIBA approval or certification will always be awarded to the applicant directly from FIBA. Neither FIBA, nor the Test laboratory accept responsibility to third parties to whom this report, or any part thereof, is made known.

Declaration of Conformity

We certify that the tests described in this report have been carried out in accordance with the latest publication of the FIBA Handbook of Test Methods and Requirements and this report accurately reflects the outcome of the tests conducted. We also confirm that, to the best of our knowledge, all samples submitted for certification were done so in accordance with the requirements of the handbook.

Report Written By:	Xiong Yihai	**Report Checked By:**	Olivier Ducrocq
Date:	10/10/2024	**Date:**	10/10/2024
Signed:		**Signed:**	

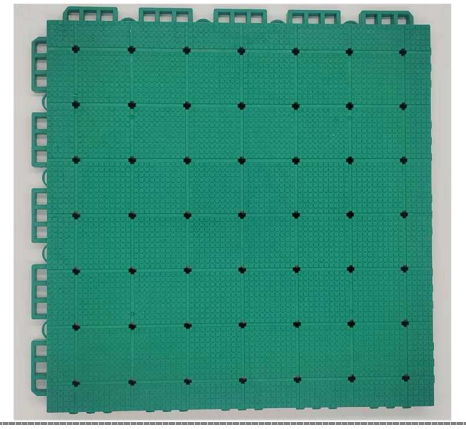
Test Laboratory

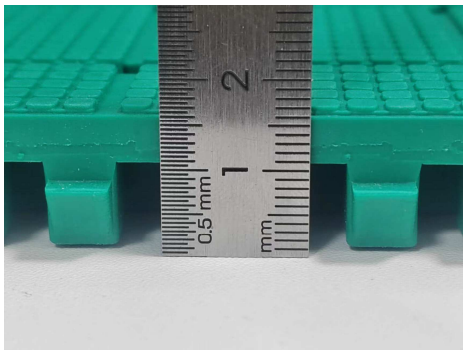
Test Laboratory Name:	Guangzhou Labosport Co., Ltd.
Address:	1/F, Building C, No.1 Huan Bao 3rd Road, Xintang Town, Zengcheng District
City & Postal (ZIP) Code:	511340 Guangzhou
State or Province:	Guangdong
Country:	China
Telephone:	+86-20-8190 0714
Email:	asia@labosport.com

Product Manufacturer

Manufacturer's Name:	**Hebei Enlio Sports Goods Co., Ltd**
Contact Name:	**宜旭旭 Yi Xuxu**
Address:	**10#Block, 4th Floor, Fang Da Science Park, No. 266 TianShan Street**
City & Postal (ZIP) Code:	**Shijiazhuang & 050035**
State or Province:	**Hebei Province**
Country:	**China**
Telephone:	**+86-18832131031**
Email:	**773400416@qq.com**

Product Description		
Surface Type:	Point-elastic	**Surface Profile Image [Plan View]:**
Installation Type:	Portable	
Sub-category:	Interlocking plastic tiles	
Surface Thickness [mm]:	16	
Sample Size:	Other - Provide details below	
Sample Size Note: 12 pieces of 30cm x 30cm		
Sample Colour:	Green	**Surface Profile Image [End Elevation]:**
Description of the Construction: 1.Surface small blocks design with double groove drainage ensures safety and anti-slippery, water drains quickly. 2.Round corner design reduces sports injuries. 3.Elastic buckles can stretch freely and relieve expansion and contraction. 4.Supporting layer: the back plate is connected by ribs with mesh design, and the overall structure is stable.		
Note: The surface image must show the below details, where this isn't possible in a single image, additional images can be submitted in the 'Additional Notes' Section of this document. • Surface Laminations • Steel Rule placed to provide reference of sample thickness		





Sample Description		
Number of samples submitted for testing:		1
Laboratory Sample Reference No(s).	**Global Reference No.**	LSA-R24320-A1
	Surface Sample 1	S24320
	Surface Sample 2, if applicable	-
	Surface Sample 3, if applicable	-
Test Laboratories are required to store a reference sample of the tested product for a period of 5-years. **By checking the box opposite, we confirm a 200x200mm sample has been placed in storage and will be retained for the minimum term of 5-years.**		☒ A sample of the tested product has been placed in storage and shall be retained for at least a 5-year period.

Results Summary			
Performance Property	**Results**	**Requirement**	**Pass/ Fail**
Force Reduction	30%	Point-elastic L1: 25% - 75%	**PASS**
Force Reduction Uniformity (absolute)	-0%/+1%	Point-elastic L1: ±5% from average	**PASS**
Vertical Deformation	1.2mm	Point-elastic: ≤ 3.5mm	**PASS**
Vertical Deformation Uniformity (absolute)	-0.1mm/+0.2mm	±0.7mm from average	**PASS**
Ball Rebound	100%	Level 1: ≥90%	**PASS**
Ball Rebound Uniformity	-1%/+0%	±3% from average	**PASS**
Slip Resistance (Dry)	102	Average: ≥80 ≤110	**PASS**
Slip Resistance (Wet)	48	Average: ≥55 ≤110	**Not suitable for wet conditions**
Resistance to Wear	147mg	Polymeric: ≤ 4,000 mg	**PASS**
Assembly/Disassembly Mechanism Durability	No visible deterioration	No visible deterioration	**PASS**
UV Resistance - Resistance to Impact	Minor visible damage	Pre-weathering: No presence of cracking	**PASS**
		Post-weathering: Informative only	**Informative**
UV Resistance - Colour Fastness	4	Post-weathering: Informative only (Guidance: ≥Greyscale 3)	**Informative**
Dimensional Stability	-0.60%	≤1%	**PASS**
Water Permeability	> 24,000mm/h	Permeable surface: ≥150 mm/h	**PASS**
Court Markings	All measurements are within the required tolerance	± 5mm of the requirements	**PASS**
Summary notes: -			

Force Reduction - Overview

Force reduction is the ability of the surface to provide cushioning to the athlete during landing from a jump or during running. Higher force reduction values indicate a softer sports surface which absorbs the energy from impacts. A low force reduction value indicates a stiffer surface.

Force Reduction – Requirements

Test	Category	Level 1	Level 2
Force Reduction (Absolute Uniformity)	Point Elastic	25% - 75% (±5% from average)	11% - 75% (±7% from average)
	Mixed Elastic	45% - 75% (±5% from average)	45% - 75% (±5% from average)
	Area Elastic	40% - 75% (±5% from average)	40% - 75% (±5% from average)
	Combined Elastic	45% - 75% (±5% from average)	45% - 75% (±5% from average)

Force Reduction – Results

Date:	09/10/2024	**Air Temperature (°C):**	23.4
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54

Location	Measurement No.			Average of Drops No. 2 and 3
	D1	D2	D3	
1	36.5%	30.4%	29.8%	30%
2	35.4%	30.8%	30.5%	31%
3	34.8%	30.2%	30.5%	31%
4	36.2%	30.7%	30.2%	30%
5	34.5%	30.3%	30.0%	30%
6 (if applicable)	-	-	-	-
7 (if applicable)	-	-	-	-
8 (if applicable)	-	-	-	-
Calculated Uniformity from Measured Locations:				30% (-0%/+1%)

Vertical Deformation - Overview
Vertical Deformation is the ability of the surface to deform during landing from a jump, during running or during any foot-floor contact. The test focuses on the deformation generated at the point of impact, and it is thought that vertical deformation values that are too high decrease foot stability. It involves computing a normalized deformation, measured in millimetres, under a standard load of 1500 N (ie 2.4 mm). A higher value for vertical deformation means that the sport surface deforms more during foot-floor impacts.

Vertical Deformation – Requirements	
Test	**Level 1 & 2 Outdoor Surfaces**
Vertical Deformation	Point Elastic: ≤ 3.5mm
	Mixed Elastic: ≤ 3.5mm
	Area Elastic: 1.5mm – 5.0mm
	Combined Elastic: 1.5mm - 5.0mm
Uniformity	±0.7mm from average

Vertical Deformation – Results			
Date:	09/10/2024	**Air Temperature (°C):**	23.4
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54

Location	**Measurement No.**			**Average of Drops No. 2 and 3**
	D1	**D2**	**D3**	
1	1.15mm	1.19mm	1.17mm	1.2mm
2	1.09mm	1.09mm	1.08mm	1.1mm
3	1.51mm	1.43mm	1.40mm	1.4mm
4	1.19mm	1.24mm	1.18mm	1.2mm
5	1.08mm	1.06mm	1.07mm	1.1mm
6 (if applicable)	-	-	-	-
7 (if applicable)	-	-	-	-
8 (if applicable)	-	-	-	-
Calculated Uniformity from Measured Locations:				1.2mm (-0.1mm/+0.2mm)

Ball Rebound - Overview

A basketball is released from a height of 1.8m and the height of its rebound from the surface calculated in accordance to EN 12235 and expressed as a percentage relative to that of a rebound on a concrete surface. Higher ball rebound values rebound to levels that are closer to those generated on concrete.

Ball Rebound – Requirements

Test	Level 1	Level 2
Ball Rebound	≥90%	≥85%
Uniformity (absolute)	±3% from average	

Ball Rebound – Results

Date:	09/10/2024	**Air Temperature (°C):**	23.4
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54

Location	Measurement No					Average	Percentage Rebound %
	1	2	3	4	5		
Concrete	103.7cm	103.7cm	104.8cm	104.3cm	103.9cm	104.1cm	
1	102.5cm	103.9cm	104.1cm	103.9cm	103.9cm	103.7cm	100
2	103.0cm	103.9cm	103.7cm	103.2cm	103.4cm	103.4cm	99
3	103.7cm	104.3cm	103.2cm	103.7cm	103.7cm	103.7cm	100
4	103.9cm	103.9cm	103.4cm	103.7cm	104.1cm	103.7cm	100
5	103.2cm	103.9cm	104.5cm	103.9cm	103.4cm	103.8cm	100
6 (if applicable)	-	-	-	-	-	-	-
7 (if applicable)	-	-	-	-	-	-	-
8 (if applicable)	-	-	-	-	-	-	-
					Sample Average:	103.7cm	100 (-1/+0)

Slip Resistance - Overview

Slip Resistance also referred to as 'linear friction', is a measure of the surfaces ability to resist slippage and to provide adequate friction to allow players to make safe changes in direction during the game of basketball. Testing simulates the shoe-surface interface. Linear slip resistance, as detailed in EN 13036, is the indicative friction of the surface under skidding or quick stopping activities and is presented in whole number value (i.e. 100).

Slip Resistance – Requirements

Test	Level 1 & 2 Outdoor Surfaces
Slip Resistance (Dry conditions)	Average ≥80 ≤110
Slip Resistance (Wet conditions)	Average ≥55 ≤110*

Slip Resistance – Results (Dry conditions)

Date:	09/10/2024	**Air Temperature (°C):**	23.7
Operator:	Xiong Yihai	**Relative Humidity (%):**	52

Direction	Measurement No					Direction Average:
	1	2	3	4	5	
0°	101	101	102	101	101	101
45°	103	103	103	102	103	103
90°	103	103	103	103	103	103

Surface Temperature at tested location (°C):	23.7	**Sample Average:**	102

Slip Resistance – Results (Wet conditions)

Date:	09/10/2024	**Air Temperature (°C):**	23.7
Operator:	Xiong Yihai	**Relative Humidity (%):**	52

Direction	Measurement No					Direction Average:
	1	2	3	4	5	
0°	47	46	47	47	47	47
45°	49	49	49	49	48	49
90°	49	49	47	48	48	48

Surface Temperature at tested location (°C):	23.7	**Sample Average:**	48

* Systems which fail to meet the wet conditions requirement may be categorised as: suitable in dry conditions only.

Resistance to Wear - Overview
This test measures the surfaces ability to resist wear and provides results indicative to the expected lifetime of the surface or its coatings. This is of particular importance in areas such as the three-point line. Weighted abrasive wheels are repeatedly passed across the surface and the respective mass loss from the surface is measured. A lower loss of mass indicates a higher resistance to wear.

Resistance to Wear – Requirements	
Test	**Level 1 & 2 Outdoor Surfaces**
Resistance to Wear	≤ 1,000 mg (or, ≤ 4,000 mg for polymeric outdoor surfaces)

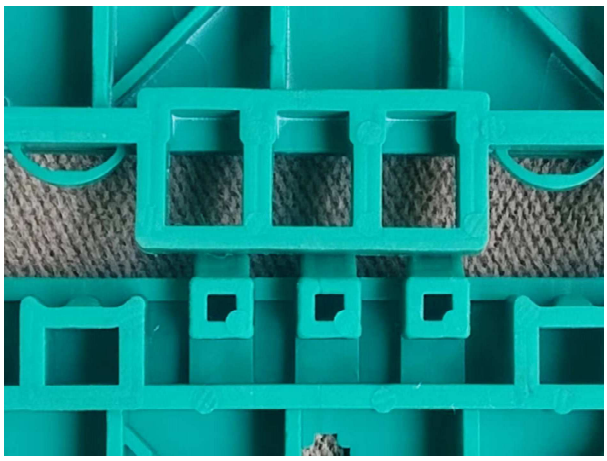
Resistance to Wear – Results			
Date:	09/10/2024	**Air Temperature (°C):**	23.4
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54

Sample No.	Pre-Abrasion Mass (g)	Post-Abrasion Mass (g)	Loss of Mass (mg)
1	38.3061	38.1746	132
2	39.0839	38.9257	158
3	39.1947	39.0568	138
4	39.7745	39.6264	148
5	38.8934	38.7516	142
6	39.2742	39.1111	163
		Average Loss of Mass (mg):	147

Assembly/Disassembly Mechanism Durability - Overview
Two tiles are manually assembled and disassembled 50 times to test the durability of the tile connection.

Assembly/Disassembly Mechanism Durability – Requirements	
Test	**Level 1 & 2 Outdoor Surfaces of Modular Construction**
Assembly/Disassembly Mechanism Durability	No visible deterioration

Assembly/Disassembly Mechanism Durability – Results			
Date:	09/10/2024	**Air Temperature (°C):**	23.5
Operator:	Xiong Yihai	**Relative Humidity (%):**	53
Visual Inspection Result:	The area under test exhibited no visible deterioration following the Assembly/Disassembly Mechanism Durability Test.		

Reference Image 1	Reference Image 2
	

Note:
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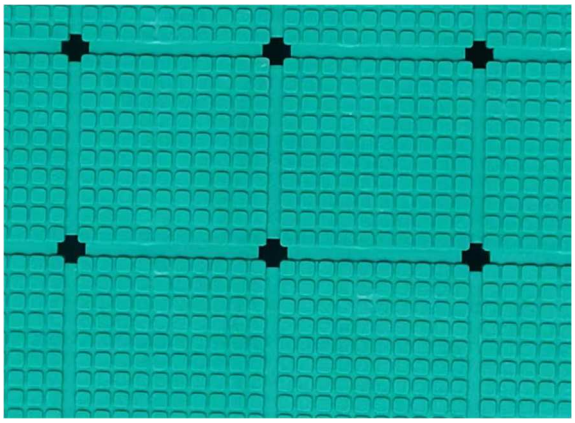
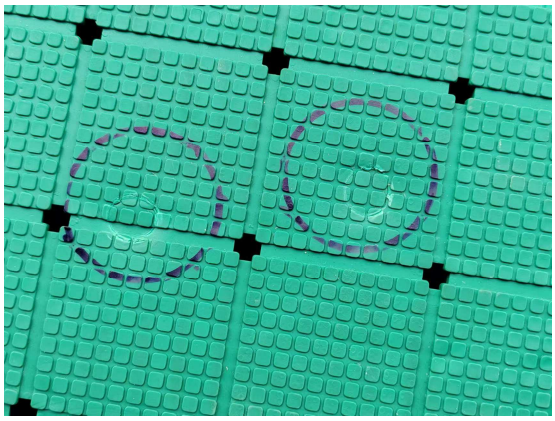
UV Resistance - Overview
Samples are exposed to artificial weathering by fluorescent UV lamps under controlled environmental conditions and changes in colour and mechanical properties are evaluated. Test samples are first assessed in an un-weathered condition and should be shown to successfully meet the relevant requirements prior to being weathered.

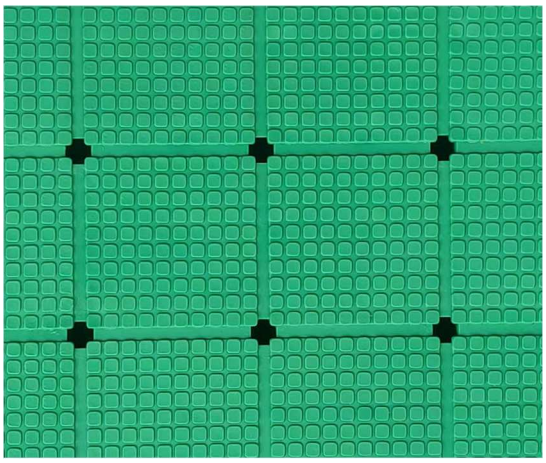
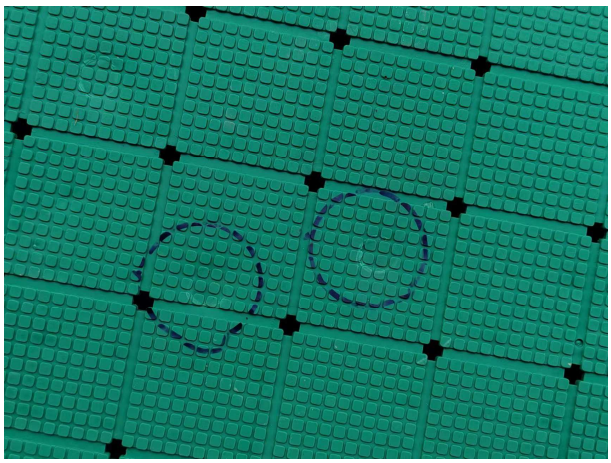
UV Resistance – Requirements		
Test	**Pre-weathering**	**Post-weathering**
Resistance to Impact	No presence of cracking	Informative only
Colour Fastness	N/A	Informative only (Guidance: ≥Greyscale 3)

Resistance to Impact – Pre-weathering – Results			
Date:	09/10/2024	**Air Temperature (°C):**	23.7
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54
Result:	Minor visible damage - reference images and description provided below		

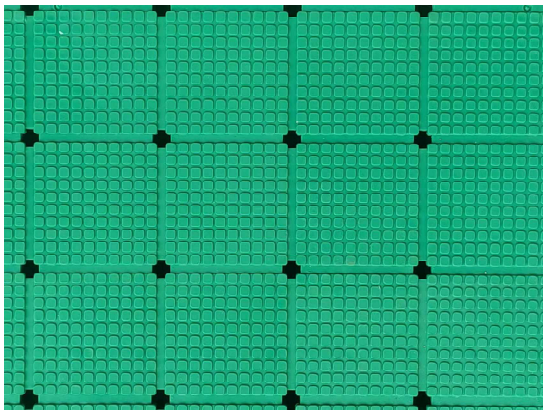
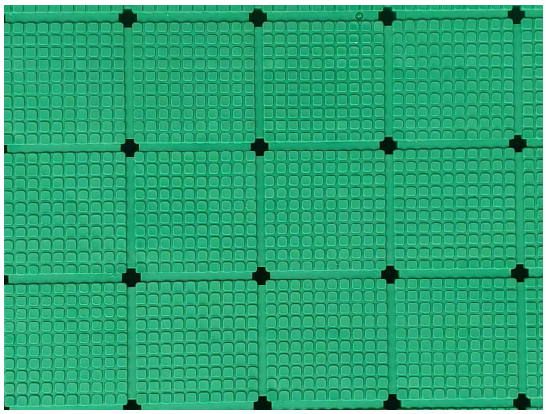
Reference Image 1	Reference Image 2
	

Description of any visible damage, including measured depth:
No perceivable cracking, splitting, slight mark with indentation about 0.5 mm.

Resistance to Impact – Post-weathering – Results			
Date:	09/10/2024	**Air Temperature (°C):**	23.7
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54
Result:	No presence of cracking or visible damage		

Reference Image 1	**Reference Image 2**
	

Description of any visible damage, including measured depth:
No perceivable cracking, splitting, slight mark with indentation about 0.4 mm.

Colour Fastness			
Date:	09/10/2024	**Air Temperature (°C):**	23.4
Operator:	Xiong Yihai/Niki/Olivier	**Relative Humidity (%):**	54
Colour fastness rating: 4			
Reference Image 1 – Sample Pre-weathering		**Reference Image 2 – Sample Post-weathering**	
			

Dimensional Stability - Overview
Samples are exposed to varied water, frost, and heat conditions. Any changes in the sample dimensions are measured and recorded.

Dimensional Stability – Requirements	
Test	**Level 1 & 2 Outdoor Surfaces**
Dimensional Stability	≤1% at each stage of the test

Dimensional Stability – Post Soak – Results

Date:	23/09/2024			**Air Temperature (°C):**			23.4	
Operator:	Zeng Zhiyang			**Relative Humidity (%):**			54	
Direction	**Direction of Manufacture**			**Across direction of Manufacture**			**Diagonal**	
Initial Length (mm)	30.33	30.31	30.33	30.35	30.30	30.33	41.58	41.59
Post Soak Length (mm)	30.38	30.39	30.41	30.38	30.42	30.41	41.68	41.69
ΔL (%)	0.16	0.26	0.26	0.23	0.23	0.26	0.24	0.24
Average ΔL (%)	0.23			0.24			0.24	

Dimensional Stability – Post Freeze – Results

Date:	24/09/2024			**Air Temperature (°C):**			24.1	
Operator:	Zeng Zhiyang			**Relative Humidity (%):**			47	
Direction	**Direction of Manufacture**			**Across direction of Manufacture**			**Diagonal**	
Post Freeze Length (mm)	30.17	30.21	30.24	30.16	30.15	30.17	41.39	41.37
ΔL (%)	-0.53	-0.33	-0.30	-0.63	-0.66	-0.53	-0.46	-0.53
Average ΔL (%)	-0.38			-0.60			-0.49	

Dimensional Stability – Post Drying – Results

Date:	27/09/2024			**Air Temperature (°C):**			24.0	
Operator:	Zeng Zhiyang			**Relative Humidity (%):**			51	
Direction	**Direction of Manufacture**			**Across direction of Manufacture**			**Diagonal**	
Post Drying Length (mm)	30.45	30.46	30.41	30.47	30.42	30.40	41.72	41.76
ΔL (%)	0.40	0.49	0.26	0.40	0.23	0.23	0.34	0.41
Average ΔL (%)	0.38			0.29			0.37	

Dimensional Stability – Final – Results								
Date:	28/09/2024			**Air Temperature (°C):**			24.4	
Operator:	Zeng Zhiyang			**Relative Humidity (%):**			52	
Direction	**Direction of Manufacture**			**Across direction of Manufacture**			**Diagonal**	
Final Length (mm)	30.36	30.37	30.38	30.38	30.34	30.36	41.62	41.64
ΔL (%)	0.10	0.20	0.17	0.10	0.03	0.10	0.10	0.12
Average ΔL (%)	0.15			0.06			0.11	

Water Permeability - Overview
The permeability of a surface is examined by measuring the rate of water infiltration through a unit area of surface material. The rate at which the water drains through the surface is calculated.

Water Permeability – Requirements	
Test	**Level 1 & 2 Outdoor Surfaces**
Water Permeability	≥150 mm/h*

Water Permeability – Results			
Date:	09/10/2024	**Air Temperature (°C):**	23.4
Operator:	Zeng Zhiyang	**Relative Humidity (%):**	54.1

Test	**t_A (h)**	**F_{WA} (mm)**	**I_A (mm/h)**
1	< 0.0008	20	> 24,000
2	< 0.0008	20	> 24,000
3	< 0.0008	20	> 24,000
		I_A Average (mm/h)	> 24,000

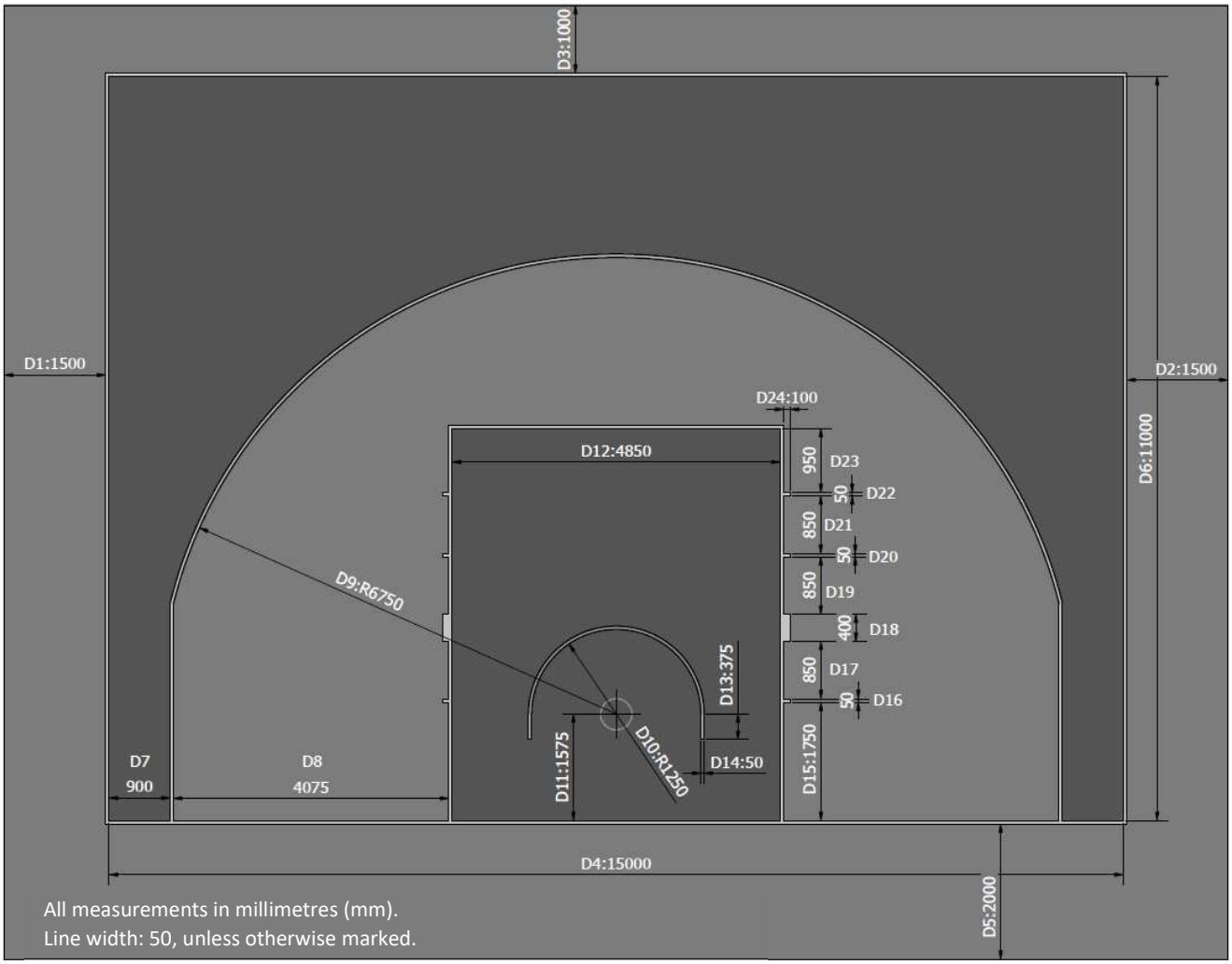
* Systems which fail to meet this requirement should be noted as Impermeable systems. Any Impermeable system installed outdoors must be installed following the requirements set out in section 3.15 – *Installation guidelines for Impermeable Surfaces* of the Handbook of Test Methods and Requirements for 3x3 and Outdoor Basketball Equipment.

Court Markings - Overview

The dimensional plan of the 3x3 court line markings is assessed against the dimensional requirements specified in the Handbook of Test Methods and Requirements for 3x3 and Outdoor Basketball Equipment.

Court Markings – Requirements

Test	Level 1	Level 2
Court Markings	Within ± 5mm of the requirements	N/A



Court Markings – Results

Court Markings Result:	All measurements are within the required tolerance

Note: -

Conclusion

The flooring samples submitted were tested in accordance with the most recent publication of the FIBA Equipment & Venue Centre Approval Programme for 3x3 and Outdoor Basketball Equipment. We confirm all information presented within this report is accurate and appropriately reflects the performance of the samples submitted.

Based upon the test results we the test laboratory consider the samples supplied to have:

☒ Met all requirements for FIBA product certification

☐ Failed to meet all requirements for FIBA product certification

Additional Notes

Use this section to insert any additional information or images relevant to the flooring samples submitted for assessment. Where the samples showed visible signs of deterioration following the Rolling Load test, images and a description of the damage observed may be supplied in this section. Any system with multiple, distinct layers should be recorded here, detailed the composition of each:

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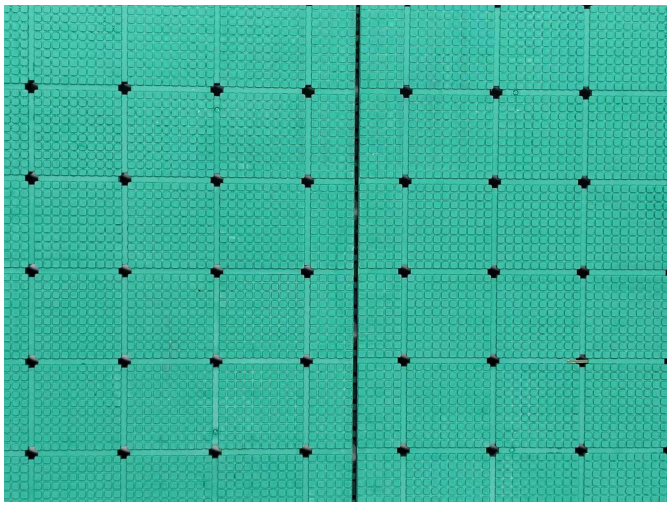
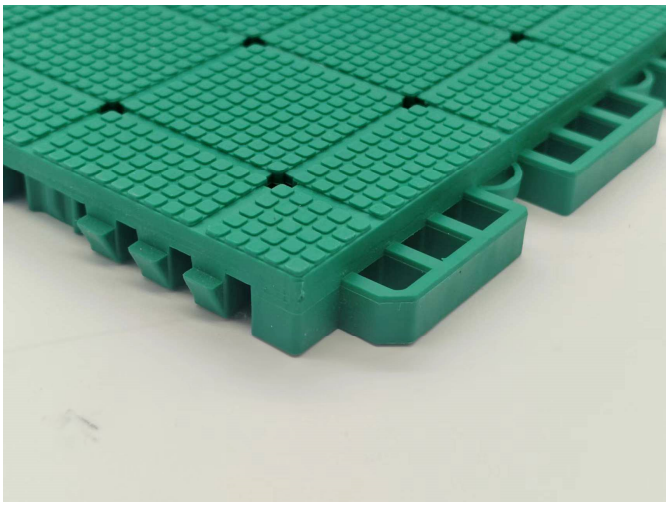
Reference Image A	Reference Image B
	

END OF REPORT

Adherence to the FIBA requirements does not constitute adherence to any regional, national or international safety or trading standards. It is the responsibility of the manufacturer to ensure products are in full compliance to any mandatory safety regulations for the intended region of product sale or installation. Products holding FIBA approval which are deemed to be in breach of any mandatory safety requirements shall have their FIBA approval revoked from the date at which the breach occurred.