Centre for Sports Technology

Laboratory Report AC-0202/5

Flexitrack SP Permeable

track surfacing

Summary: Selected tests from the IAAF Performance Specification have been carried out on a synthetic athletics track surfacing from Rosehill Polymers Ltd. The methods of tests employed are described and the results obtained are given.

Reported by:

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Date of this report: 4th August 2008

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* tests marked thus are outside the scope of CST's accreditation under UKAS

UKAS TESTING 2264

1 INTRODUCTION

1.1 The International Association of Athletics Federations (IAAF) has published a *Performance Specification for Synthetic Surfaced Athletics Tracks (Outdoor),* written with the assistance of the International Association for Sports Surfaces Sciences (ISSS) and the International Arbeitskreis Sport- und Freizeiteinrichtungen (IAKS).

1.2 The Centre for Sports Technology (CST) is a laboratory accredited by the IAAF to test products and installations in accordance with their specification.

1.3 At the request of Nadeem of :

Rosehill Polymers Ltd.,
Rose Hill Mills
Beech Road
Sowerby Bridge
West Yorkshire
HX6 2JT

the test methods listed in that specification have been applied to their synthetic sports surfacing product*: Flexitrack SP Permeable.*

2 SAMPLE

2.1 4 No. identical samples of synthetic sport surfacing product, measuring 500 x 500mm, were supplied for test. The samples were received on 17th July 2008. Instructions to undertake the tests were received in order no. 11613, on the 2nd June 2008. The results obtained relate only to the samples provided.

2.2 *Flexitrack SP Permeable* is a permeable athletics track surfacing, constructed in-situ in two layers. The lower layer consists of recycled black rubber crumb, approximately 12.1 mm thick. Above this, is a 2.0mm thick layer of spray-applied red polyurethane resin, incorporating rubber granules, with a textured depth of 1.4mm. The system has an overall measured thickness of 14.2mm.

2.3 The raw materials from which the product was manufactured were stated by the client to be sourced as follows:

'Flexilon' polyurethane spray coating	Rosehill Polymers Ltd (UK)
TPV red rubber granules	Rosehill Polymers Ltd (UK)
Clear polyurethane binder (base layer)	Rosehill Polymers Ltd (UK)
Recycled black rubber granules	Crumb Rubber Ltd (UK)

3 TEST PROGRAMME

The properties tested can be found in the IAAF's *"Performance Specification for Synthetic Surfaced Athletics Tracks"*. The tests are listed below, with summaries of the methods employed where appropriate. It is important to note that this Specification is primarily intended to define the performance properties of an installed athletics track. For this reason, some of the test methods have limited relevance in a laboratory assessment of a surfacing product.

3.1 **Surface Thickness** measurements on an installation are made using a calibrated probe and if necessary, cores are cut from the surface for laboratory thickness measurement by the method described in the Specification. In a laboratory assessment, the coring method described is used as a matter of course, and the thickness is recorded because of its effects on the dynamic properties of the surfacing.

The Force Reduction and Vertical Deformation results given below are applicable only to surfacing of the thickness quoted.

3.2 **Force Reduction** is determined using the *Artificial Athlete*, as defined and described in the Specification. The Specification limits are required to be met at any temperature within the range 10 to 40°C. Our tests were carried out at intervals of 5º over the temperature range 0 to 50°C, with an additional test at our standard laboratory temperature, 23ºC. A graph showing Force Reduction vs. Temperature is given in Appendix B of this report.

3.3 **Vertical Deformation** is determined using the apparatus and method described in the Specification. This test method is based on the *Artificial Athlete*, modified to allow measurements to be made without causing permanent damage to the track surface. The Specification limits are required to be met at any temperature within the range 10 to 40°C. Our tests were carried out at intervals of 5º over the temperature range 0 to 50°C, with an additional test at our standard laboratory temperature, 23ºC. A graph showing Vertical Deformation vs. Temperature is given in Appendix B of this report.

3.4 **Friction** measurements are made using the Transport and Road Research Laboratory *Portable Skid Resistance Tester*, as described and defined in the Specification.

3.5 **Tensile Properties** of the surfacing material are determined using the methods described in the Specification. Tensile strength and elongation at break are recorded.

3.6 **Colour*** is assessed by reference to the Methuen Atlas of Colour. This Clause is intended to apply to installations, where uniformity of the colour is specified. For laboratory samples, the value serves as a reference for future use.

4 RESULTS

The results obtained in the selected tests are tabulated in Appendices A and B of this report.

Appendix C of this report comprises the formal IAAF Certification Report, which should be sent to IAAF in Monaco if it is intended to seek formal accreditation for this system. Details of the IAAF Accreditation procedures and the fees charged, may be found on the IAAF Website :

http://www.iaaf.org/downloads/CertSystem/index.html

click on Track Surfacing Product Certification Application

5 CONCLUSIONS

5.1 The synthetic sports surfacing material *Flexitrack SP Permeable* at an installed thickness of 12.6mm, was found to meet the IAAF Specification requirements at 23°C for the following properties:

Thickness,
Force Reduction,
Vertical Deformation,
Slip Resistance and
Tensile Properties.

5.2 In addition the Force Reduction also met the requirement at all temperatures between 10 - 40°C.

5.3 The Vertical Deformation also met the requirement at all temperatures between 10 - 40°C.

END OF TEXT

Appendix A

Results of laboratory tests on *Flexitrack SP Permeable*

IAAF Performance specification for synthetic sports surface.

[This table **must** be read in conjunction with the notes in Section 3 of this Report]

(n/a = test not applicable)

(* tests marked thus are outside the scope of CST's accreditation under UKAS)

Specification Clause	Units	Accuracy	Result	Specification Requirement
Sample Thickness	**mm**	**±0.5**	12.6	Average ≥12 Minimum 10
Force Reduction at 23°C	**%**	**± 1**	36.8	35 to 50
Vertical Deformation at 23°C *	**mm**	**± 0.1**	2.0	0.6 to 2.5
Surface Friction Wet	**-**	**± 3**	49	≥ 47
Tensile Properties Tensile strength Elongation at break	 **MPa** **%**	 **± 0.01** **± 5**	 0.88 157	 ≥ 0.5 ≥ 40
Colour * Methuen Atlas reference	**-**	**±1**	9E8	n/a

Appendix B

Dynamic Tests over the temperature range 0 to 50ºC

Flexitrack SP Permeable

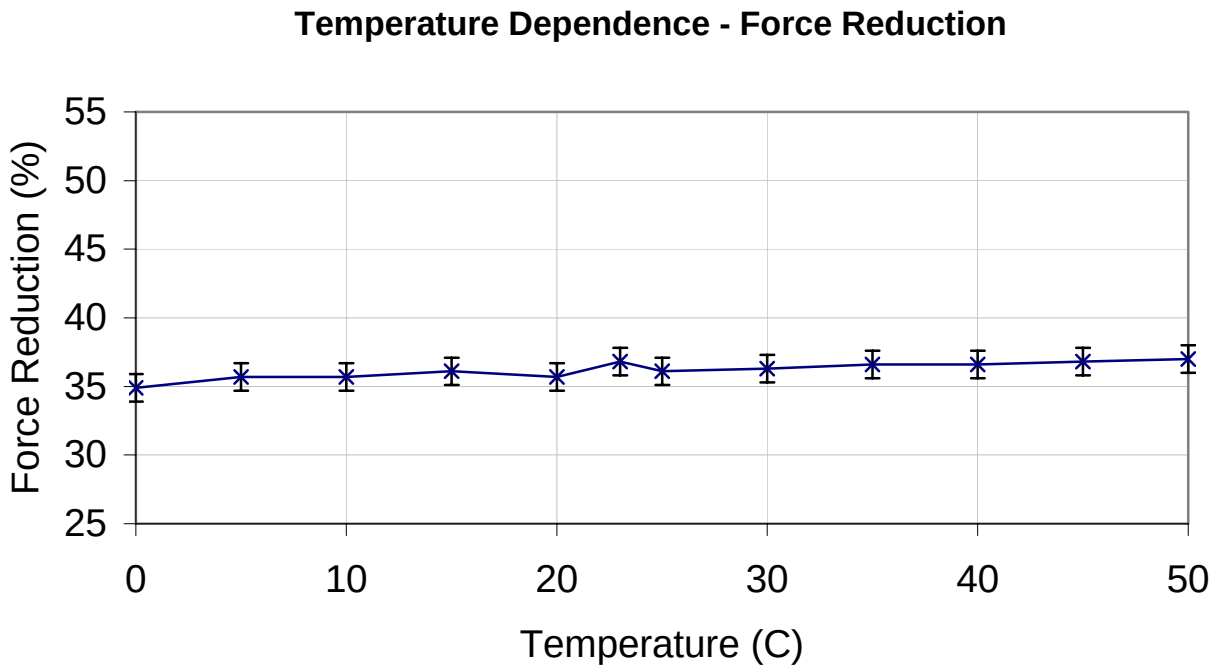
Graphs of Force Reduction vs Temperature

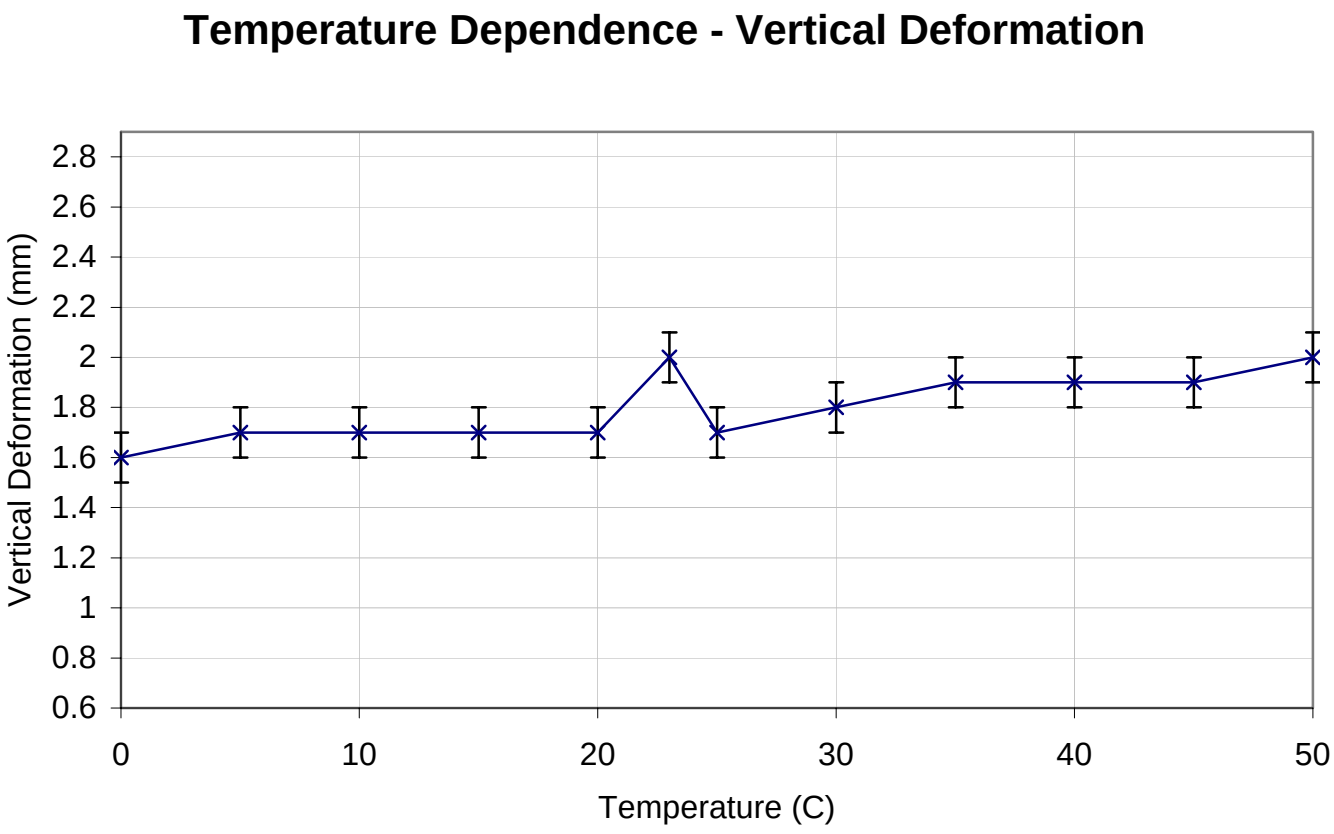
and

Vertical Deformation vs Temperature

	Flexitrack SP Permeable	
Temperature	**Force Reduction**	**Vertical Deformation**
(º C ±1)	**(% ±1)**	**(mm ±0.1)**
0	34.9	1.6
5	35.7	1.7
10	35.7	1.7
15	36.1	1.7
20	35.7	1.7
23	36.8	2.0
25	36.1	1.7
30	36.3	1.8
35	36.6	1.9
40	36.6	1.9
45	36.8	1.9
50	37.0	2.0

Flexitrack SP Permeable





Appendix C

IAAF CERTIFICATION SYSTEM

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click on Track Surfacing Product Certification Application