LABOSPORT

# LABORATORY TESTS

# INDOOR SPORT SURFACE

**Product : « OMNISPORTS V35 »**

**Company : VINISIN LTD**

**Report n° R100329-C1**

**Le Mans, 23/03/2017**

**Scope of application**

**According to EN 14 904 (June 2006)**

**Surface for sports areas**

**Specification for indoor surfaces for multi - sports use.**

The accreditation delivered by COFRAC certifies the competence of the laboratories to undertake specific tests covered by the accreditation

Accreditation N° 1-2113

"list of accredited sites and range(s) communicated on request"

* Only tests results marked with an asterisk are covered by the accreditation

**This report has been established from the report R100329-A2.**

This report contains 12 pages including 4 annexes.



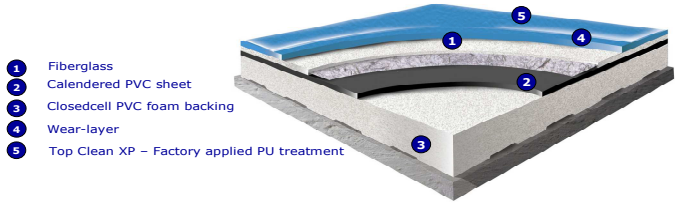
The results are only valid for the above sports surface.

**LABOSPORT** - Technoparc du circuit des 24 heures - Chemin aux bœufs - 72100 Le Mans - FRANCE
Tél : 02 43 47 08 40 - Fax : 02 43 47 08 28
SAS au capital de 225 000 euros - RCS Le Mans B 390 733 814

## 1. APPLICANT

| | |
|---|---|
| **Firm** | VINISIN LTD |
| **Date of order** | 12/03/2010 |
| **Date of samples receipt** | 12/03/2010 and 04/05/2010 |
| **Sample reference** | 006716, 006717, 006718 and 007040 |

## 2. IDENTIFICATION

| | |
|---|---|
| **Product name** | OMNISPORTS V35 |
| **Description** |  |
| **Picture** |  |

Identification

| | Manufacturer declaration | Labosport results | Units |
|---|---|---|---|
| **Total thickness** | 3,45 | 3,4 | mm |
| **Mass per unit area** | 3.50 | 3,54 | Kg/m² |
| **Mass per unit volume** | NC | 1040 | Kg/m³. |
| **Hardness** | NC | 82,8 | shore A |
| **Colour** | NC | wood | - |

## 3.SCOPE OF TEST PROGRAMME & DESCRIPTION OF TESTS CARRIED OUT

The system was tested in accordance with NF EN 14904 : Surfaces for Sports Areas - Indoor Surfaces for Multi-Sports Use - Specification (June 2006), using the following test procedures :

### 3.1. Player/surface interaction

3.1.1 Friction*

Surface friction was measured in accordance with NF EN 13036-4 using the Stanley RRL Pendulum fitted with the CEN rubber slider.

3.1.2 Shock absorption*

Shock absorption was measured in accordance with NF EN 14808.

3.1.3 Deformation*

Deformation was measured in accordance with NF EN 14809.

### 3.2. Technical aspects

3.2.1 Ball/surface interaction*

Vertical ball rebound was measured in accordance with NF EN 12235 using a basketball.

3.2.2 Behaviour under a rolling load

Behaviour under a rolling load was assessed in accordance with NF EN 1569.

3.2.3 Resistance to wear

Resistance to wear was measured in accordance with EN ISO 5470-1 using the Taber Abrader fitted with H18 wheels 1kg load. CS10 wheels 500g load are used on lacquered surface.

### 3.3. Reaction to fire

EN 14904 states “if a claim for reaction to fire performance is made, the sports floor covering shall be tested and classified according to the requirements of EN 13501-1 and the resulting class and subclass shall be declared. If is decided to make no claim for reaction to fire performance, i.e. it is decided to place the product of family of products on the markets as Class $F_{fl}$, no testing is required for this product or family of products.”

This test was not requested by the applicant.

### 3.4. Formaldehyde emission

EN 14904 states “when formaldehyde-containing materials have been added to the product as part of the production process, the products shall be tested and classified into one of two classes E1 or E2”. It also stated, “the test requirement does not apply to sports floor coverings to which no formaldehyde-containing materials were added during production or post production processing. It is not necessary to be classified, but may, without any testing be declared as Class E1”.

This test was not requested by the applicant.

### 3.5 . Content of pentachlorophenol (PCP)

EN 14904 states “sports floor coverings shall not contain pentachlorophenol or a derivative thereof as a component in the production process of the product or of its raw materials.
In cases where verification is required, if the content is less than 0,1 % by mass by the method described in Annex C (of En 14904), this requirement shall be considered to be met”.

This test was not requested by the applicant.

### 3.6.Specular gloss

Specular gloss was assessed in accordance with EN ISO 2813 using a reflectometer and a white light source at 85°.

### 3.7.Specular reflection

Specular reflection was measured in accordance with pr EN 13745 using a spectrocolorimeter and light source d8 at 85°.

### 3.8.Static load (indentation)

Resistance to static load was in accordance with NF EN 1516. The static load was 500 N acting on an area measuring 3 $cm^2$ for a period of 5 hours. The residual penetration was measured after 24 hours.

### 3.9.Impact strength (resistance to impact)

Impact resistance was measured in accordance with NF EN 1517. The sample was conditioned prior to test for 14 days at 50°C and tested at 10°C.

### 3.10.Resistance to repeated impact

Resistance to repeated impact was measured in accordance with TS 15122. This test is for information only, is non-mandatory and has no requirements.

## 4. ACCREDITATION FOR LABORATORY TESTS

### 4.1. Scope

The COFRAC accreditation delivered to LABOSPORT certifies that this laboratory is competent to undertake laboratory tests according to the followings norms:

| Norms | Title |
|---|---|
| NF EN 12235 | Surfaces for sports areas - Determination of vertical ball behaviour |
| NF EN 13036-4 | Road and airfield surface characteristics - Test methods - Part 4: Method for measurement of slip/skid resistance of a surface: The pendulum test |
| NF EN 14808 | Surfaces for sports areas - Determination of shock absorption |
| NF EN 14809 | Surfaces for sports areas - Determination of vertical deformation |

### 4.1.Location of the tests under accreditation

All the tests under COFRAC accreditation are realized at Labosport France at the following address:

**LABOSPORT France**
**Technoparc, circuit des 24 Heures du Mans**
**72100 - Le Mans**
**Tel : 02.43.47.08.40**

### 4.2.Test conditions

The tests are realised indoor where temperature and air humidity are controlled.

| Conditions | |
|---|---|
| Temperature (°C) | 22,5 to 23,7 |
| Air humidity (%) | 49,0 to 52,4 |

### 4.3 Description of COFRAC Tests

| Norms | Tests Material* | Principles | Uncertainty** |
|---|---|---|---|
| NF EN 12235 | Acquisition system A05-00-00 | A ball is allowed to fall onto a surface. The vertical ball rebound height is then measured and the vertical rebound height is determined in percentage. | ± 3 % |
| NF EN 13036-4 | Device A02-00-00 | The system is composed of a standard rubber slider assembled with a spring and fixed to the pendulum extremity. Dropping the pendulum arm from the horizontal position, the energie loss caused by the slider friction onto the surface is measured on a calibrated scale giving the oscillation arm amplitude decrease. | ± 4 |
| NF EN 14808 | Acquisition system A04-00-00 | A mass is allowed to fall onto a spring that rests, via a load cell and test foot on the test specimen, and the maximum force applied is recorded. The percentage reduction in this force relative to the maximum force measured on a concrete surface is reported as the 'Force Reduction'. | ± 2% |
| NF EN 14809 | Acquisition system A04-00-00 | A mass is allowed to fall onto a spring that rests, via a load cell and test foot, on the test specimen and the maximum and standard deformation of the surface is determined. | ± 0,20mm |

* = The delivery of a test report carrying "COFRAC-TEST" logo guarantees the connection of the equipment used during the test to the International Unit System of (S.I).

** = The uncertainty mentioned is the result of 2 types of uncertainties. These typical uncertainties were measured taking into account different components like means of measurement, tests conditions, the equipment uncertainty, number of measurements undertaken.

## 5. RESULTS

| Tests | Units | Requirements | Results | Uncertainty | Pass or Fail |
|---|---|---|---|---|---|
| Friction* | - | 80 - 110 | 90* | ± 4 | Pass |
| Shock absorption* | % | 25 - 75 | 7* | ± 2 | **Fail** |
| Vertical deformation* | mm | ≤ 5,0 | 0,06* | ± 0,20 | Pass |
| Vertical ball rebound* | % | ≥ 90 | 99* | ± 3 | Pass |
| Rolling load | mm | ≤ 0,50 | 0,30 | - | Pass |
| | - | No damage | No damage | - | Pass |
| Resistance to wear | g | Synthetic surface : ≤ 1.00 | 0,12 | - | Pass |
| Specular gloss | % | Matt : ≤ 30 | 17 | - | Pass |
| Resistance to indentation | mm | < 0,50 mm | 0,04 | - | Pass |
| Resistance to impact | - | Synthetic surface: no damage (no cracks, no indentation >0,5mm) | No damage | - | Pass |
| Reaction to fire | Reaction to fire was not assessed as part of this test programme | | | | |
| Formaldehyde Emission | Formaldehyde emission was not assessed as part of this test programme | | | | |
| Content of Pentachlorophenol | Content of pentachlorophenol was not assessed as part of this test programme | | | | |
| Repeated impact [1] | - | - | - | - | - |
| Specular reflectance[1] | - | - | - | - | - |

[1] = Test on option

## 6.CONCLUSION

The results of the tests below mentioned, covered by the COFRAC accreditation, comply with the requirements of NF EN 14904 standard :

- Vertical deformation
- Friction
- Vertical ball rebound

The results of the tests below mentioned, covered by the COFRAC accreditation, do not comply with the requirements of NF EN 14904 standard :

- Shock absorption

The results of the tests below mentioned, not covered by the COFRAC accreditation, comply with the requirements of NF EN 14904 standard :

- Rolling load
- Resistance to wear
- Specular gloss
- Resistance to indentation
- Resistance to impact

Le Mans, March 23rd, 2017

Benoit BOSSUET
Synthetic Surfaces Technical Manager

Steeve BAZEILLE
Laboratory Dep. Manager

# Annex 1 : Friction results

| LABOSPORT | FEUILLE DE MESURE DE GLISSANCE | FM 02 | |
|---|---|---|---|
| | Date de mise en apllication | Indice | Page |
| | 19.03.2009 | F | 1/1 |

FM 02iF — **FEUILLE DE MESURE DE GLISSANCE EN LABORATOIRE** — PAGE 1/1

| | |
|---|---|
| DATE D'EDITION | 22/03/2010 |
| DATE DE DEBUT DU CONDITIONNEMENT | 12/03/2010 |

## OPERATEUR

| | | | | |
|---|---|---|---|---|
| OPERATEUR: | FP | CONDITIONS DU LABO: | 50,7 | HR |
| DATE ESSAIS: | 10/05/2010 | | 22,9 | Air |
| HEURE ESSAIS | 13h30 | CONDITIONS PRODUIT: | / | Eau |
| TYPE REVETEMENT | GYMNASE | | 23,3 | Surface |
| NOM DU PRODUIT: | 10-0329 | Type de gomme du patin | CEN | |
| N° ECHANTILLON: | 006716 | Longueur de glissement | 126 ± 1 | mm |

## METHODE D'ESSAI

| | | | | |
|---|---|---|---|---|
| Méthodes d'essais | NF P90-106 ☐ | | EN 13036-4 X | |
| Référentiels | ITTF ☐ | NF 192 ☐ | EN 14 904 X | |
| | NF P90 203 ☐ | NF P 90 110 ☐ | IAAF ☐ | |
| | | EN 14 877 ☐ | EN 15330-1 (Tennis) | |

Les essais sont réalisés conformément au mode opératoire **M0-02** à l'aide du pendule **A02-00-00**

X **Glissance à sec** ☐ **Glissance en humide**

## CORRECTIONS AVANT LA MESURE

| ZERO | Lâcher N° 1 | 2 | 3 | Moyennes des lachers |
|---|---|---|---|---|
| Avant essai | 0 | 0 | 0 | 0 |
| Aprés essai | 0 | 0 | 0 | 0 |
| MOYENNE DES MOYENNES | | | | 0 |

**EAU** — Corrections en fonction de la température de l'eau

| | | | |
|---|---|---|---|
| 0 °C | -7 | 15°C | -1 |
| 2° C | -6 | 20°C | 0 |
| 5 °C | -5 | 25°C | 1 |
| 8 °C | -4 | 30°C | 2 |
| 10°C | -3 | 40°C | 3 |
| 13°C | -2 | | |

## ESSAI

| ESSAIS \ LACHERS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Moyenne (X) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 99 | 91 | 84 | 83 | 85 | 88 | 88 | 88 | 88 |
| 2 | 66 | 67 | 66 | 67 | 68 | 90 | 90 | 90 | 90 |
| 3 | 70 | 77 | 76 | 78 | 83 | 90 | 90 | 90 | 90 |
| MOYENNE DES MOYENNES = X | | | | | | | | | 89,3 |

| BILAN DES CORRECTIONS | | |
|---|---|---|
| | EAU | / |
| | ZERO ( MOY DES MOY*) | 0 |
| | ETALONNAGE | +0,6 |
| **GLISSANCE CORRIGEE** | | 90 |

INCERTITUDE DE LA MESURE ± 4 UNITES

## CONFORMITE DE L'ECHANTILLON

A REMPLIR SEULEMENT PAR LE RESPONSABLE DU DEPARTEMENT CONCERNÉ

| CONFORME | X | NON-CONFORME | |
|---|---|---|---|

## COMMENTAIRES ET REMARQUES

Dans le cas où les 5 premières valeurs diffèrent de plus de 3 unités, ne sont pris en compte que les 3 derniers

## Annex 2 : Shock absorption results

MESURES DE LA REDUCTION DE FORCE

N° d'enregistrement : 100329
Date : 23/03/2010
Opérateur : MB
Programme utilisé : athlete_110806_DT9816
Appareil utilisé: Athlète A04-00
Température (°C) : 23.7
Hygrométrie (%) : 49
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**********

| Point | n° | 120Hz odr2(%) | 120Hz odr9(%) | 220Hz odr2(%) | 220Hz odr9(%) | Energie (%) |
|---|---|---|---|---|---|---|
| Epaisseur :3.4mm au point A | | | | | | |
| A | 1 | 8.05 | 7.87 | 7.77 | 8.82 | 82.01 |
| A | 2 | 7.1 | 7.14 | 6.83 | 8.1 | 84.6 |
| A | 3 | 7.28 | 7.27 | 7.17 | 8.23 | 86.35 |
| Epaisseur :3.4mm au point B | | | | | | |
| B | 1 | 9.08 | 9.2 | 8.99 | 9.97 | 81.16 |
| B | 2 | 7.67 | 7.69 | 7.53 | 8.7 | 85.04 |
| B | 3 | 7.06 | 7.14 | 6.67 | 7.92 | 84.17 |
| Epaisseur :3.4mm au point C | | | | | | |
| C | 1 | 8.49 | 8.42 | 8.45 | 9.13 | 82.44 |
| C | 2 | 7.44 | 7.71 | 7.13 | 8.24 | 85.47 |
| C | 3 | 6.99 | 7.5 | 6.6 | 7.78 | 85.04 |
| Epaisseur :3.4mm au point D | | | | | | |
| D | 1 | 99.77 | 99.34 | 99.68 | 99.67 | 242.8 |
| D | 2 | 7.62 | 7.58 | 7.51 | 8.36 | 84.6 |
| D | 3 | 7.35 | 7.67 | 6.98 | 8.07 | 83.3 |
| | | **7.31** | | | | |

## Annex 3 : Vertical deformation results

MESURES DE DEFORMATION PONCTUELLE

N° d'enregistrement : 100329
Date : 23/03/2010
Opérateur : MB
Programme utilisé : athlete_110806_DT9816
Appareil utilisé: Athlète A04-00
Température (°C) : 22.5
Hygrométrie (%) : 52.4

| Point | n° | F Max (kN) | Déf R (mm) | Déf STV (mm) |
|---|---|---|---|---|
| A | 1 | 1.64 | -0.06 | -0.05 |
| A | 2 | 1.65 | -0.05 | -0.05 |
| A | 3 | 1.64 | -0.06 | -0.06 |
| B | 1 | 1.62 | -0.07 | -0.07 |
| B | 2 | 1.64 | -0.07 | -0.06 |
| B | 3 | 1.64 | -0.06 | -0.06 |
| C | 1 | 1.64 | -0.05 | -0.05 |
| C | 2 | 1.65 | -0.06 | -0.05 |
| C | 3 | 1.64 | -0.05 | -0.05 |
| | | | | -0.06 |

## Annex 4 : Vertical ball rebound results

MESURES DE REBOND VERTICAL

N° d'enregistrement: 006716
Date: 23/03/2010
Opérateur: MB
Programme utilisé: rbv_121103
Type de Balle : Basket
Température: 23.6 °C
Hygrométrie: 49.4 %
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**********

| Point | Laché | Tps(s) | HR(cm) | |
|---|---|---|---|---|
| A | 1 | 0.947 | 104.6 | |
| A | 2 | 0.948 | 104.8 | |
| A | 3 | 0.951 | 105.5 | |
| A | 4 | 0.948 | 104.8 | |
| A | 5 | 0.947 | 104.6 | 104.86 |
| B | 1 | 0.946 | 104.3 | |
| B | 2 | 0.94 | 103 | |
| B | 3 | 0.942 | 103.4 | |
| B | 4 | 0.949 | 105 | |
| B | 5 | 0.936 | 102.1 | 103.56 |
| | | | | 99% |