

IBV
INSTITUTO DE
BIOMECÁNICA

**ELASTIC GRANULATED SBR
LAYER. TENSILE AND
THICKNESS TEST.**

On request of: **NEOFLEX, S.L.**

Elaborated by: **Instituto de
Biomecánica de Valencia**

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Code: 130240 - PROY12/0603

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**Accredited testing laboratory by
ENAC with accreditation number
519/LE1105**



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SIGNATURES AND AGREEMENT CONDITIONS

Report elaborated by: Ms. **Sonia Gimeno Peña**, Laboratory technician of the IBV Testing Line:

Signature:

Date: 
5/12/2013

Report reviewed and approved by: Ms. **Amelia Gómez Perez**, Production coordinator of the IBV Testing Line:

Signature:

Date: 
5/12/2013

AGREEMENT CONDITIONS

1. The test results and statements of compliance with the specifications (if applicable) in this report refer only to the test sample as it was tested.
2. Unless otherwise stated, the samples have been freely chosen and sent by the petitioner.
3. The IBV is not responsible in any case for the misinterpretation or misuse that can be done of this report, the reproduction of which, in its whole or part, with publicity purposes and without authorization from the IBV, is forbidden.
4. The results of this report are considered the petitioner's property and without his previous consent, the IBV will not communicate them to a third party.
5. Unless otherwise stated, the sample or the samples subject of this report will remain in the IBV during a period of six months beginning from the date of issue of this report. After this period, we will proceed to their destruction. Therefore, any claim must take place within the aforementioned period.
6. The appointment of COMPLIANCE in this report implies that the result is within the specification limit when taking into account the uncertainty of the measure.

NOT COMPLIANCE designation in this report implies that the measurement result is outside the specification limit when taking into account the measurement uncertainty.
7. The coverage probability for test uncertainty on which is based the statement of compliance is about 95%.



C o n t e n t s

SIGNATURES AND AGREEMENT CONDITIONS

1. INTRODUCTION AND OBJECTIVES

2. MATERIAL AND METHODS

3. RESULTS



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1. INTRODUCTION AND OBJECTIVES

The objective with the conducting of the tests is to determine the tensile strength and thickness of an elastic layer of granular SBR, used in sports surfaces.

Tests have been requested by the company NEOFLEX, S.L. located in: Camino de Castilla Km 5, 03207, ELCHE (ALICANTE).

2. MATERIAL AND METHODS

Samples were received on November 4, 2013. Tests were conducted in IBV laboratory facilities on December 4, 2013.

The sample was identified like is shown in the next table:

SAMPLE CODE	SAMPLE TEST DESCRIPTION SUPPLIED BY THE CUSTOMER	IMAGE
MU13-0473	<p>Specimens from SBR elastic layer and Neoflex RMD adhesive.</p> <p>Elastic layer constitution: Binder-resin adhesive: NEOPUR 2905 Rubber: Elastech. Mix ratio rubber:resin = 100 : 9</p>	

The specimens for conducting the tensile and thickness tests were cut by the petitioner. For the tensile test were used six specimens (three with longitudinally cut and three with transversely cut).

The thickness test was performed with conditions of 22°C and 52% RH.

The tensile test was performed with an ambient conditions of 22°C and 29%RH. Before testing, the specimens were conditioned during 24 hours at 23 ± 2°C and 50%RH.



The methodology for performing the tests is described below:

1. Thickness test according to UNE-EN 1969:2000 "Surfaces for sports areas. Determination of thickness of synthetic sports surfaces. Method A."
2. Tensile test according to UNE-EN 12230:2003 "Surfaces for sports areas - Determination of tensile properties of synthetic sports surfaces"

The measurement equipment used for conducting the tests are presented in the following table:

MEASURE EQUIPMENTS
Thermo-higrometer
Caliber 150mm
Dial gauge
Tensile testing machine
Video-extensometer
Flat reference surface
Climatic chamber
Register and humidity probe



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3. RESULTS

Bellow the individual and overall results are presented for each of the tests performed:

THICKNESS

The mean and individual results have been:

SAMPLE	TOTAL Thickness
Specimen 1	10.8
Specimen 2	10.8
Specimen 3	10.6
Specimen 4	10.7
Specimen 5	10.9
MEAN	10.8

Expanded uncertainty (total thickness test): 0.2mm (k=2.13).

TRACCIÓN

The mean and individual results have been:

Relative elongation for maximum tensile (%), E_m

SAMPLE	E_m (%)
Specimen 1	56
Specimen 2	41
Specimen 3	47
Specimen 4	64
Specimen 5	48
Specimen 6	54
MEAN	52

Expanded uncertainty (relative elongation for the maximum tensile): 8.6% (k=2.52).



Relative elongation at break (%), E_r

SAMPLE	E_r (%)
Specimen 1	57
Specimen 2	41
Specimen 3	51
Specimen 4	67
Specimen 5	49
Specimen 6	57
MEAN	54

Expanded uncertainty (elongation at break): 9.3% (k=2.52).

Maximum tensile resistance (KPa), O_m

SAMPLE	O_m (kPa)
Specimen 1	671
Specimen 2	583
Specimen 3	699
Specimen 4	590
Specimen 5	629
Specimen 6	552
MEAN	621

Expanded uncertainty (maximum tensile resistance): 57 kPa (k=2.52).

Traction tensile at break (KPa), O_r

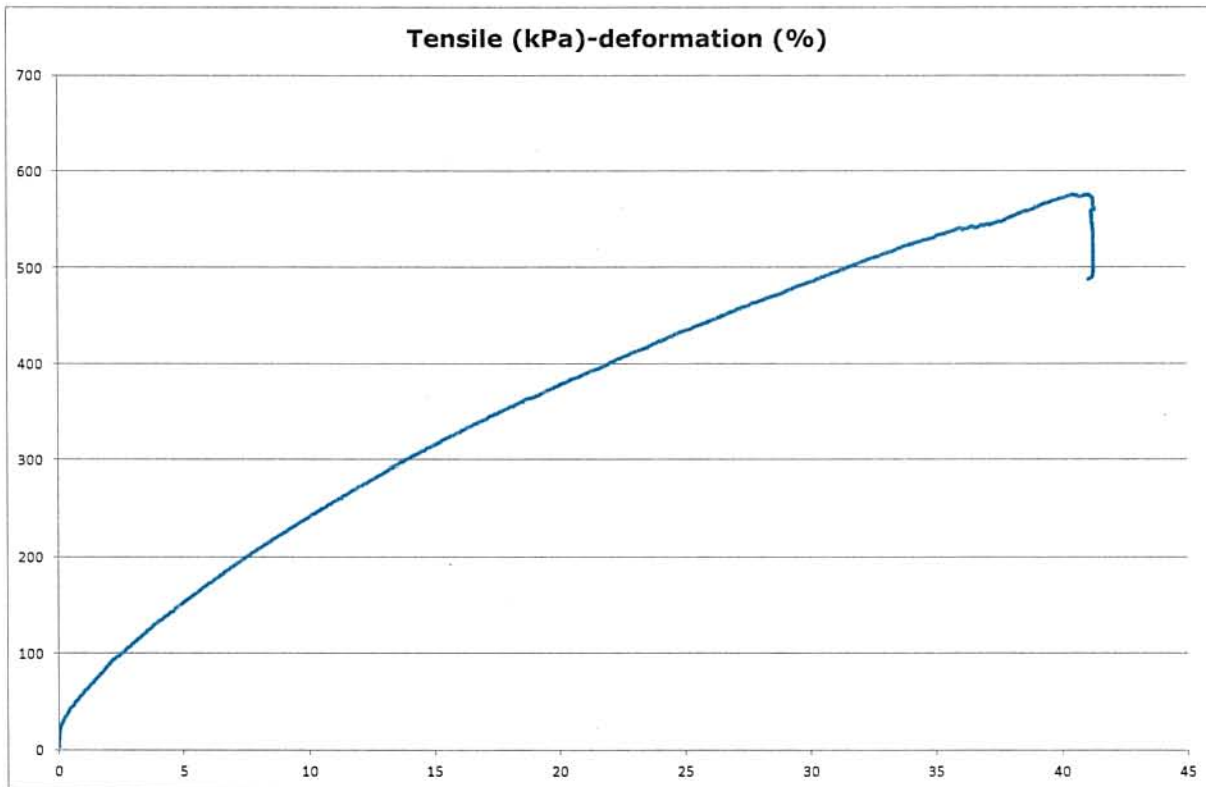
SAMPLE	O_r (kPa)
Specimen 1	671
Specimen 2	579
Specimen 3	695
Specimen 4	540
Specimen 5	592
Specimen 6	552
MEAN	605

Expanded uncertainty (traction tensile at break): 63 kPa (k=2.52).



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Tensile-deformation Curve



DESVIATIONS FROM THE STANDARD TEST:

- The specimens supplied by the petitioner do not meet all dimensional specifications in particular do not meet the dimensional tolerance of the width of 25 ± 0.1 mm.
- The humidity conditions during the test were 29% RH, rather than fixed by the standard (50% RH).