12-0557IT

Issued on  November 16th 2012

COMPANY
Tinaz Rubber Chemistry Ind. Ltd. Co

PRODUCT NAME
LAY-FLEX EPDM RUBBER GRANULES

CATEGORY
EPDM GRANULES

Tests according to:
NF P90-100:2008 standard Surfaces for sports areas – Synthetic material surface-coated athletics tracks and run-up areas.

Reproduction of this Test Report is only authorised in its entirety.

The results are only valid for the sample subjected to testing.

This report, valid for 3 years, contains 6 pages.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST PROGRAMME</td>
<td>3</td>
</tr>
<tr>
<td>REFERENCE DOCUMENTS</td>
<td>3</td>
</tr>
<tr>
<td>STORAGE TIMES</td>
<td>3</td>
</tr>
<tr>
<td>TEST PERFORMANCE CONDITION IN LABORATORY</td>
<td>3</td>
</tr>
<tr>
<td>APPLICANT</td>
<td>3</td>
</tr>
<tr>
<td>ACQUISITION DATA</td>
<td>3</td>
</tr>
<tr>
<td>SAMPLE IDENTIFICATION</td>
<td>4</td>
</tr>
<tr>
<td>Sample’s photo</td>
<td>4</td>
</tr>
<tr>
<td>TESTS RESULTS</td>
<td>4</td>
</tr>
<tr>
<td>PARTICLE SIZE CURVE</td>
<td>5</td>
</tr>
<tr>
<td>TGA GRAPH</td>
<td>5</td>
</tr>
<tr>
<td>ADDITIONAL INFORMATION</td>
<td>6</td>
</tr>
<tr>
<td>CONCLUSIONS</td>
<td>6</td>
</tr>
</tbody>
</table>
**TEST PROGRAMME**
Granules have been tested in accordance with NF P90-100 standard: Sport surfaces - Surfaces for sports areas – Synthetic material surface-coated athletics tracks and run-up areas. As required in this standard, chemical identification (TGA), particle size (EN933-1) and bulk density (NF EN 1097-3) have been realized.

**REFERENCE DOCUMENTS**
NF P90-100:2008  Sport surfaces - Surfaces for sports areas – Synthetic material surface-coated athletics tracks and run-up areas
EN 933-1 :1999  Tests for geometrical properties of aggregates. Determination of particle size distribution. Sieving method
NF EN 1097-3:1998  Tests for mechanical and physical properties of aggregates. Determination of loose bulk density and voids

**STORAGE TIMES**
Storage “Sine die” of specimens and documents

**TEST PERFORMANCE CONDITION IN LABORATORY**

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 ± 2°C</td>
<td>50 % ± 5%</td>
</tr>
</tbody>
</table>

**APPLICANT**

**COMPANY**
TINAZ RUBBER CHEMISTRY IND. LTD. CO

**ADDRESS**
Oto Sanayi Sitesi Aytekin Sok No: 44
Levent Istanbul

**COUNTRY**
Turkey

**ACQUISITION DATA**

**DATE ORDER RECEIVED**
November 06\textsuperscript{th} 2012

**DATE FIRST SAMPLE RECEIVED**
November 09\textsuperscript{th} 2012

**DATE LAST SAMPLE RECEIVED**
November 09\textsuperscript{th} 2012

**TEST START DATE**
November 09\textsuperscript{th} 2012

**TEST END DATE**
November 16\textsuperscript{th} 2012
SAMPLE IDENTIFICATION

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Commercial name</th>
<th>Color</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tinaz Rubber Chemistry Ind. Ltd. Co</td>
<td>LAY-FLEX</td>
<td>Green</td>
<td>EPDM</td>
</tr>
</tbody>
</table>

Application declared: Top layer of Athletic surface when mixed with PU binder

SAMPLE’S PHOTO

![Sample Photo]

TESTS RESULTS

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particle size</td>
<td>1.25 - 2.5mm</td>
<td>(d \geq 1.0\text{mm}. D \leq 4.0\text{mm.})</td>
</tr>
<tr>
<td>Bulk density</td>
<td>0.63g/cm²</td>
<td>(/)</td>
</tr>
<tr>
<td>TGA</td>
<td>% mineral 63.5%, % organic 36.5%, % elastomer 25.8%</td>
<td>% elastomer \geq 21%</td>
</tr>
</tbody>
</table>
PARTICLE SIZE CURVE

This test consists in registering the sample mass variations (solid or liquid) according to the temperature. The obtained curve is named thermogramm. It records simultaneously the weight curve and its primary derivative, that allows to know the temperature for which one the body degradation speed is the most important.

TGA GRAPH

This test consists in registering the sample mass variations (solid or liquid) according to the temperature. The obtained curve is named thermogramm. It records simultaneously the weight curve and its primary derivative, that allows to know the temperature for which one the body degradation speed is the most important.

\[ \text{Delta Y} = 10.479\% \]

\[ \text{Delta Y} = 24.722\% \]

\[ \text{Delta Y} = 1.004\% \]

\[ \text{Delta Y} = 23.268\% \]

\[ \text{Onset Y} = 63.626\% \]

\[ \text{Onset X} = 64.955^\circ C \]
ADDITIONAL INFORMATION
None

CONCLUSIONS
The particle size of the granule is 1.25 - 2.5mm. and complies with the NF P90-100 requirement. Elastomer rate in the tested granule is 25.8% and complies with NF P90-100 requirement.

Laboratory Director
Roberto Armeni

Laboratory responsible
Davide Giorgini