TERRAIN™

RESILIENT IN EVERY SENSE

# Test Certificates

1- Labosports - EN1177 & EN 71
2- ISO 9001:2015
3- Lesson Polyurethane
4- Era Polymers
5- Element- Critical Radiant Flux
6- Intertek- Anti Fungal

# TEST REPORT

## 17-0459IT

**Issued on** November 02nd 2017

*CLIENT*

**AL KHALEEJ POLYMERS RUBBER & PLASTIC INDUSTRIES LLC**

*PRODUCT NAME*

**TERRAIN RUBBER TILES**

*TYPE*

**RUBBER TILE**

**Test according to:**

**EN 1177:2008 Impact attenuating playground surfacing. Determination of critical fall height**

**EN 71-3:2013+A1 2014 Safety of toys. Migration of certain elements**

*Reproduction of this test report is only authorized in its entirety*

*The results are solely considered valid for the specimen subjected to testing*

**Labosport Italia S.r.l**
*Via Monza, 80 – 23870 CERNUSCO LOMBARDONE (LC)*
*Tel. +39 039 894.62.15 – Fax +39 039 968.51.68*

**www.labosport.it**
**labosport@labosport.it**



LAB N° 1427

## PREMISE

This Test Report is issued in compliance with the accreditation LAT N° 1427 granted according to decrees connected with Italian law No. 27311991 which has established the National Calibration System. ACCREDIA attests the measurement capability, the metrological competence of the Centre and the traceability of test results to the national and international standards of the International System of Units (SI). This certificate may not be partially reproduced, except with the prior written permission of the issuing Centre.
List of equipment used for the test are listed in this Test Report.

The measurement results reported in this Test Report were obtained in accordance with the standard given in the following page, where the reference standard is indicated.

The measurement uncertainties stated in this document have been determined according to the ISO/IEC Guide 98 and to EA-4102. Usually, they have been estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95%. Normally, this factor k is 2.

## UNCERTAINTY

The expanded uncertainty is estimated to be ± 30.3 (HIC value).
Expanded uncertainty calculated with a coverage factor (k) of 2, corresponding to a confidence level of 95%

# SUBJECT

Determination of the HIC value in accordance with the EN 1177:2008 and chemical tests according to EN71-3:2013+A1 2014.

# REFERENCE DOCUMENTS

## REFERENCE STANDARDS AND REGULATIONS USED

EN 1177:2008 Impact attenuating playground surfacing. Determination of critical fall height

EN71-3:2013+A1 2014 Safety of toys. Migration of certain elements.

# STORAGE TIMES

Storage of documents 4 years and samples 1 month from the issue of the report.

# SAMPLING

Sampling carried out by the customer.

# DECLARATION

This material must also comply with the requirements of EN 1176-1, in particular in paragraphs 4 and 6.

# APPLICANT

| | |
|---|---|
| **COMPANY NAME** | **AL KHALEEJ POLYMERS RUBBER & PLASTIC INDUSTRIES LLC** |
| **ADDRESS** | Plot No: L7 & 2B Al Ghail Industrial Park<br>RAK |
| **COUNTRY** | UAE |

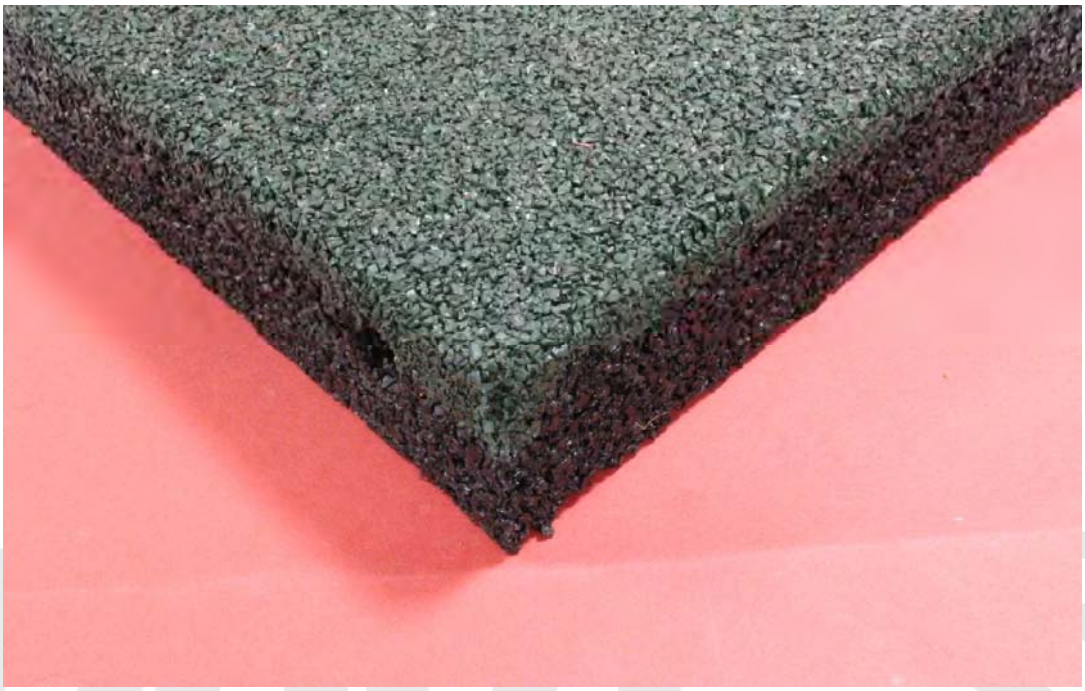
# DATA ACQUISITION

| | |
|---|---|
| **DATE ORDER RECEIVED** | June 19th 2017 |
| **DATE FIRST SAMPLE RECEIVED** | August 03rd 2017 |
| **DATE LAST SAMPLE RECEIVED** | August 03rd 2017 |
| **START DATE OF TESTS** | September 05th 2017 |
| **END DATE OF TESTS** | October 18th 2017 |

# TEST PERFORMANCE CONDITION IN LABORATORY

| Air temperature | Relative humidity |
|---|---|
| 23°C ± 2°C | 50% ± 5% |

# *SAMPLE IDENTIFICATION*



*General view*


*Section*

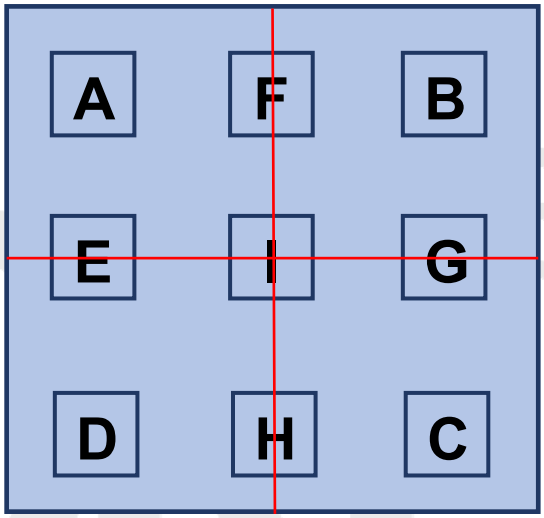
Product it has been laid on the concrete testing platform without to be glued or fixed.
Product was tested at 23°C and 48% RH (ambient temperature).
Weight of the sample tested was 30.1kg/m².
Measured thickness of the tile 50mm.

# PRODUCT DESCRIPTION

| | |
|---|---|
| **Trade name** | **TERRAIN RUBBER TILES** |
| **Declared thickness (total)** | **50.0**mm. |
| **Description (as indicated by the manufacturer)** | **Rubber crumbs top 0.5-2.5mm, bottom rubber crumbs 1.4mm, rubber binder, iron oxide pigments.** |

# DATA ACQUISITION

## SCHEME OF MEASUREMENTS DONE




## DESCRIPTION OF THE TEST

The test consists of dropping out of each of the nine points occurred a hemispherical mass with an accelerometer for four times in each of the nine points to a different height of fall detecting the values of HIC for each of the points.

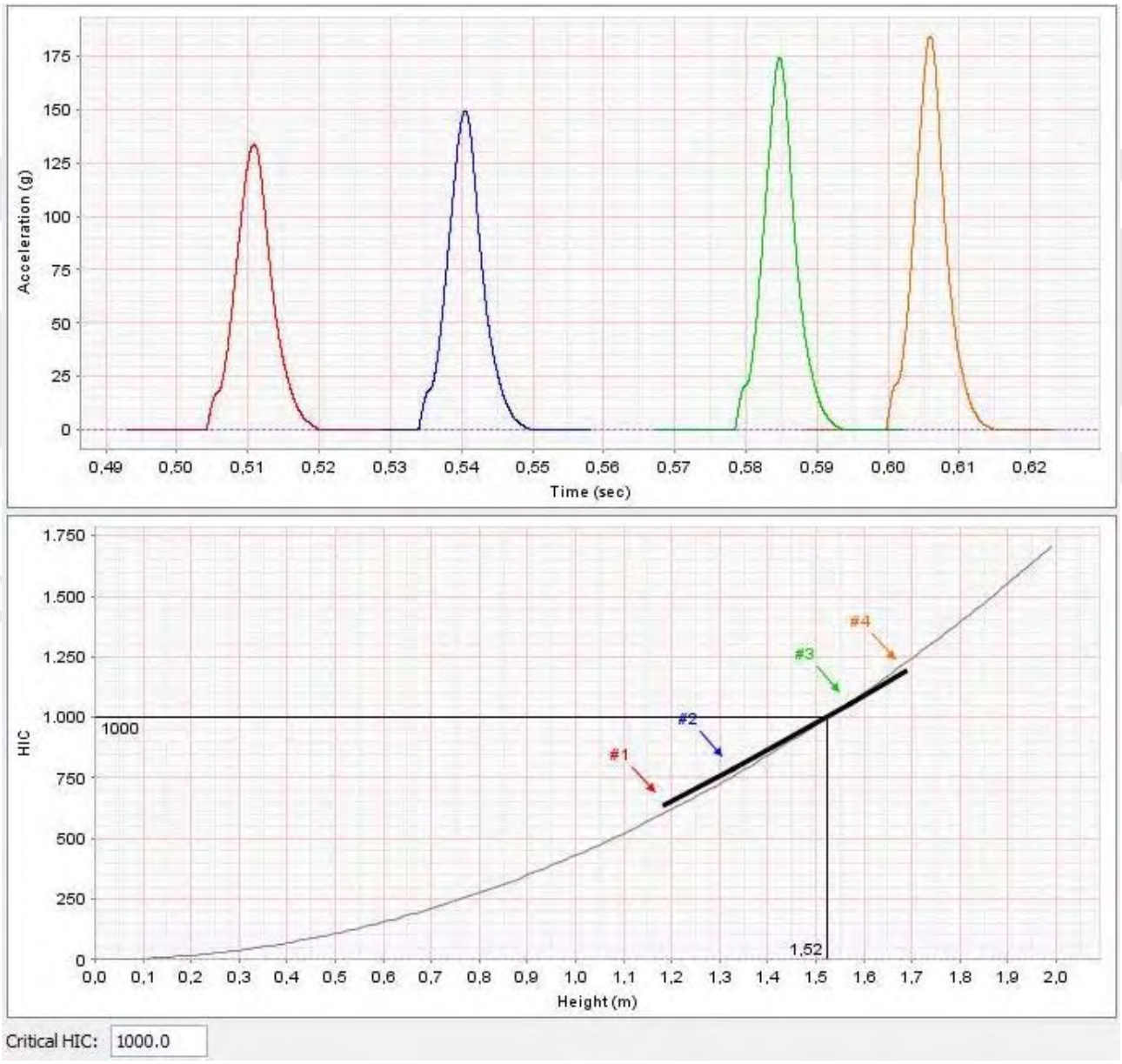
# TEST RESULTS

| Verified point | HIC 1000 (cm. value) | Critical fall height (meters value) | Total critical fall height (meters value) |
|---|---|---|---|
| A | 152 | 1.5 | 1.5m |
| B | 152 | 1.5 | |
| C | 152 | 1.5 | |
| D | 150 | 1.5 | |
| E | 151 | 1.5 | |
| F | 150 | 1.5 | |
| G | 154 | 1.5 | |
| H | 160 | 1.6 | |
| I | 153 | 1.5 | |

# *DETAIL OF THE TEST POINT "A"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.58**ms | **134**g | **1.19**cm | **641** |
| **2** | **5.31**ms | **149**g | **1.33**cm | **790** |
| **3** | **4.89**ms | **174**g | **1.57**cm | **1055** |
| **4** | **4.77**ms | **185**g | **1.69**cm | **1189** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "A"** | | | | **1.5**m |

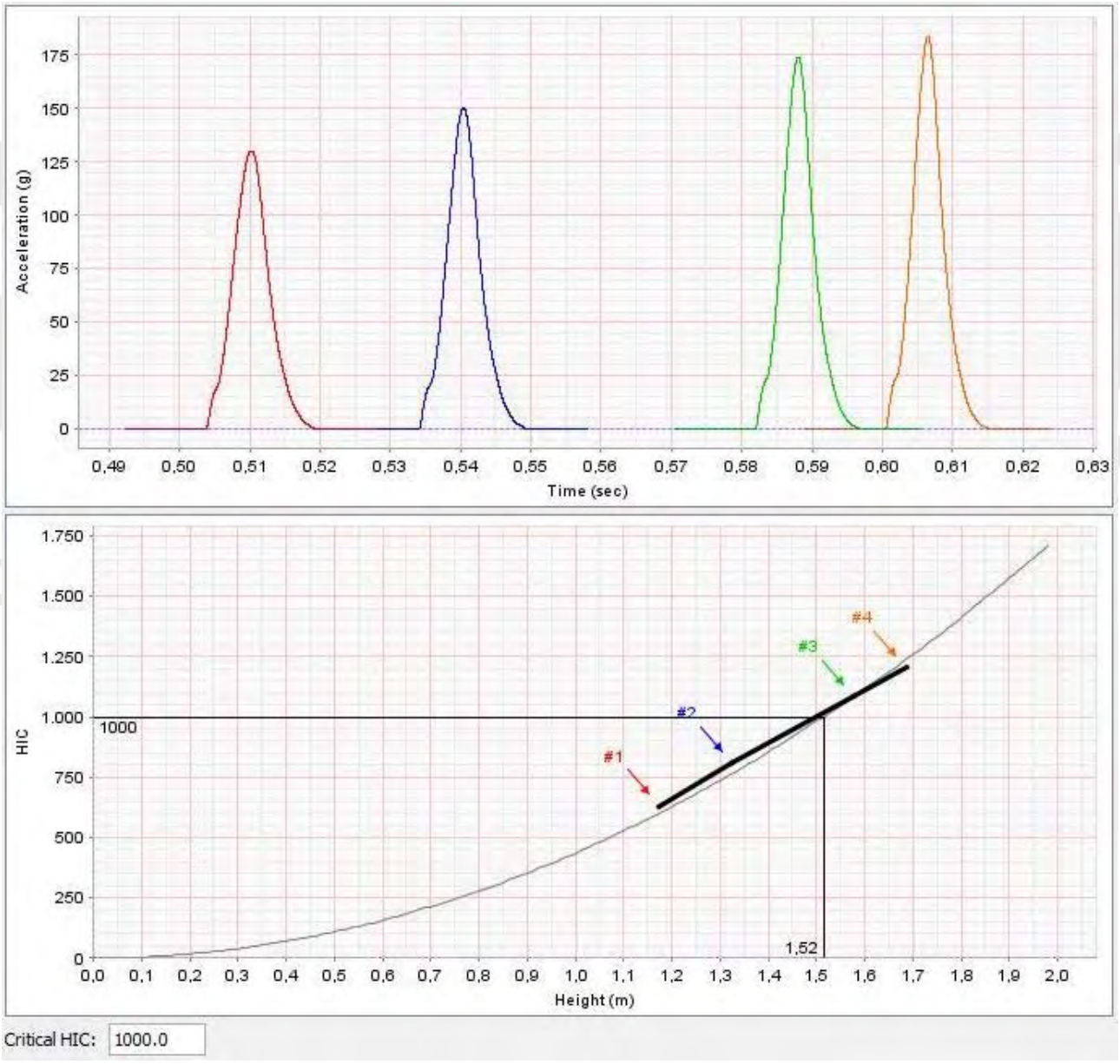
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "B"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.76**ms | **130**g | **1.17**cm | **629** |
| **2** | **5.31**ms | **150**g | **1.33**cm | **807** |
| **3** | **4.92**ms | **174**g | **1.58**cm | **1082** |
| **4** | **4.83**ms | **184**g | **1.69**cm | **1202** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "B"** | | | | **1.5**m |

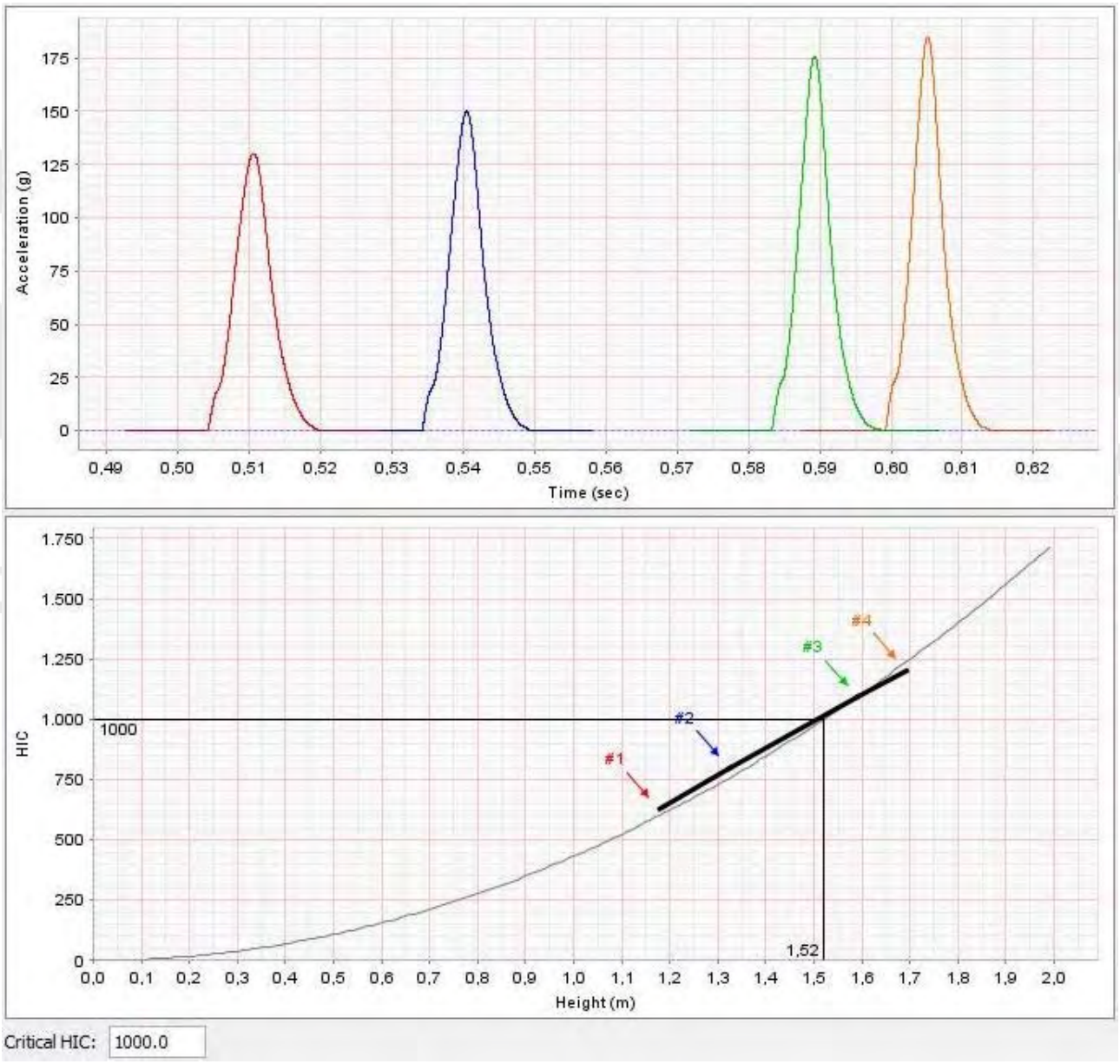
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "C"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.79**ms | **130**g | **1.18**cm | **627** |
| **2** | **5.31**ms | **150**g | **1.32**cm | **798** |
| **3** | **4.89**ms | **176**g | **1.59**cm | **1090** |
| **4** | **4.80**ms | **185**g | **1.69**cm | **1202** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "C"** | | | | **1.5**m |

## *HIC CURVE*

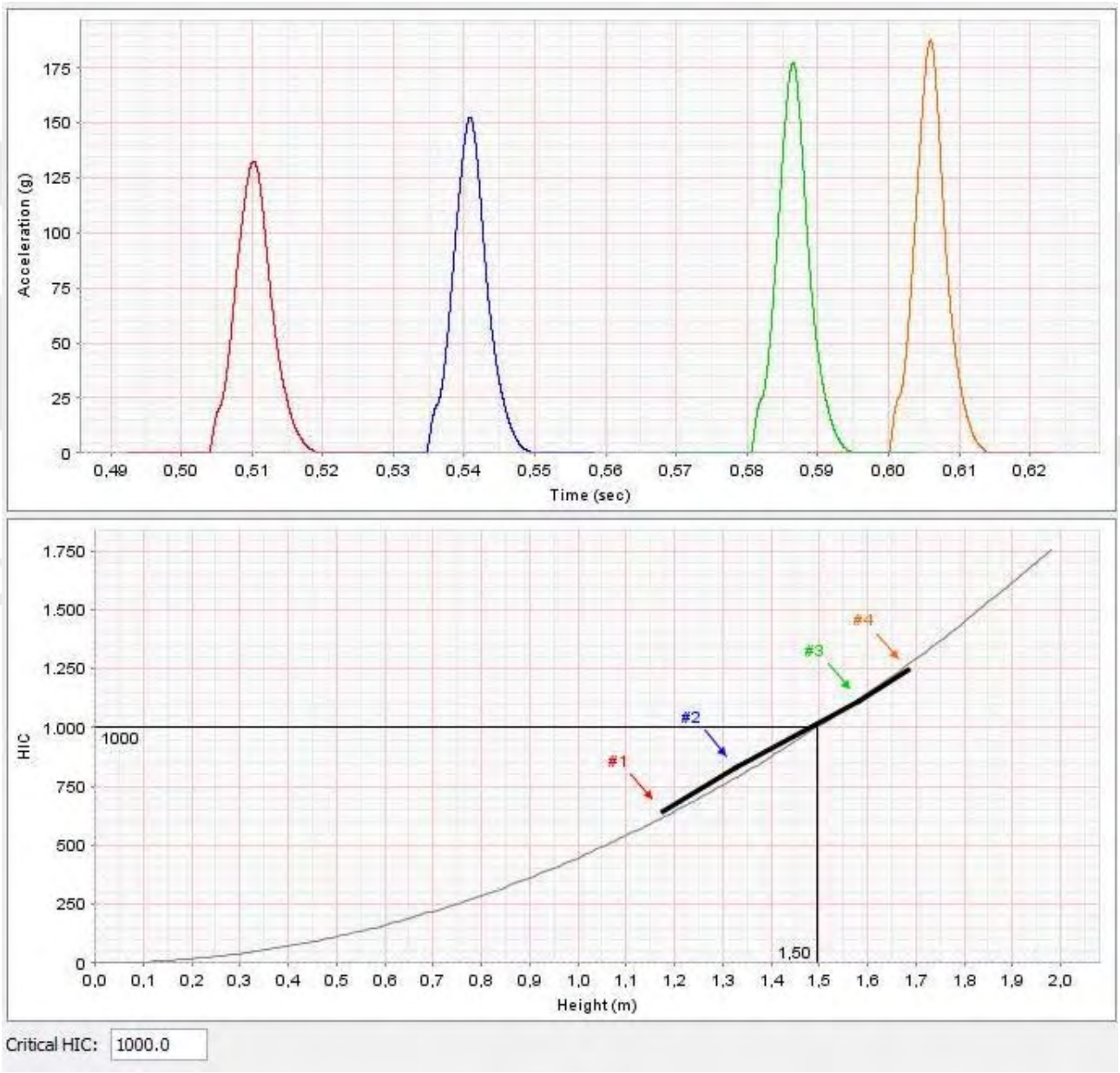



Critical HIC: 1000.0

# *DETAIL OF THE TEST POINT "D"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.70**ms | **133**g | **1.18**cm | **646** |
| **2** | **5.22**ms | **153**g | **1.33**cm | **829** |
| **3** | **4.86**ms | **178**g | **1.58**cm | **1113** |
| **4** | **4.77**ms | **188**g | **1.68**cm | **1241** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "D"** | | | | **1.5**m |

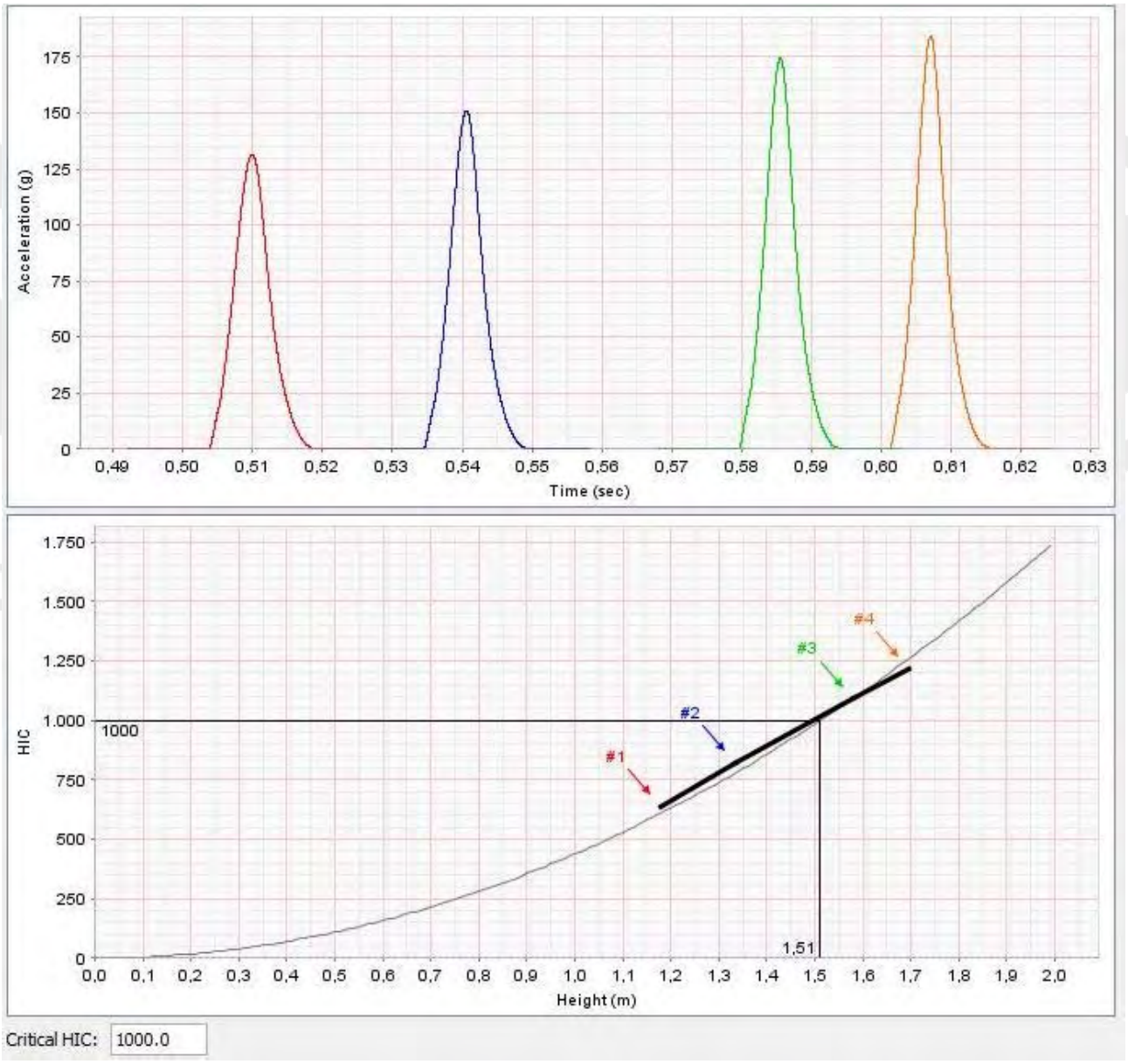
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "E"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.79**ms | **132**g | **1.18**cm | **640** |
| **2** | **5.31**ms | **151**g | **1.33**cm | **822** |
| **3** | **4.98**ms | **175**g | **1.58**cm | **1090** |
| **4** | **4.86**ms | **184**g | **1.70**cm | **1217** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "E"** | | | | **1.5**m |

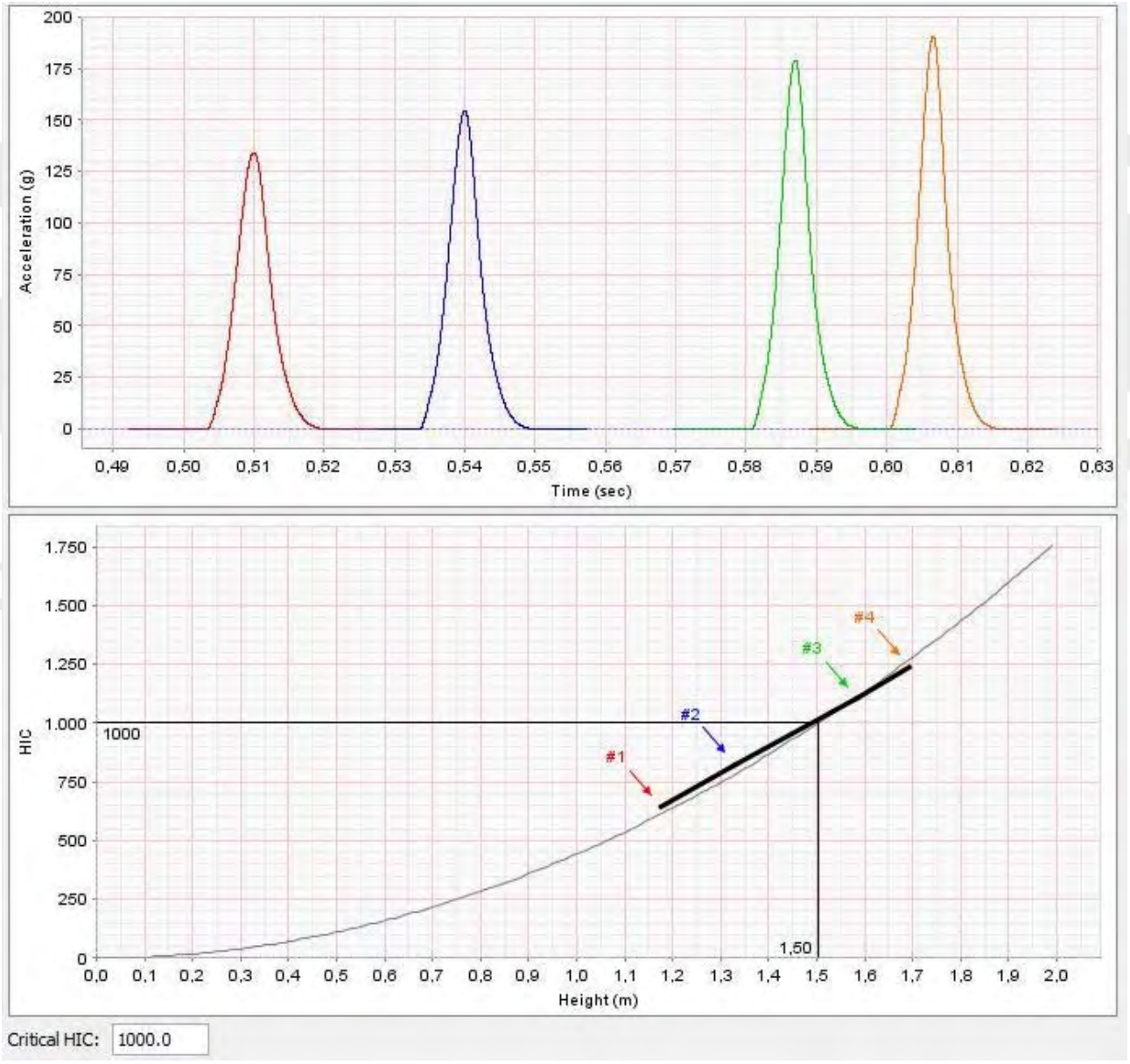
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "F"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.49**ms | **134**g | **1.18**cm | **642** |
| **2** | **5.04**ms | **155**g | **1.33**cm | **823** |
| **3** | **4.71**ms | **179**g | **1.58**cm | **1103** |
| **4** | **4.53**ms | **191**g | **1.69**cm | **1237** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "F"** | | | | **1.5**m |

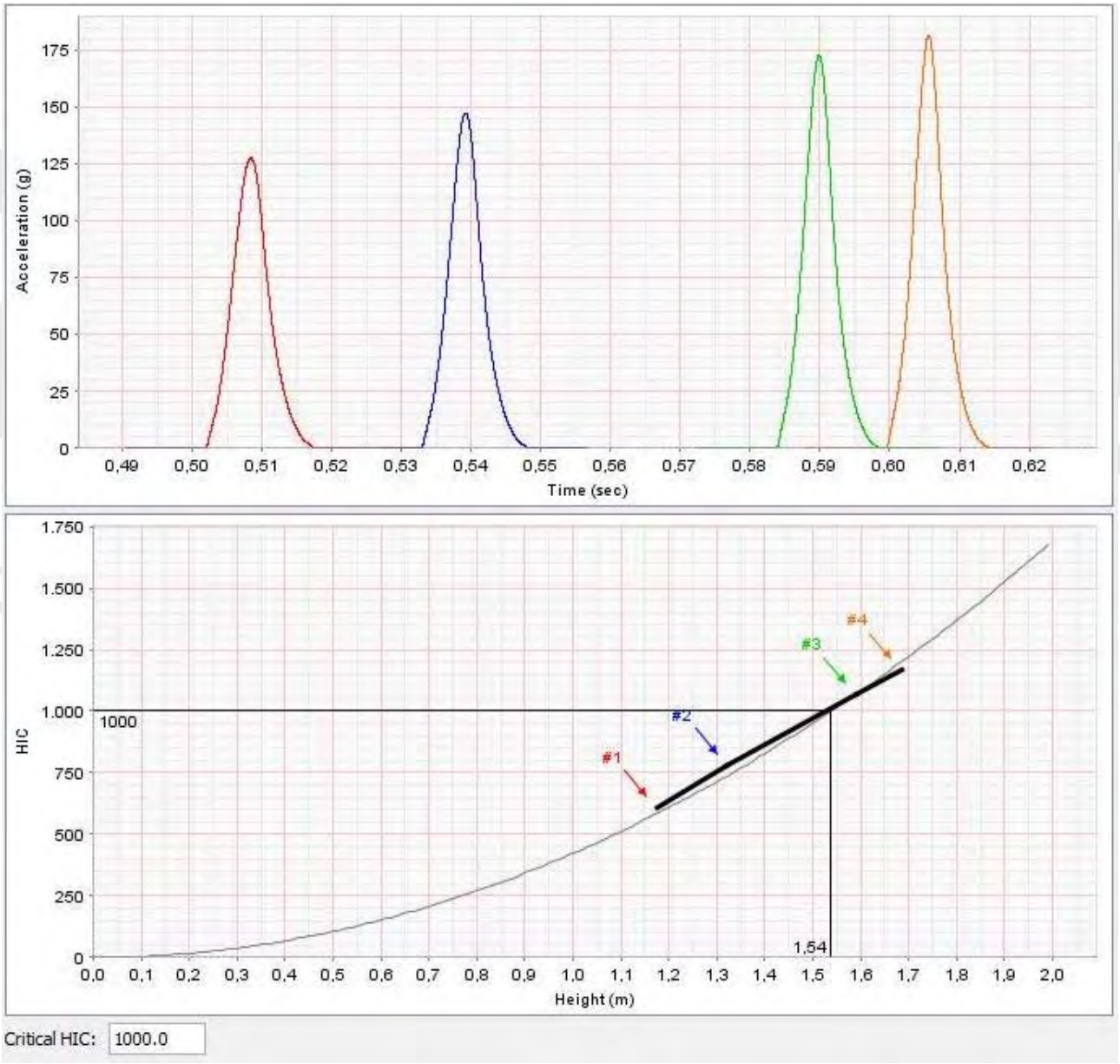
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "G"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.88**ms | **128**g | **1.17**cm | **607** |
| **2** | **5.40**ms | **147**g | **1.32**cm | **778** |
| **3** | **4.98**ms | **173**g | **1.59**cm | **1066** |
| **4** | **4.89**ms | **181**g | **1.68**cm | **1166** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "G"** | | | | **1.5**m |

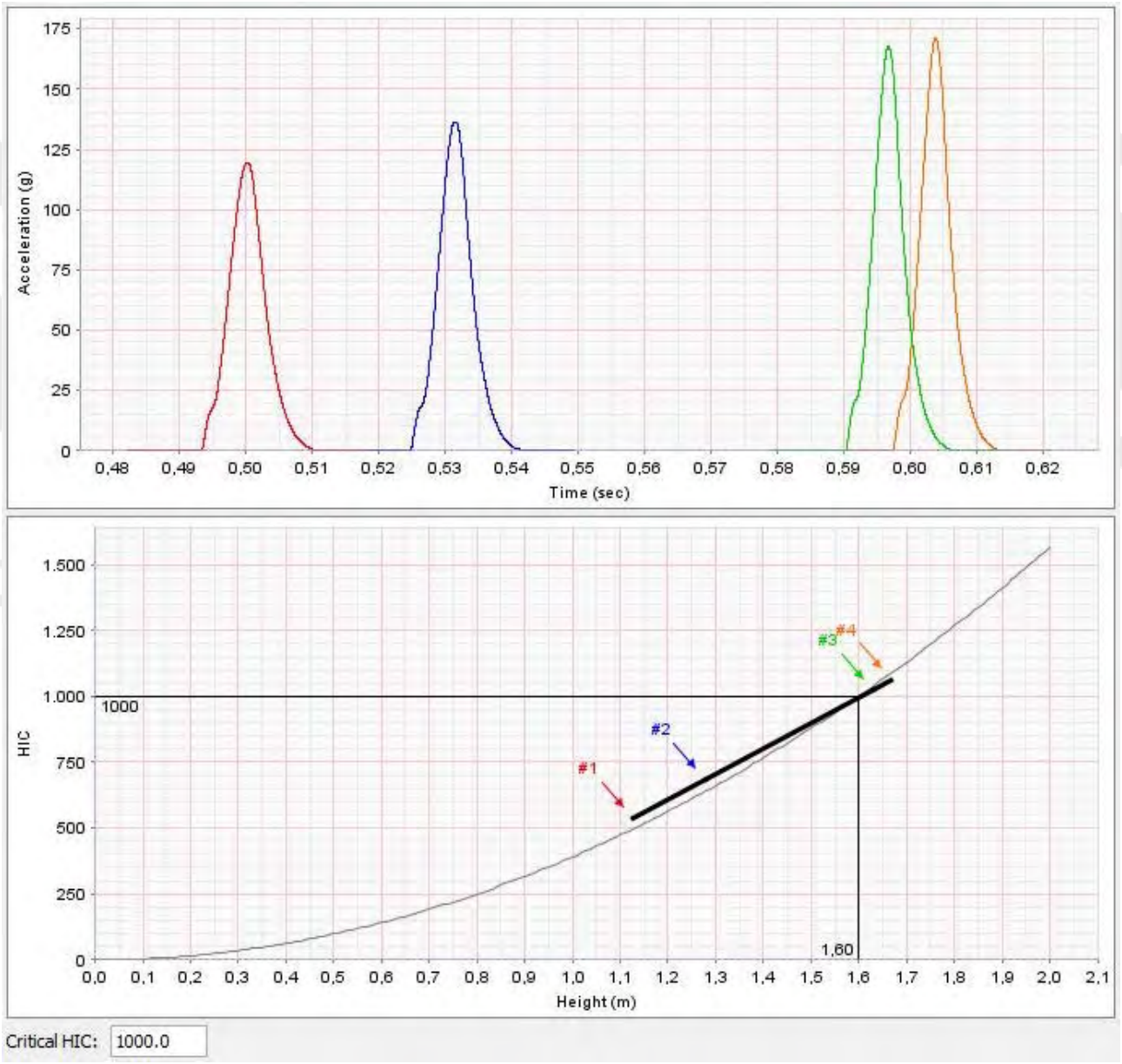
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "H"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **6.12**ms | **119**g | **1.13**cm | **535** |
| **2** | **5.64**ms | **136**g | **1.28**cm | **684** |
| **3** | **5.16**ms | **168**g | **1.63**cm | **1021** |
| **4** | **5.13**ms | **171**g | **1.67**cm | **1062** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "H"** | | | | **1.6**m |

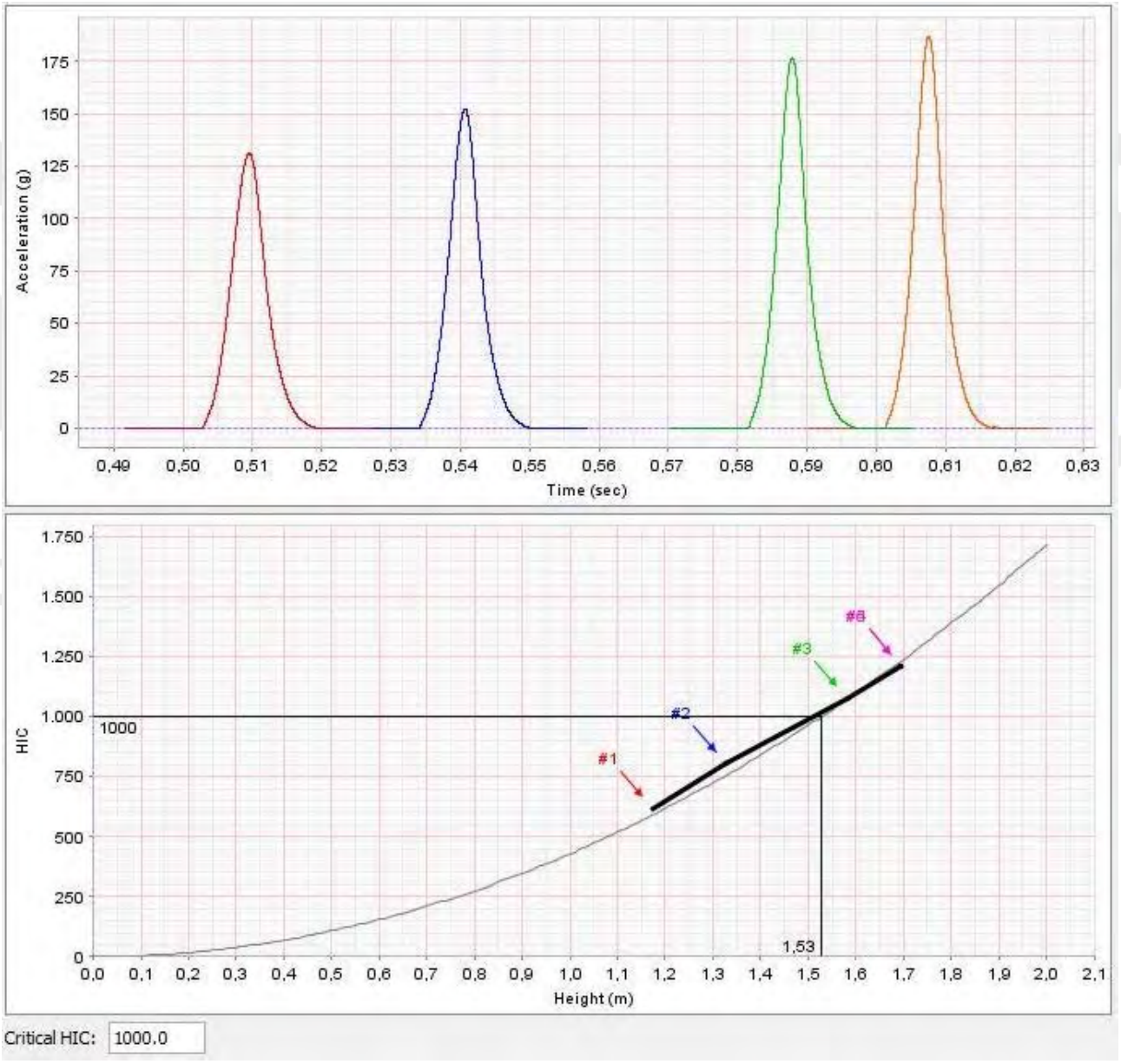
## *HIC CURVE*



# *DETAIL OF THE TEST POINT "I"*

| Impact | Time | G max | Height | HIC |
|---|---|---|---|---|
| **1** | **5.64**ms | **131**g | **1.17**cm | **617** |
| **2** | **5.16**ms | **152**g | **1.33**cm | **804** |
| **3** | **4.8**ms | **177**g | **1.58**cm | **1077** |
| **4** | **4.65**ms | **187**g | **1.69**cm | **1209** |
| **Thickness of the sample at the point** | | | | **5.0**mm |
| **Result of the test at the point "I"** | | | | **1.5**m |

## *HIC CURVE*



## CHEMICAL RESULTS

| ELEMENTS | RESULTS | REQUIREMENTS EN71-3 Category III – Migration Limit |
|---|---|---|
| **Aluminum** | 12.3mg/Kg | 70 000 mg/Kg |
| **Antimony** | <0.05mg/Kg | 560 mg/Kg |
| **Arsenic** | <0.05mg/Kg | 47 mg/Kg |
| **Barium** | 4.1mg/Kg | 18 750 mg/Kg |
| **Boron** | 1.6mg/Kg | 15 000 mg/Kg |
| **Cadmium** | <0.05mg/Kg | 17 mg/Kg |
| **Chrome (III)** | 0.25mg/Kg | 460 mg/Kg |
| **Chrome (VI)** | <0.2mg/Kg | 0,2 mg/Kg |
| **Cobalt** | <0.05mg/Kg | 130 mg/Kg |
| **Copper** | 0.95mg/Kg | 7 700 mg/Kg |
| **Lead** | 0.1mg/Kg | 160 mg/Kg |
| **Manganese** | 0.3mg/Kg | 15 000 mg/Kg |
| **Mercury** | <0.05mg/Kg | 94 mg/Kg |
| **Nickel** | 0.25mg/Kg | 930 mg/Kg |
| **Selenium** | 0.05mg/Kg | 460 mg/Kg |
| **Strontium** | 0.5mg/Kg | 56 000 mg/Kg |
| **Tin** | <0.05mg/Kg | 180 000 mg/Kg |
| **Zinc** | 14.5mg/Kg | 46 000 mg/Kg |

## EQUIPMENT USED

**EN 1177:2008 Impact attenuating playground surfacing. Determination of critical fall height**

| Instrument | Model | Serial number | Internal code |
|---|---|---|---|
| Datalogger | 117-H1 | 01333640/702 | STR018 |
| Meter | Powerlock classic | STR229 | STR229 |
| HIC Frame | - | STR172 | STR172 |

## ADDITIONAL INFORMATION

None

## CONCLUSIONS

None

Laboratory Manager
Davide Giorgini

Laboratory Director
Roberto Ameni

# Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 1722594**

Certificate Holder: **Al Khaleej Polymers Rubber & Plastic Industries L.L.C.**
Al Ghail Industrial Area,
Plot # 7 & 28, Ras Al Khaimah,
United Arab Emirates

Scope: Manufacturer, Supplier and Contractor for Rubber and all other Sports Flooring, Manufacturer of Plastic Moulded Products and Trading of Rubber Sheets.

Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity: The certificate is valid from 2021-03-11 until 2024-01-07.
First certification 2018

2021-03-14

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

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Leeson Polyurethanes

A bond for life

| | | |
|---|---|---|
| **Customer** | **:** | **Al Khaleej Polymers** |
| **Lab reference** | **:** | LTR 2717 |
| **Title** | **:** | Laboratory Testing of Bound Rubber Tiles |
| **Author** | **:** | David Christian |
| **Date** | **:** | 13th September 2016 |

Produced in Confidence, for the Attention of Al Khaleej Polymers Only

**Leeson Polyurethanes Ltd.** Hermes Close, Warwick, CV34 6RP, UK.
Tel: +44 (0) 1926 833367 Fax: +44 (0) 1926 881469 sales@lpultd.com | www.lpultd.com

Registered in England No. 2007874
VAT Registration: GB 418 8342 39

**Background:**
Al Khaleej Polymers provided Leeson Polyurethanes Ltd. with four sample sets of bound rubber tiles made with Leeson Polyurethane binder. Each sample set had a different binder concentration of 5%, 8%, 10% and 12%. Using the provided samples comparative testing was undertaken.

**Lab Testing:**
***Tensile and Elongation:***
From each of the provided samples three test pieces were cut using a die to give a test pieces with a width of 25mm. The samples were then tested following BS 7188:2008 to destruction with an Instron 4411 Tensometer using a speed of 100mm/min and crosshead separation of 80mm. An average of their results was then taken.

Test piece placed firmly inside the Instron 4411 Tensometer prior to testing. Elongation and load application are set to zero before the test is initiated.

Test piece pulled to destruction, at this point the maximum load applied to the test piece and the maximum elongation are recorded.

***Hardness:***
The cured hardness of each provided sample was tested to LPU STM 87 using a Shore A and Shore D durometer, for each sample the hardness was measured across the surface five times and an average taken.

***Discolouration:***
UV resistance and stability was tested using a Q-Panel QUV Accelerated Weathering Tester following the method in ASTM D4587-05. A 25mm by 100mm test piece from each provided sample was partially protected with opaque material and was then exposed for 72 hours to UV light using UVA 340 fluorescent tubes at a temperature

of 45°C. After the 72 hours the colour drift between the covered and uncovered sections were measured with a Sheen Micromatch.

**Results:**

***Tensile and Elongation:***

Binder application of 5%

| Sample | Max Load (N) | Tensile ($N/mm^2$) | Elongation (%) |
|---|---|---|---|
| Averaged Value | 253.32 | 1.00 | 97.92 |

Binder application of 8%

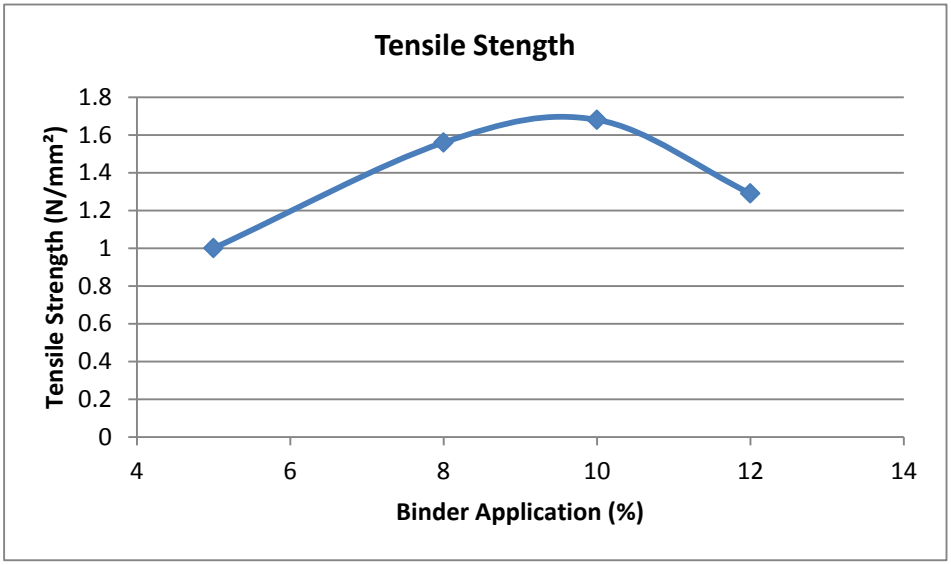
| Sample | Max Load (N) | Tensile ($N/mm^2$) | Elongation (%) |
|---|---|---|---|
| Averaged Value | 398.27 | 1.56 | 135.23 |

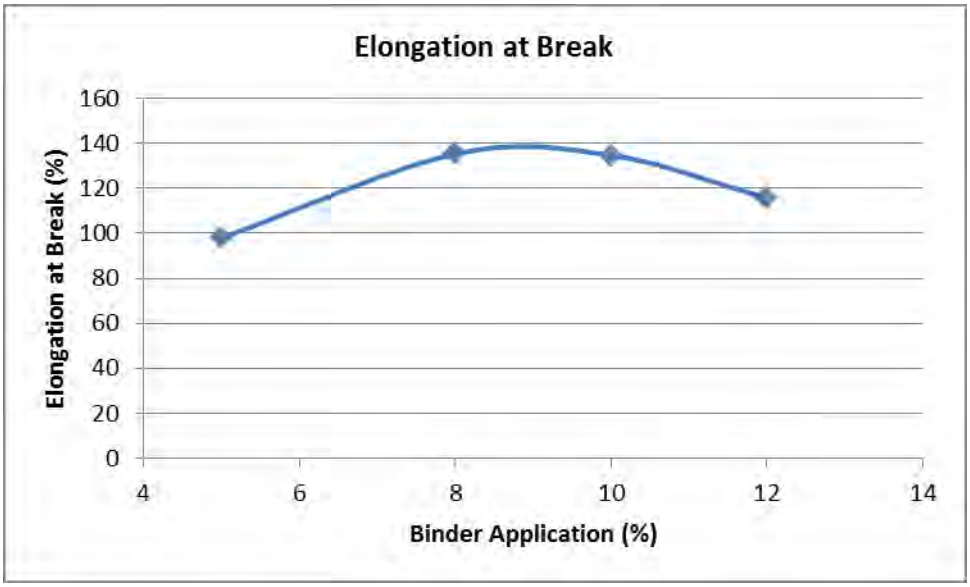
Binder application of 10%

| Sample | Max Load (N) | Tensile ($N/mm^2$) | Elongation (%) |
|---|---|---|---|
| Averaged Value | 428.67 | 1.68 | 134.62 |

Binder application of 12%

| Sample | Max Load (N) | Tensile ($N/mm^2$) | Elongation (%) |
|---|---|---|---|
| Averaged Value | 332.10 | 1.29 | 115.62 |






***Hardness:***

Binder application of 5%

| Sample | Shore A | Shore D |
|---|---|---|
| Averaged Value | 58 | 15 |

Binder application of 8%

| Sample | Shore A | Shore D |
|---|---|---|
| Averaged Value | 60 | 15 |

Binder application of 10%

| Sample | Shore A | Shore D |
|---|---|---|
| Averaged Value | 60 | 16 |

Binder application of 12%

| Sample | Shore A | Shore D |
|---|---|---|
| Averaged Value | 62 | 15 |

***Discolouration:***

Average discolouration

| Sample | ΔE, Colour Variance |
|---|---|
| Averaged Value | 0.42 |

None of the samples showed a significant discolouration due to UV exposure. All values for colour variance between the covered sections and the exposed section had a $\Delta E < 0.50$.

**Conclusions:**

Testing shows that the highest performing system is at a binder application of 10%, this showed the highest tensile strength and elongation at break and also the highest Shore D hardness

David Christian
Technical Manager
Leeson Polyurethanes

Era Polymers Pty Ltd
ABN 14 003 055 936
2 Green Street
Banksmeadow 2019
Sydney
NSW 2019, Australia
P +61 2 9666 3788
F +61 2 9666 4805
E erapol@erapol.com.au
www.erapol.com.au

# TEST REPORT

| | | | |
|---|---|---|---|
| Laboratory: | Era Polymers - NATA Accreditation No. 4817 | Test report No: | WR 55296 |
| Manufacturer: | Al Khaleej Polymers | Pages: | 3 |
| Product: | Erapol EMD73RB with rubber crumb | Issue Date: | 1/1/2017 |

## UV Testing for Al Khaleej Polymers with Erapol EMD73RB

Resistance to ultraviolet degradation is often measured using a Weatherometer – an apparatus that causes accelerated degradation by exposing the sample to round-the-clock exposure at elevated temperatures. The sample degradation is observed after exposure to artificial weathering – including ultraviolet light – for a prescribed time period of time.

The samples tested were prepared by Al Khaleej Polymers with four different ratios of Era EMD73RB to rubber crumb.

Sample A: **12%** Erapol EMD73RB/**88%** rubber crumb
Sample B: **10%** Erapol EMD73RB/**90%** rubber crumb
Sample C: **8%** Erapol EMD73RB/**92%** rubber crumb
Sample D: **5%** Erapol EMD73RB/**95%** rubber crumb

The aim of the test is to compare the differences in colour that occur when exposed to UV over time. Photos were taken to compare the changes at different times of exposure.

The apparatus used in the weathering test is an accelerated weathering tester 'QUV Weather-o-meter' Model: QUV / Spray – QUV with UV-B.

The samples were placed in the UV weatherometer for continuous UV-B radiation (UVB-313 EL Lamp, 0.46 watts/m²/nm) at 45oC with deionised water spray for 1min every 50 hours and inspected.

### Summary of results:

After 4 months of UV exposure, Erapol EMD73RB/rubber crumb has no change in colour and not exhibited any adverse effects after exposure. The exposed area has become matt as compared to the glossy unexposed area, and with no measurable change in strength.

*Jim Kostouros*
*Testing Officer*

Era Polymers

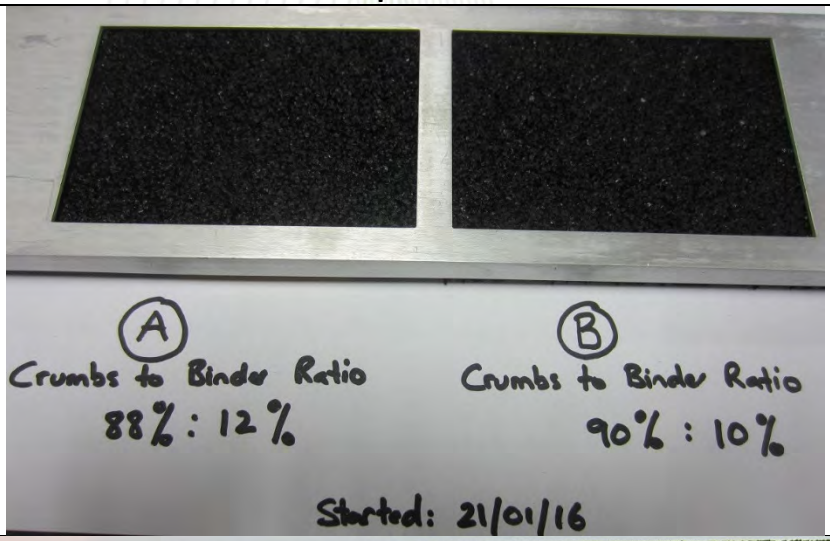
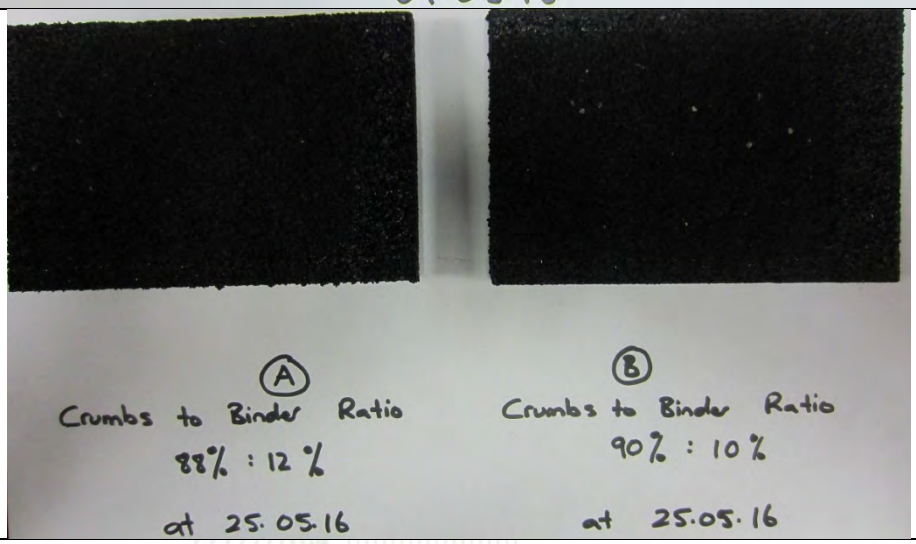
**Era Polymers Pty Ltd**
ABN 14 003 055 936

2 Green Street
Banksmeadow 2019
Sydney
NSW 2019, Australia

P +61 2 9666 3788
F +61 2 9666 4805
E erapol@erapol.com.au

**www.erapol.com.au**

## Results:

| Date | Samples A & B |
|---|---|
| **21/1/2016**<br><br>**ORIGINAL UNEXPOSED SAMPLES** |  |
| **9/3/2016**<br><br>**48 days** |  |
| **25/5/2016**<br><br>**124 days (4 months)** |  |

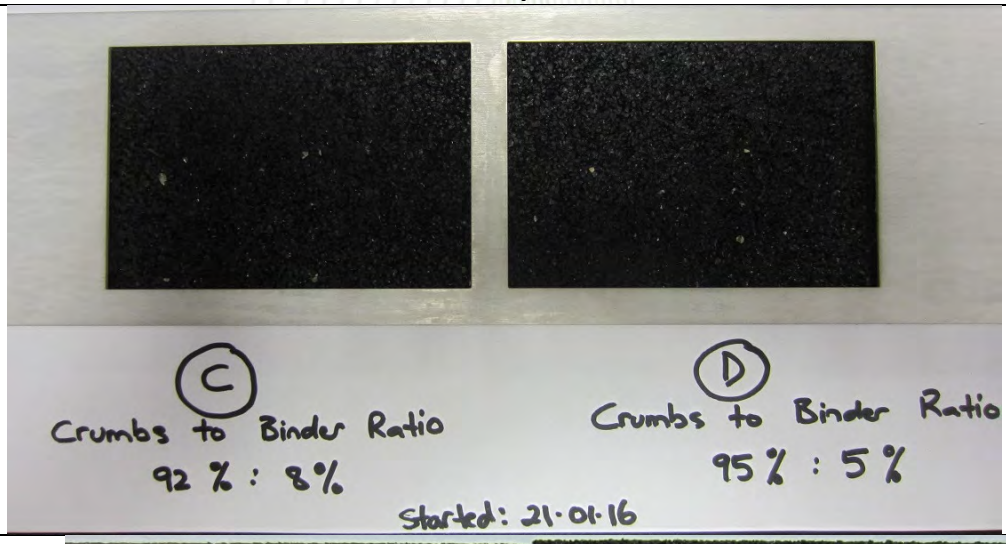
Era Polymers

**Era Polymers Pty Ltd**
ABN 14 003 055 936

2 Green Street
Banksmeadow 2019
Sydney
NSW 2019, Australia

P +61 2 9666 3788
F +61 2 9666 4805
E erapol@erapol.com.au

**www.erapol.com.au**

| Date | Samples C & D |
|---|---|
| **21/1/2016**<br><br>**ORIGINAL UNEXPOSED SAMPLES** |  |
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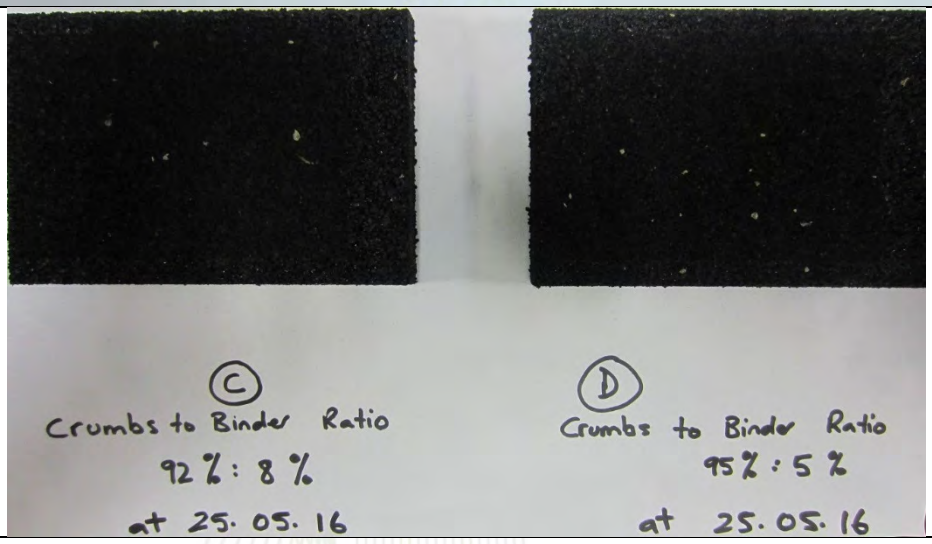
| **25/5/2016**<br><br>**124 days (4 months)** |  |

2395 Speakman Dr.
Mississauga, ON
Canada L5K 1B3

P: 1 905 822 4111
F: 1 905 823 1446
info.toronto.fire@element.com
element.com

# ASTM E 648 Critical Radiant Flux Testing of "SBR RUBBER TILE"

| | |
|---|---|
| A Report To: | **AL KHALEEJ POLYMERS**<br>Plot: L7 & 28<br>Ras Al Khaimah<br>Al Gail Industrial Park<br>United Arab Emirates |
| Phone: | +971555581860 |
| Attention: | Yusuf Firoz |
| E-mail: | yusuf@akhpolymers.com |
| cc: | murtaza.m@akhpolymers.com |
| Submitted by: | Element Fire Testing |
| Report No. | 22-002-121(Revision 1)<br>3 Pages |
| Date: | March 31, 2022 |

## 1.0 ACCREDITATION

ISO/IEC 17025 for a defined Scope of Testing by the American Association for Laboratory Accreditation (A2LA)

## 2.0 SPECIFICATIONS OF ORDER

Determine critical radiant flux in accordance with ASTM E 648, as per Element Quotation No. 22-002-325482 RV1 dated February 7, 2022.

### 2.1 History of Report Revision

This report supersedes Element Test Report No. 22-002-121, originally issued on March 29, 2022. It is revised by request to simplify performance criteria references.

## 3.0 SAMPLE IDENTIFICATION (Element sample identification number 22-002-S0121)

Rubber flooring material, nominally 0.78 inches (20 mm) in thickness, identified as:
"SBR RUBBER TILE"

## 4.0 SUMMARY OF TEST PROCEDURE

This procedure is used to measure the critical radiant flux of horizontally-mounted floor covering systems exposed to a flaming ignition source in a graded radiant heat energy environment, in a test chamber.

The radiant panel is calibrated to yield a heat flux gradient ranging from 1.1 W/cm² at the near end of the specimen to 0.1 W/cm² at the far end of the specimen.

The floor covering system (250 x 1070 mm) is mounted in the test frame as specified by its end use (e.g. glued directly to cement board, clamped to cement board or clamped over an undercushion).

The system is admitted into the calibrated test chamber, and after a 5 minute pre-heat, is ignited by a pilot flame. The distance at which extinguishment takes place is measured, correlated with the heat flux at that point, and is reported as the critical radiant flux (CRF). This value represents the minimum radiant energy required to sustain propagation of flaming combustion along the surface of the material.

The higher the critical radiant flux, the more resistant the floor covering system is to flame propagation.

## 5.0 TYPICAL PERFORMANCE REQUIREMENTS

| Specifier | Minimum CRF (W/cm²) | Designated End-Use |
|---|---|---|
| General Services Administration (GSA) | 0.45 | Institutional |
| | 0.22 | Commercial |
| Health, Education & Welfare (USA) | 0.45 | Institutional |
| | 0.22 | Commercial |
| New York & New Jersey Port Authority | 0.50 | Corridors, exitways |
| | 0.40 | General areas |
| NFPA 130 (2020 Edition) | 0.50 | Rail Cars |

Many Building Codes and/or authorities having jurisdiction may also refer to the following categories:

| Class I | Class II | Test Result |
|---|---|---|
| 0.45 W/cm² or greater | 0.22 W/cm² to 0.44 W/cm² | Class II |

## 6.0 SAMPLE PREPARATION

The rubber tile material was tested in the free-lay configuration (no adhesive or substrate). Each specimen was conditioned at a temperature of 23 ± 3°C and a relative humidity of 50 ± 5% for at least 48 hours prior to testing.

## 7.0 SUMMARY OF TEST RESULTS

**SAMPLE: "SBR RUBBER TILE"**

| | |
|---|---|
| Average Critical Radiant Flux (W/cm$^2$) | **0.27** |
| Standard Deviation | 0.057 |
| Coefficient of Variation | 21.5 |

## 8.0 INDIVIDUAL TEST RESULTS

**ASTM E 648-19ae1**

Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source

| | Test 1 | Test 2 | Test 3 |
|---|---|---|---|
| Distance Burned (mm) | 527 | 645 | 628 |
| Criticial Radiant Flux (W/cm$^2$) | 0.33 | 0.23 | 0.24 |

### 8.1 Observations

Smoldering was observed prior to the application of the pilot burner flame. Ignition occurred after application of the test flame. Charring behavior was observed. Post-test examination showed a loss of structure (crumbling) in the area affected by flaming.

## 9.0 CONCLUSIONS

With an average critical radiant flux of 0.27 W/cm², the flooring material identified in this report qualifies for use in commercial applications, as governed by the General Services Administration and Health, Education and Welfare in the United States. The flooring would be considered a Class II material by many authorities having jurisdiction.

Robert A. Carleton,
Technician.

Ian Smith,
Technical Manager.

Intertek India Private Limited,
Division : Commodities
Intertek House,
"F" wing, Tex Centre,
26-A, Chandivali Farm Road,
Off. Saki Vihar Road, Andheri (East)
Mumbai – 400 072, India.
Tel : +91 22 42450100
Fax : +91 22 42450250
Operation.mumbai@intertek.com
www.intertek.com

## Report of Analysis

| | | | |
|---|---|---|---|
| **Date of Sample(s) Received :** | 10.01.2022 | **Report No :** | MUM/000085A/2022 |
| **Date of Job Started :** | 10.01.2022 | **Date of Job Completed :** | 31.01.2022 |
| **Sample Number(s) :** | 14885969 | **Report Date :** | 31.01.2022 |

**M/s. Symphony Environmental Ltd**
6 Elstree Gate, Elstree Way,
Borehamwood, Herts,
WD6, 1JD, UK

| | | |
|---|---|---|
| **For the Attention of** | : | Mr. James White |
| **Sample(s) received from** | : | Symphony Environmental Ltd |
| **Sample(s) submitted as** | : | Rubber Tile With 0.6% 97010<br>Manufacturer: Al Khaleej Polymers |
| **Description(s) on Label(s)** | : | As Attached |
| **Seals on Sample(s)** | : | - |

The above sample(s) was/were examined as detailed below and the following results obtained:

Please refer attached sheet for analytical results.

intertek
Total Quality. Assured.

| | | | |
|---|---|---|---|
| **Date of Sample(s) Received :** | 10.01.2022 | **Report No :** | MUM/000085A/2022 |
| **Date of Job Started :** | 10.01.2022 | **Date of Job Completed :** | 31.01.2022 |
| **Sample Number(s) :** | 14885969 | **Report Date :** | 31.01.2022 |

**Sample Description:** 1) 15897/1765 (113/A) – Rubber Tile with 0.6% 97010
2) 15897/1766 (113/B) – Rubber Tile Control

**METHOD:** Evaluation of Antifungal Activity by ASTM E 3152 -18

**Experimental Conditions:**
**Media used:** Nutrient Salt Agar
**Temperature:** 29 ± 1°C
**Duration of Exposure:** 14 Days
**Dates of Inoculum preparation:** 10/01/2022
**Culture used:** 1) *Aspergillus niger* ATCC 16404
2*) Chaetomium globosum* ATCC 6205

**Observation:**

**Visual Assessment Report**

| Sample Identification/ Description | Duration of the Test | |
|---|---|---|
| | 7 days | 14 days |
| 15897/1766 (113/B) Control | Not Fungal Resistant | Not Fungal Resistant |
| 15897/1765 (113/A) | Fungal Resistant | Fungal Resistant |

**Observation for Visible Effects:**

| Rating |
|---|
| Fungal Resistant |
| Moderately fungal Resistant |
| Not fungal Resistant |

**Interpretation:**
Sample labeled as **15897/1765(113/A) Rubber tile with 0.6% 97010** is **Fungal Resistant** at the end of 14 days of incubation when tested as per **ASTM E 3152** test method.

---------- **End of Report** ----------

**Authorized Signatory**

**Ushadevi Yadav**
**Microbiologist**