

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

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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

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LAB N° 1427

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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
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

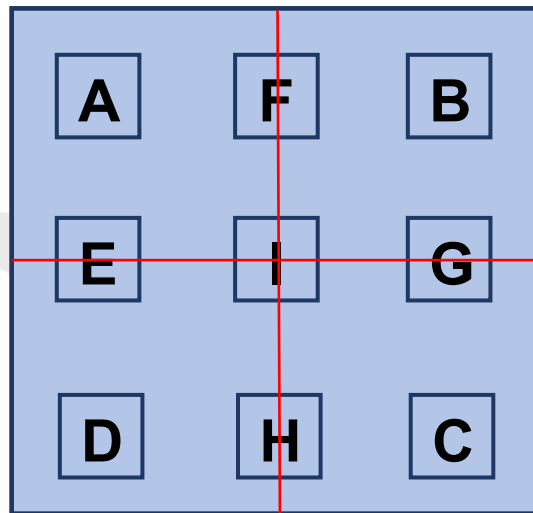
Product it has been laid on the concrete testing platform without to be glued or fixed.
Product was tested at 23°C and 48% RH (ambient temperature).
Weight of the sample tested was 30.1kg/m².
Measured thickness of the tile 50mm.

PRODUCT DESCRIPTION

Trade name	TERRAIN RUBBER TILES
Declared thickness (total)	50.0mm.
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.

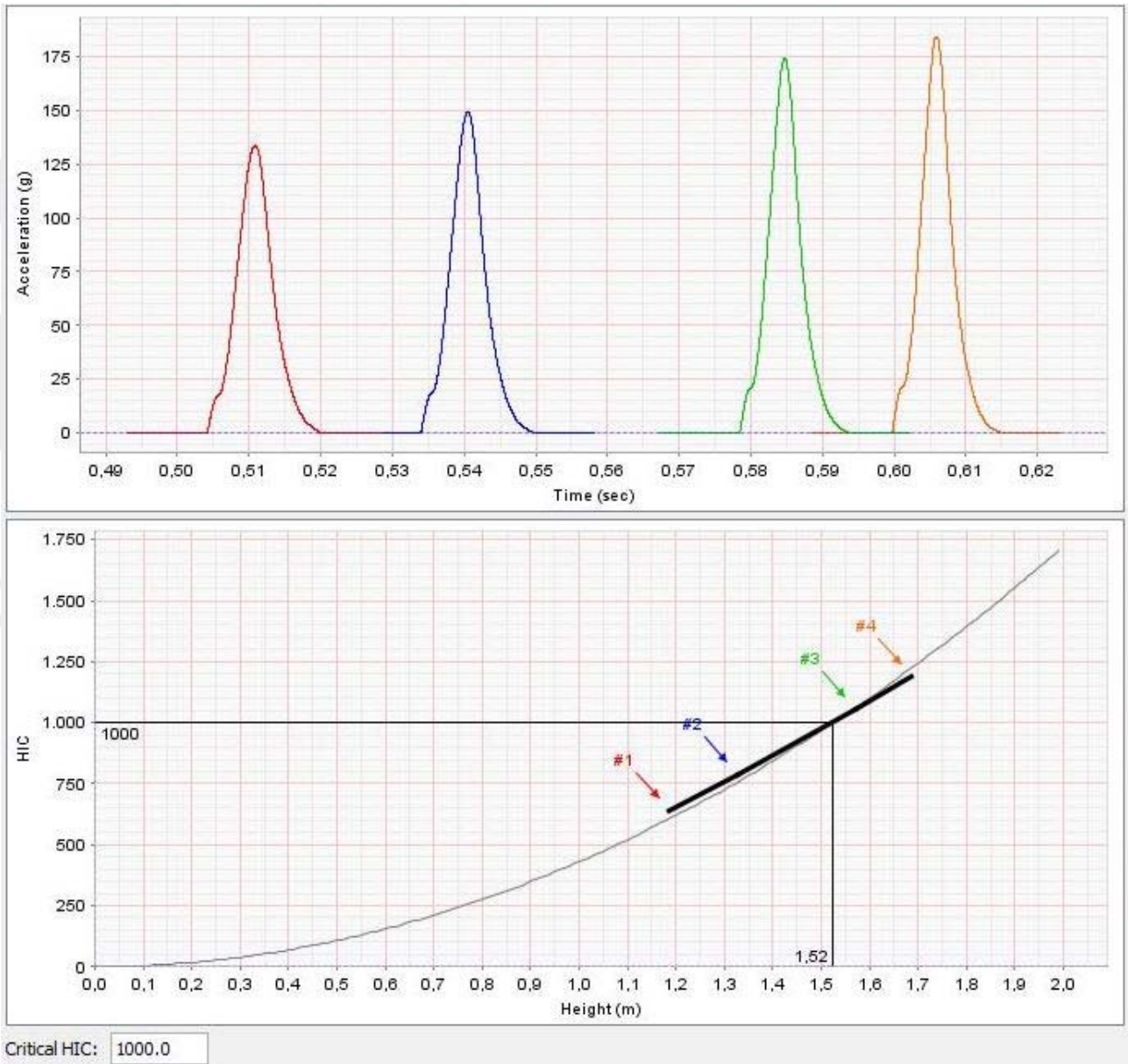
TEST RESULTS

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	5.58ms	134g	1.19cm	641
2	5.31ms	149g	1.33cm	790
3	4.89ms	174g	1.57cm	1055
4	4.77ms	185g	1.69cm	1189
Thickness of the sample at the point				5.0mm
Result of the test at the point "A"				1.5m

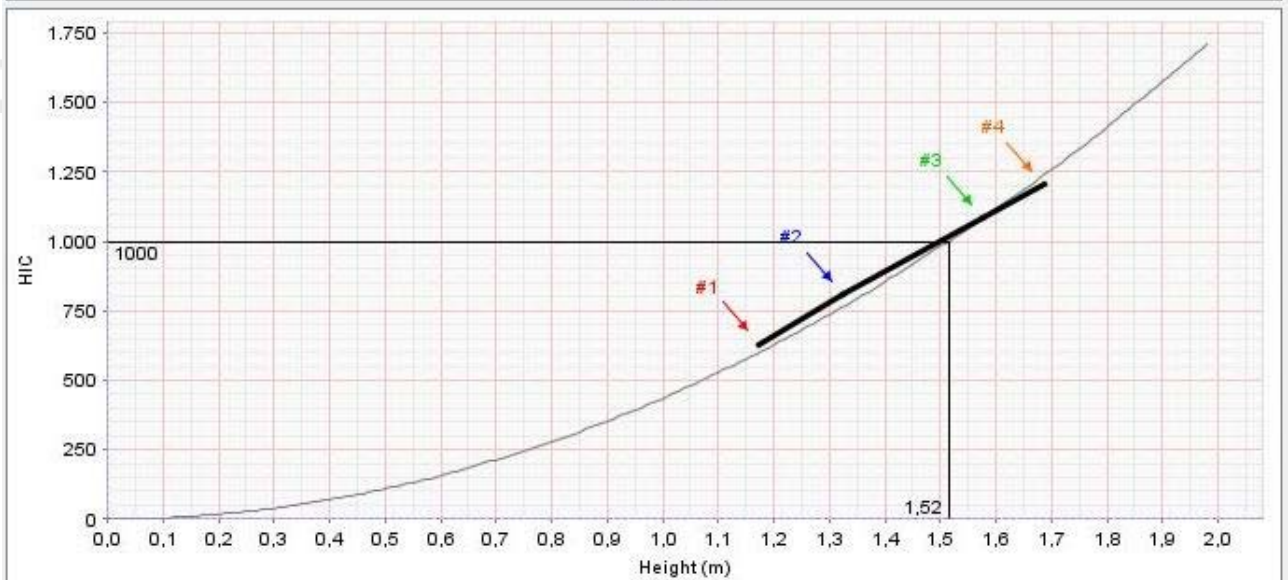
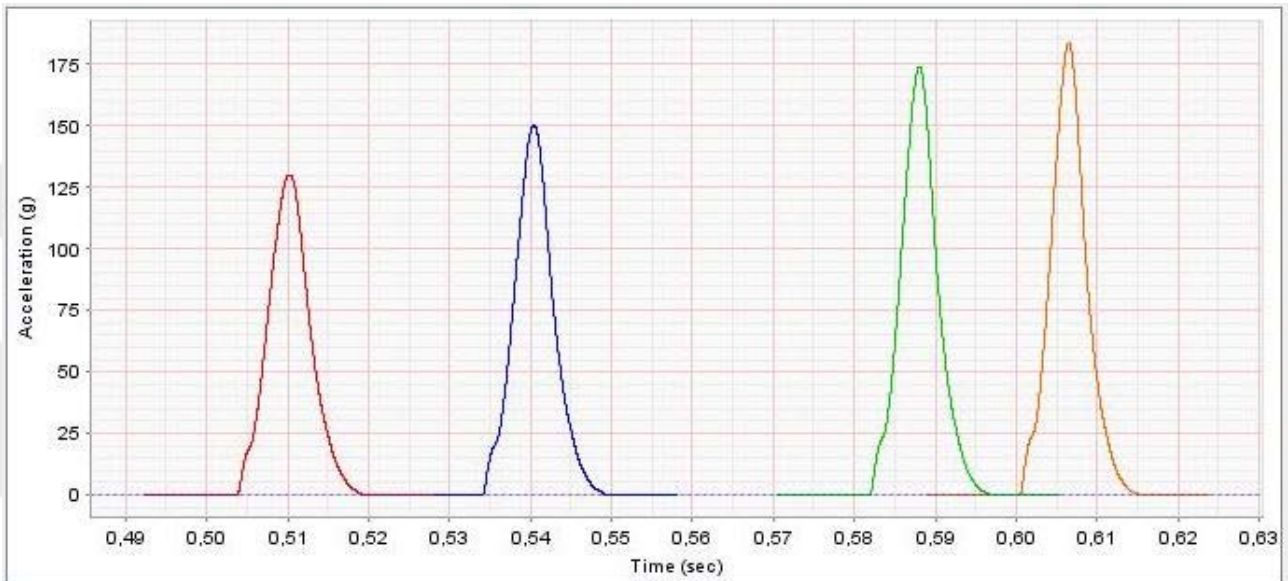
HIC CURVE



DETAIL OF THE TEST POINT "B"

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

HIC CURVE

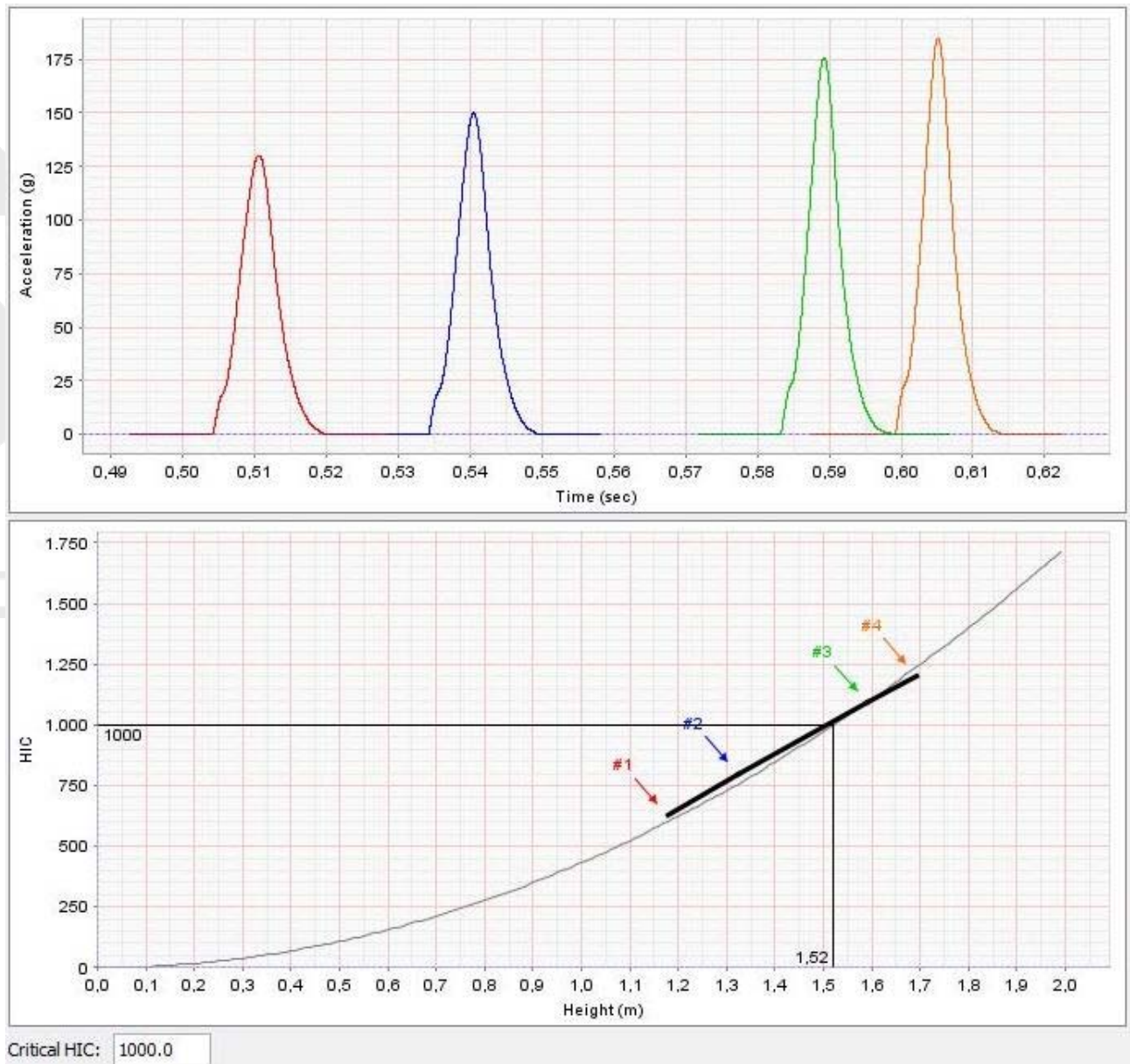


Critical HIC:

DETAIL OF THE TEST POINT "C"

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

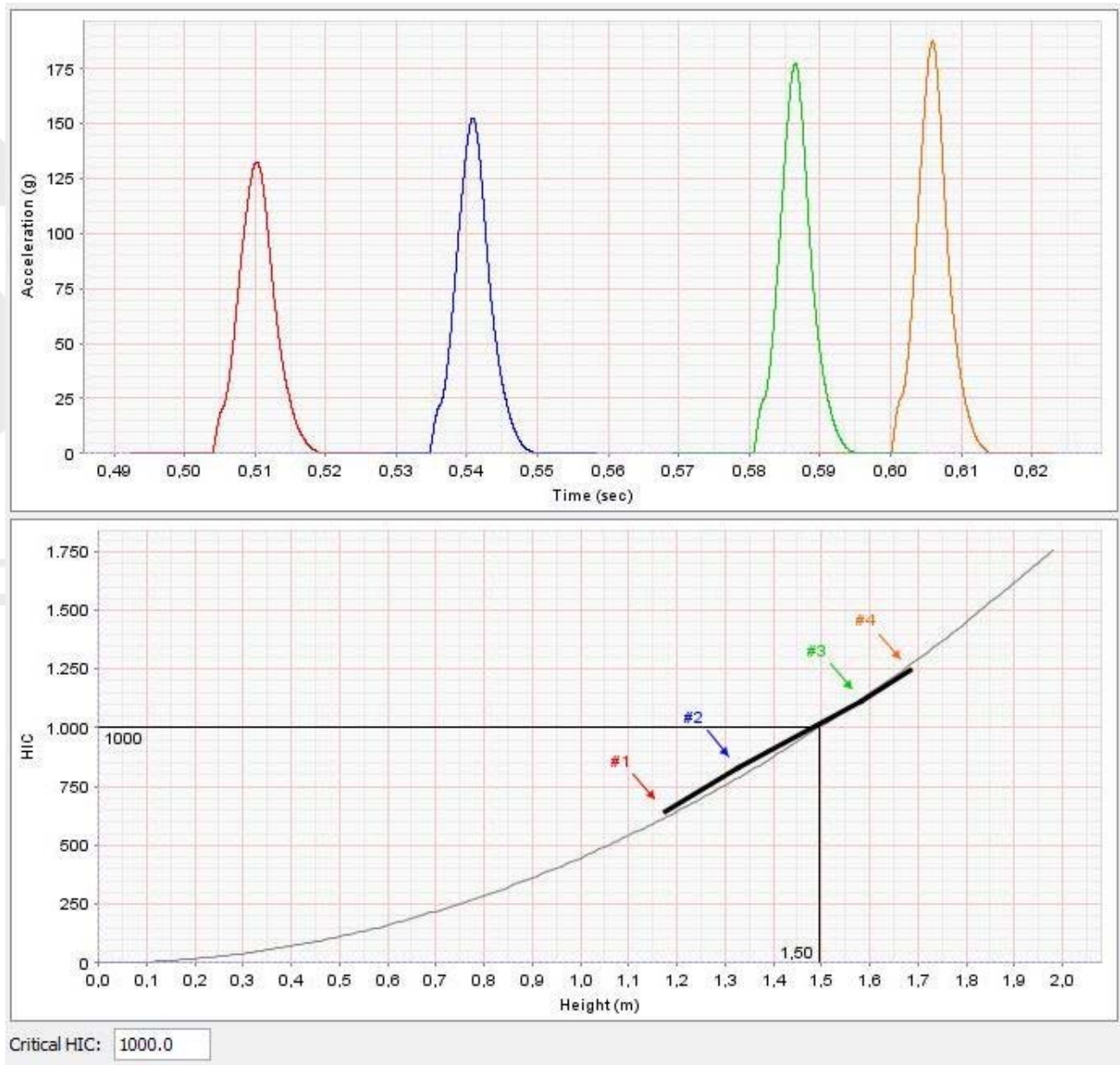
HIC CURVE



DETAIL OF THE TEST POINT "D"

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

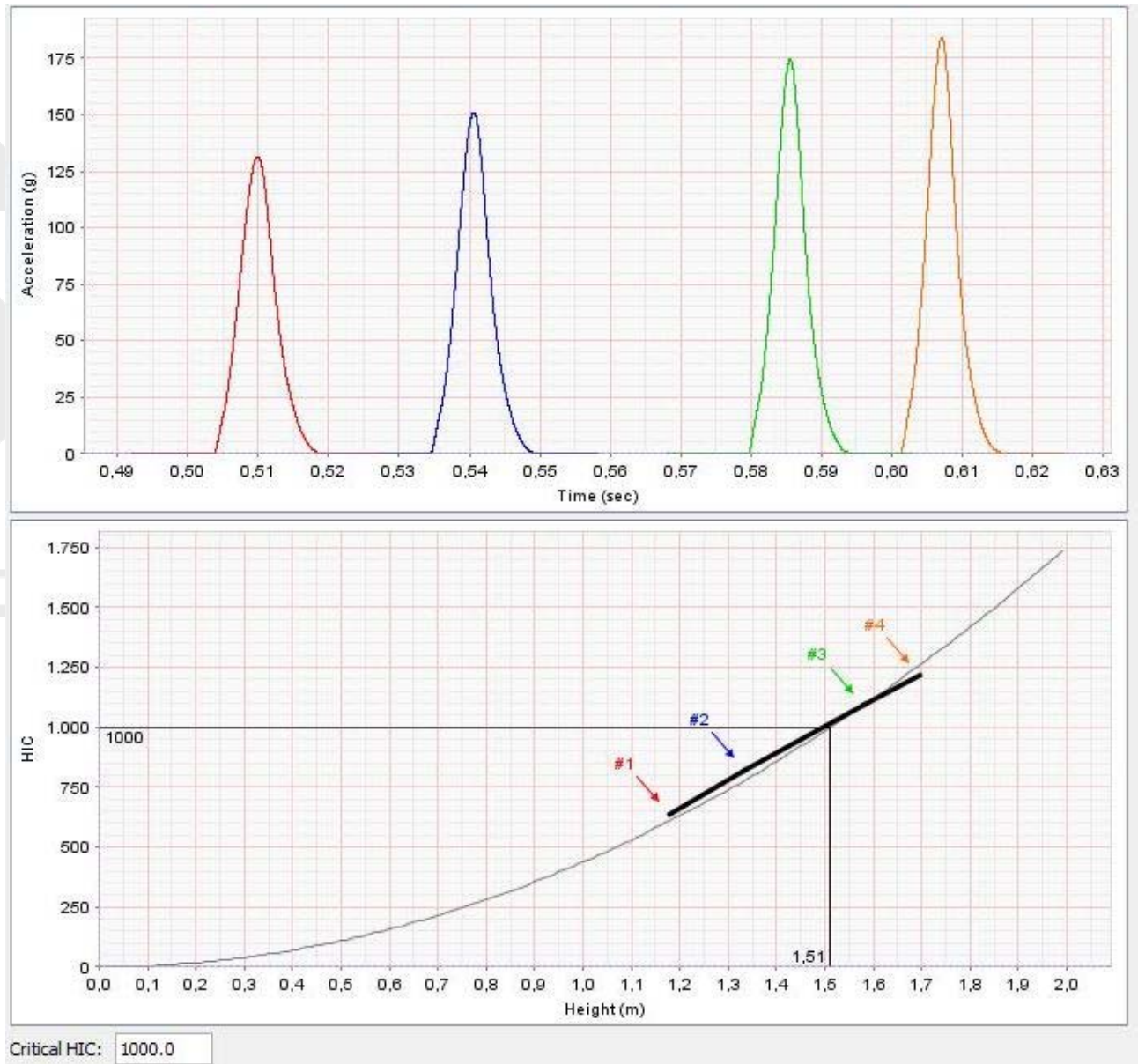
HIC CURVE



DETAIL OF THE TEST POINT "E"

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

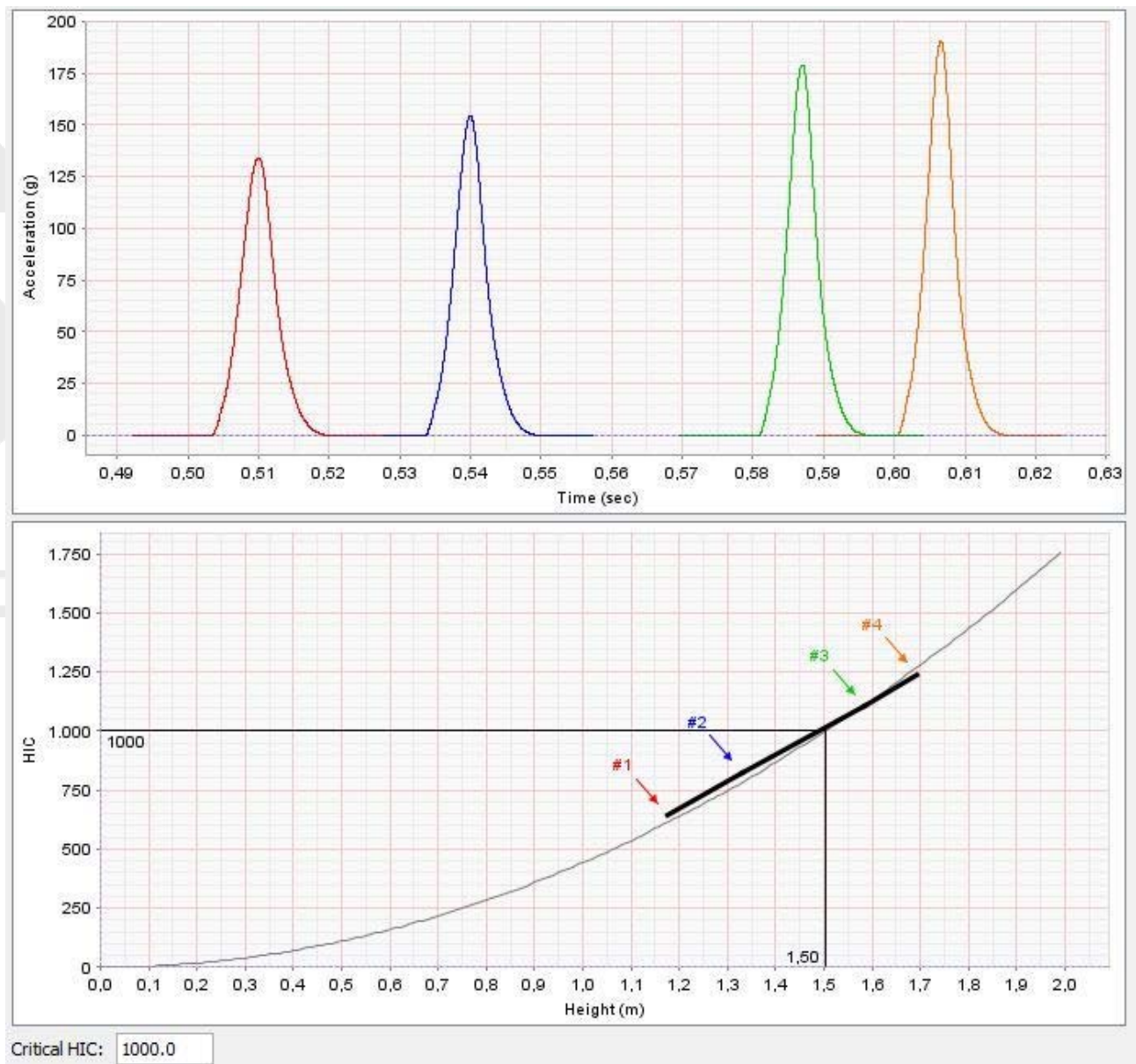
HIC CURVE



DETAIL OF THE TEST POINT "F"

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

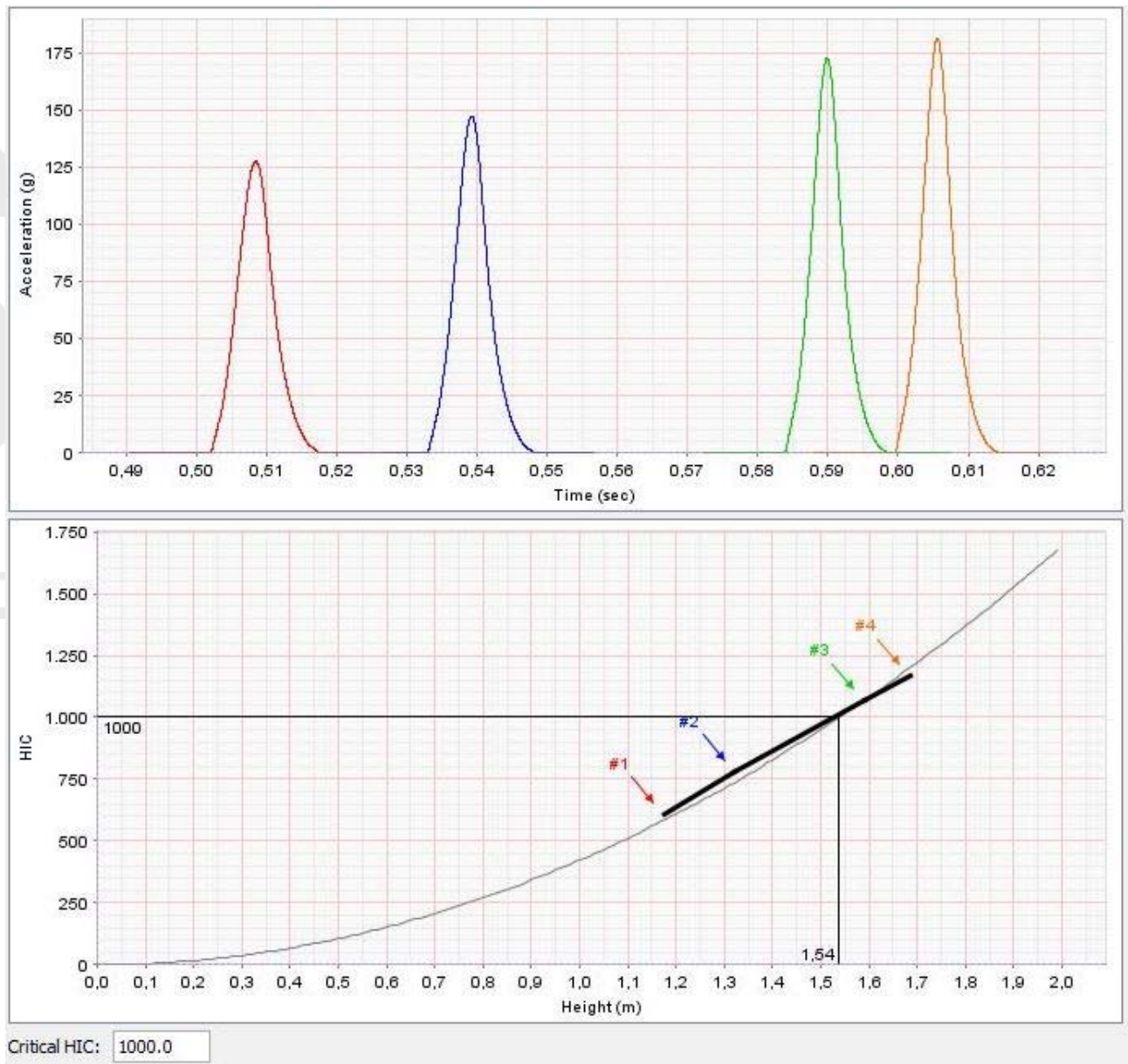
HIC CURVE



DETAIL OF THE TEST POINT "G"

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

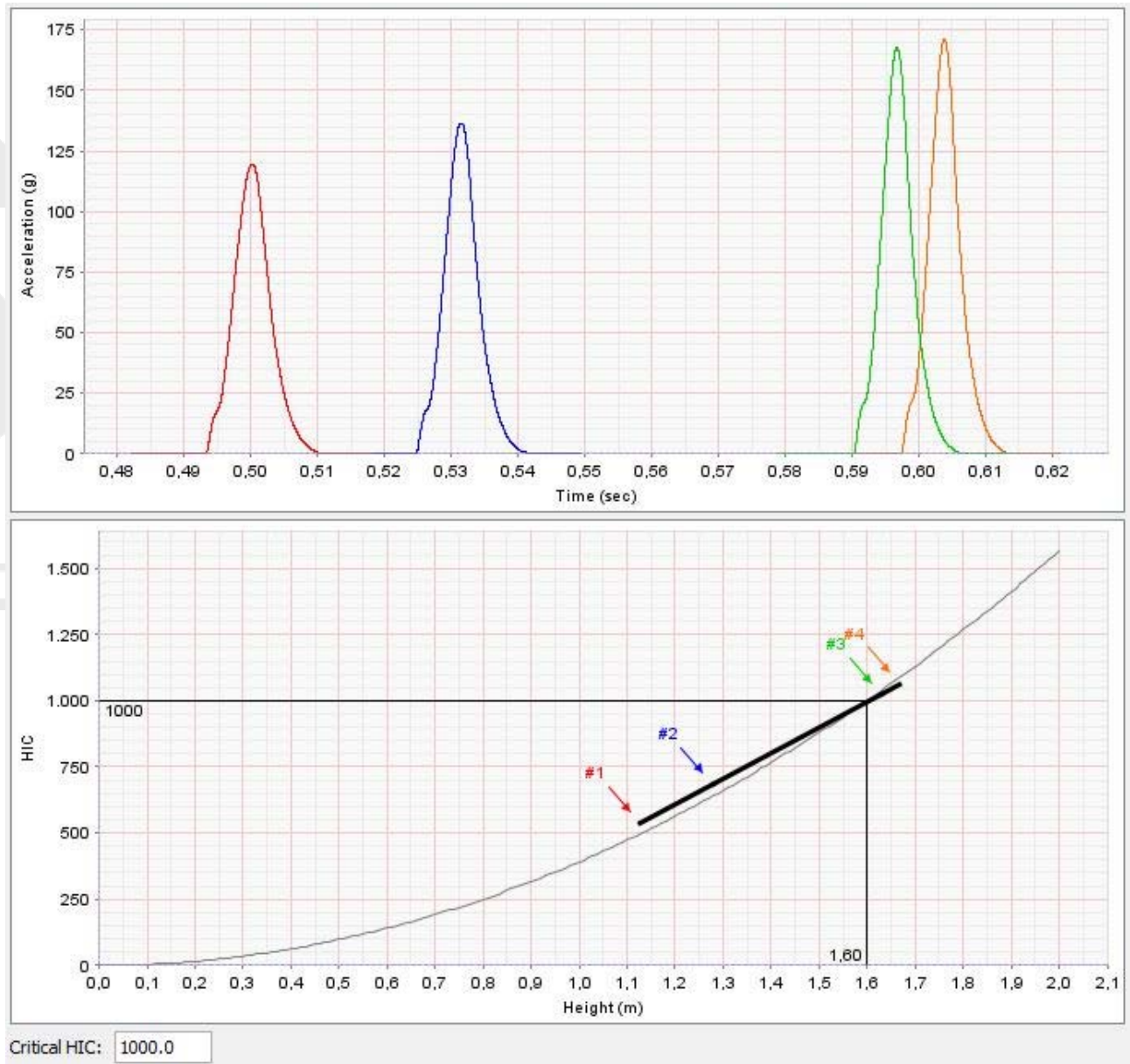
HIC CURVE



DETAIL OF THE TEST POINT "H"

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

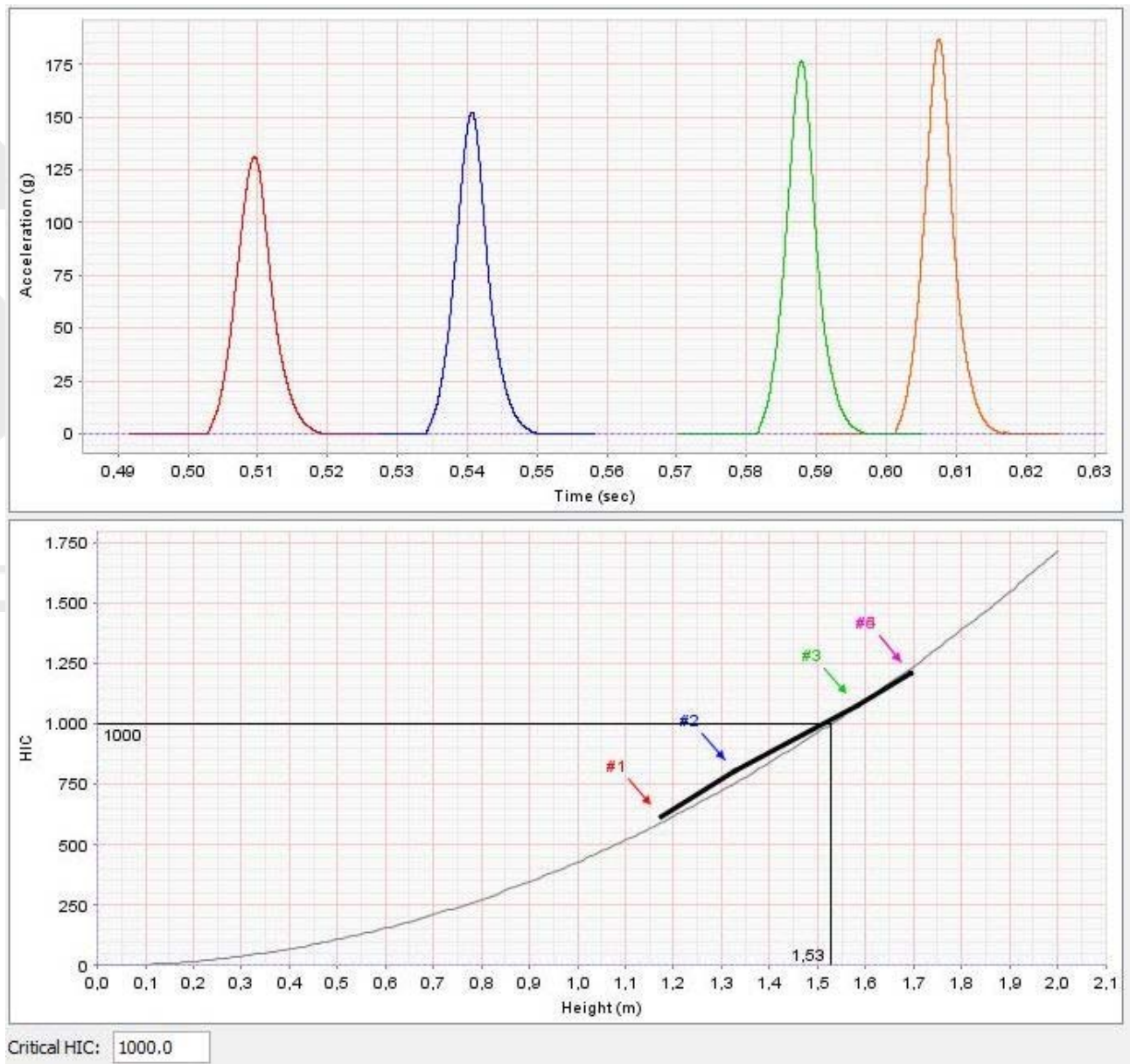
HIC CURVE



DETAIL OF THE TEST POINT "I"

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

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

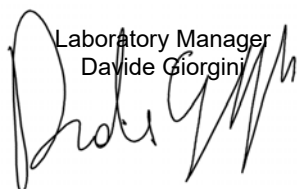
ADDITIONAL INFORMATION

None

CONCLUSIONS

None

Laboratory Manager
Davide Giorgini




Laboratory Director
Roberto Armeni

