



„MEŽA UN KOKSNES PRODUKTU PĒTNIECĪBAS UN ATTĪSTĪBAS INSTITŪTS” SIA

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## Classification of reaction to fire performance in accordance with EN 13501-1:2007+A1:2009

Issue number: K09/2014

Date of issue: 16.05.2014.

Sponsor: Plitker OÜ

Customer's address: Vōru 13-17, Tallin, Estonia

Reg. No. 11715021

Manufacturer: Plitker OÜ

Prepared by: SIA “Meža un koksnes produktu pētniecības un attīstības institūts” (*Forest and Wood Products Research and Development Institute Ltd*).

Product name: Polyurethane facade thermopanel with clinker tiles.

Laboratory involved in testing is accredited by the Latvian National Accreditation Bureau (LATAK) according to the standard LVS EN ISO/IEC 17025 under the terms of Latvian legislation with reg. No. T-316. Laboratory is a notified body with reg. No. NB 2040 under construction product regulation Nr. 305/2011.

*Classification report refers only to these test objects. This classification report may not be reproduced otherwise than in full text, excepted with the prior written approval of the Forest and Wood Products Research and Development Institute*

## 1. Introduction

This classification report defines the reaction to fire classification assigned to Polyurethane facade thermopanel with clinker tiles in accordance with the procedures given in EN 13501-1:2007+A1:2009.

## 2. Details of classified product

### 2.1. General

The product polyurethane facade thermopanel with clinker tiles that is described as thermal insulation product for buildings - Factory made rigid polyurethane foam (PUR) according to standard LVS EN 13165:2013.

### 2.2. Product description

- Product name: Polyurethane facade thermopanel with clinker tiles.
- Nominal thickness: 40 mm.
- Materials: Polyurethane components polyol and isocyanate Bayer (Germany), clinker tiles ABC Klinkergruppe, Stroeher (Germany).

## 3. Test reports and test results in support of classification

### 3.1. Test reports

Name of laboratory	Name of sponsor	Test reports	Test method
SIA „Meža un koksnes produktu pētniecības un attīstības institūts” Testing Laboratory	Plitker OÜ	1139-1/2014	EN 13823:2010
SIA „Meža un koksnes produktu pētniecības un attīstības institūts” Testing Laboratory	Plitker OÜ	1139-2/2014	EN ISO 11925-2:2010

### 3.2. Test results

Test method	Parameter	Number of tests	Results	
			Continuous parameter mean	Compliance parameters
EN 13823:2010	$FIGRA_{0,2MJ}(W/s)$	3	Threshold not reached	Compliant
	$FIGRA_{0,4MJ}(W/s)$		Threshold not reached	(-)
	$THR_{600s}(MJ)$ $LFS$		0.23 <1000 mm	Compliant Compliant
	$SMOGRA(m^2/s^2)$		Threshold not reached	Compliant
	$TSP_{600s}(m^2)$		18.3	Compliant
	Flaming droplets <10s Flaming droplets >10s		no no	Compliant Compliant
EN ISO 11925-2:2010	Flame spread (Fs)	12	Less than 150 mm	Compliant
Exposure time 30 s. Test duration 60 s.	Ignition of filter paper		no	(-)
	Flaming droplets/particles		no	(-)
(-) not applicable				

### 4. Classification and field of application

#### 4.1. Reference of classification

This classification has been carried out in accordance with clause 11 of EN 13501-1:2007+A1:2009.

#### 4.2. Classification

Polyurethane facade thermopanel with clinker tiles in relation to its reaction to fire behaviour is classified:

B

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets/particles is:

d0

The format of the reaction to fire classification for construction product excluding floorings and linings is:

Fire behaviour		Smoke production			Flaming droplets	
B	-	s	1	,	d	0

Reaction to fire classification: B-s1-d0

#### 4.3. Field of application

4.3.1 This classification is valid for the following end use applications:

Product primary end use application is the fire retardant treatment of wood products.

4.3.2. This classification is also valid for following product variations:

Thickness:	thickness variation within 5% of nominal thickness.
Facing:	valid only for tested clinker tile facing as tested.
Chemical composition:	valid only for product composition as tested.
Orientation:	there is no orientation effect.

4.3.3. Classification valid for following substrates and air gaps:

Mounting:	valid only for product mounting without air gaps between product and substrate.
Substrates:	product performance determined on birch plywood substrate, classification is valid for product mounting on substrates at least reaction to fire class D-s2-d0.
Joint:	valid only for panel mounting with sealed joints. All edges or gaps should be protected by sealant.
Specification of joints:	valid only for mounting with fire resistant sealants (cement mortar, fire resistant silicone).

#### 5. Limitations.

5.1. No restrictions on the duration of validity of this classification report as long as the product specifications remain unchanged.

5.2. This document does not represent type approval or certification of the product.

Prepared by

  
(signature)

E. Bukšāns

Reviewed by

  
(signature)

K. Būmanis







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## Test Report No.1139-1/2014

Forest and Wood Products Research and Development Institute  
Testing Laboratory

**Customer:** Plitker OÜ.

Customer's address: Võru 13-17, Tallin, Estonia

Reg. No. 11715021

Date of the order: 10.02.2014.

Testing was done according contract No. 57-02/14 MU.

Test samples received: 18.02.2014.

**Description of product (According to customer's information)**

- Product name: Polyurethane facade thermopanel with clinker tiles.
- Nominal thickness: 40 mm.
- Materials: Polyurethane components polyol and isocyanate Bayer (Germany), clinker tiles ABC Klinkergruppe, Strocher (Germany).

**Sampling:**

Production of the product was done by Plitker OÜ at 04.02.2014. at Tiskre str. 12, Tallinn, Estonia.

Sampling was done by Plitker OÜ at 10.02.2014. at Tiskre str. 12, Tallinn, Estonia. Specimens were sampled randomly from store.

**Application of building product (according to customer's information):**

Product is intended to use as facade thermo insulation panels.

**Specimen preparation for testing:**

Specimens were prepared for testing by Plitker OÜ. 5 specimens with dimensions 1500x500 and 1500x100 mm were prepared.

**Substrates used:**

Product was fixed on standard 12 mm thick birch plywood substrate by steel fixings.

**Conditioning of specimens:**

Specimens were conditioned according to standard EN 13238:2010.

Conditioning method: constant mass.

Temperature:  $t = 23 \pm 1$  °C.

Relative humidity:  $RH = 50 \pm 5\%$ .

Conditioning period: 50 days.

**Test standard:** EN 13823:2010.

**Test date:** 09.04.2014. and 10.04.2014.

**Test results:**

Test results are given in the annex 1 and test protocols in the annexes 2 to 4.

According to EN 13823:2010 test results relate to the behaviour of test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

**Annexes:**

- Annex 1 (Test results, 2 pp.)
- Annex 2 (SBI test protocol Nr. 1139-1-1, 3 pp.)
- Annex 3 (SBI test protocol Nr. 1139-1-2, 3 pp.)
- Annex 4 (SBI test protocol Nr. 1139-1-3, 3 pp.)
- Annex 5 (test parameter explanation, 1 pp.)

Date of issue: 16.05.2014.



Head of Laboratory

K.Būmanis

(signature and name)

Tests carried out by

E.Bukšāns

(signature and name)

*Test results refer only to these test objects. This test report may not be reproduced other than in full, excepted with the prior written approval of Testing Laboratory of the Forest and Wood Products Research and Development Institute*

Annex 1 to test report No. 1139-1/2014

## TEST RESULTS

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### Test specimens

- Polyurethane facade thermopanel with clinker tiles
- Measured thickness: 40 mm.
- Number of test specimens and identification: five specimens delivered by customer identification in laboratory – 1139-1-1 to 1139-1-5.

### Mounting:

Insulation termopanel was mounted by fixing on birch plywood board substrate, joints were sealed by cement mortar see Fig. 1. Specimens were mounted in SBI trolley in accordance with standard LVS EN 13823:2010 paragraph 5.2.2 b. There was no air gap between the specimen and substrate. Corner joint between specimen short wing and long wing was sealed with fire resistant sealant PENOSIL Premium FireStop Silicone. Calcium silicate backing board was placed directly behind substrate. Calcium silicate backing board and substrate complies with standard LVS EN 13238:2010 requirements.

### Test result summary

All tests were done without technical failure. All test data were selected for data statistical analyse – specimens No. 1139-1-1; 1139-1-2 and 1139-1-3. Test result summary shown in table and graphs is shown in test protocols in Annexes 2-4.

Specimen No.	1139-1-1	1139-1-2	1139-1-3	Average	Standard deviation	Standard error
<b>General information</b>						
Test start, min:s	0:00	0:00	0:00	-	-	-
Auxiliary burner ignited, min:s	2:00	2:00	2:00	-	-	-
Main burner ignited, min:s	5:03	5:03	5:03	-	-	-
Main burner stopped, min:s	26:00	26:00	26:00	-	-	-
<b>Observations</b>						
Ignition of specimen	no	no	no	-	-	-
Burning droplets, particles, <10s; min:s	no	no	no	-	-	-
Burning droplets, particles, >10s; min:s	no	no	no	-	-	-
Lateral flame spread, LFS; min:s	no	no	no	-	-	-
Falling specimen parts, min:s	no	no	no	-	-	-
<b>Fire performance, see annexes 2 - 4</b>						
FIGRA <sub>0,2MJ</sub> , W/s	Threshold not reached			-	-	-
FIGRA <sub>0,4MJ</sub> , W/s	Threshold not reached			-	-	-
THR <sub>600s</sub> , MJ	0.3	0.2	0.2	0.23	0.1	0.03
SMOGR <sub>A</sub> , cm <sup>2</sup> /s <sup>2</sup>	Threshold not reached			-	-	-
Time of maximal smoke growth rate (SMOGR <sub>A</sub> ), s	-	-	-	-	-	-
TSP <sub>600s</sub> , m <sup>2</sup>	18.3	15.9	20.6	18.3	2.4	1.36

### Observations during the test

There were no flaming droplets observed during all tests. There were no lateral flame spread nor specimen collapse during all tests, see Fig. 2.

### Deviations from standard:

no



Photos:



*Fig. 1 Specimen mounting in SBI.*



*Fig. 2 Specimen after the test.*



**SBI Test Report**

Laboratory name MeKA Testing Laboratory  
 Operator Edgars Buksans  
 Filename C:\SBICALC\Data\1139\1139-1-1.csv  
 Report identification 1139-1-1  
 Product identification Facade front termopanel with klinker tiles



Test		Pre-test conditions	Specimen conditioning
Standard used	EN 13823:2010	Baseline duct temperature 290.97 K	Method Constant mass
Date of test	09/04/2014	Ambient temperature 291.29 K	Time interval 144 hours
Date of report	09/04/2014	Ambient pressure 101.804 kPa	Mass 1 26181 g
E'	17.2 MJ/m <sup>3</sup>	Relative humidity 42%	Mass 2 26182 g
Apparatus specifications		Baseline conditions	
		Baseline ambient oxygen	20.763%
		Baseline oxygen	20.940%
		Baseline carbon dioxide	0.0528%
		Baseline smoke	99.94%
kt	0.89		Temperature 23°C
kp	1.08		RH 50%
Duct diameter	0.315 m		
O2 calibration delay time	12 s		
CO2 calibration delay time	10 s		

**Specimen information**

Thickness	40 mm	Mounting method	5.2.2 b) in EN 13823:2010
Density		Joints	none
Surface mass/area		Fixed to substrate?	Yes
Specimen number	1	Fixing method	screw
Date of arrival	18/02/2014	Substrate	plywood
		Manufacturer	Plitker OU
		Sponsor	Plitker OU

**Test validity criteria****Test drifts**

	Initial	Final	Change
Oxygen	20.940%	20.949%	0.009%
CO2	0.053%	0.051%	0.002%
Smoke	99.94%	99.53%	0.004

Exposure time 1254 s

**Synchronisation details**

Duct temp. dropped by 2.5 K from baseline of 315.03 K at 303 s  
 Oxygen rose by 0.05% from baseline of 20.651% at 303 s  
 CO2 dropped by 0.02% from baseline of 0.229% at 306 s

**Burner details**

Burner HRR	31.572 kW
Burner HRR std. dev.	0.495 kW
Burner CO2/O2 ratio	0.610
Burner SPR	0.028 m <sup>2</sup> /s
Burner SPR std. dev.	0.004 m <sup>2</sup> /s
Burner response time (s)	12 s

**Other checks**

Minimum duct flow	0.548 m <sup>3</sup> /s
Maximum duct flow	0.632 m <sup>3</sup> /s
No T/C failure	

**Classification results**

FIGRA(0.2)	threshold not reached
FIGRA(0.4)	threshold not reached
THR(600)	0.3 MJ
SMOGRA	threshold not reached
TSP(600)	18.3 m <sup>2</sup>

**Classification observations**

LFS to edge?	No
FDP flaming ≤ 10s?	No
FDP flaming > 10s?	No

**Potential classification**

Class	A2/B
Smoke production	s1
Flaming droplets/particles	d0

**Recorded events**

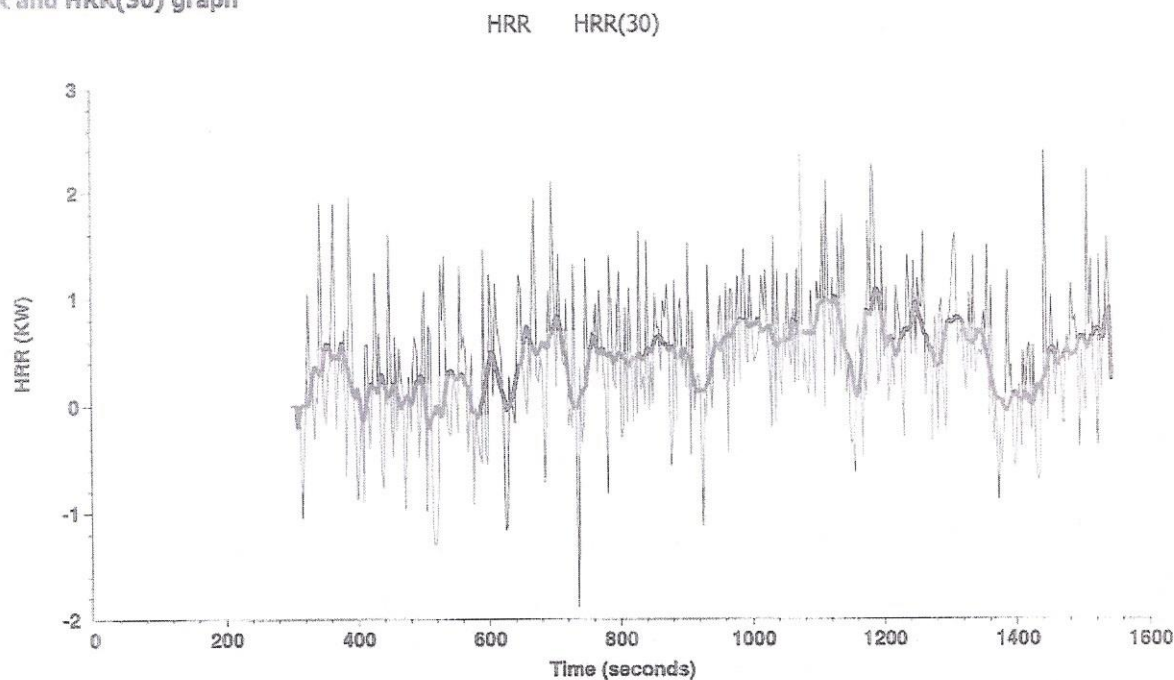
Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No  
 Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

**Pre-test comments****After-test comments**

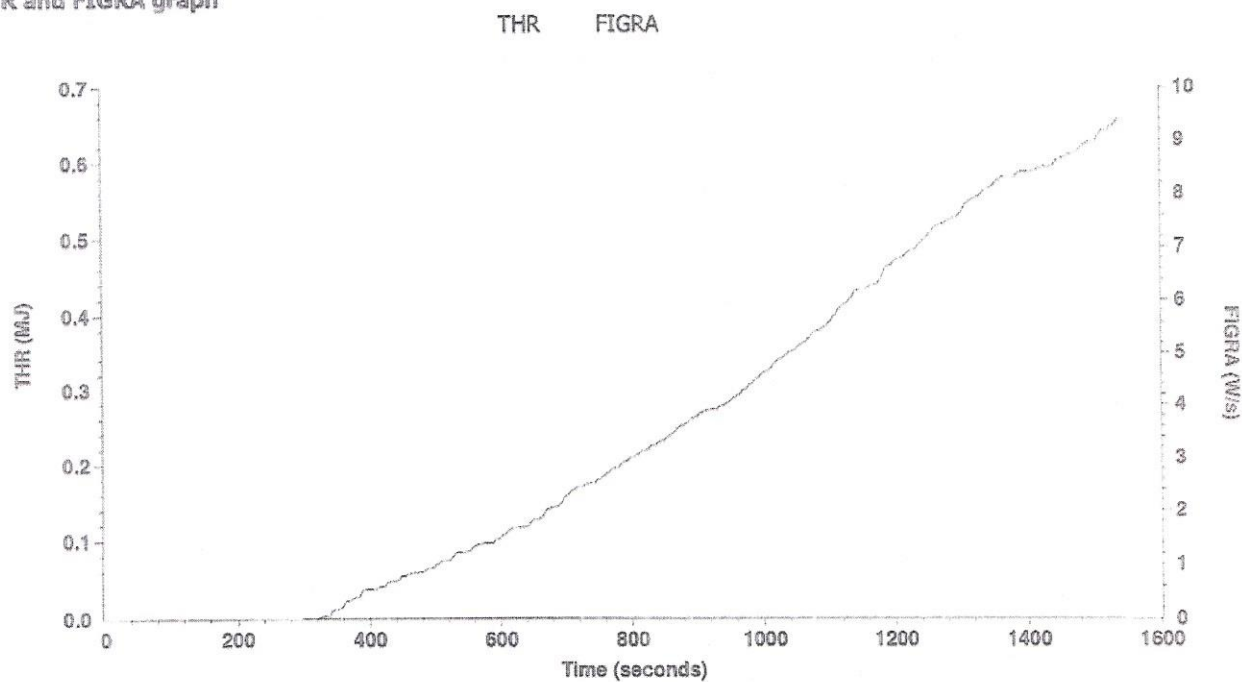
## SBI Test Report

Laboratory name MeKA Testing Laboratory  
Operator Edgars Buksans  
Filename C:\SBICALC\Data\1139\1139-1-1.csv  
Report identification 1139-1-1  
Product identification Facade front termopanel with klinker tiles

### HRR and HRR(30) graph



### THR and FIGRA graph



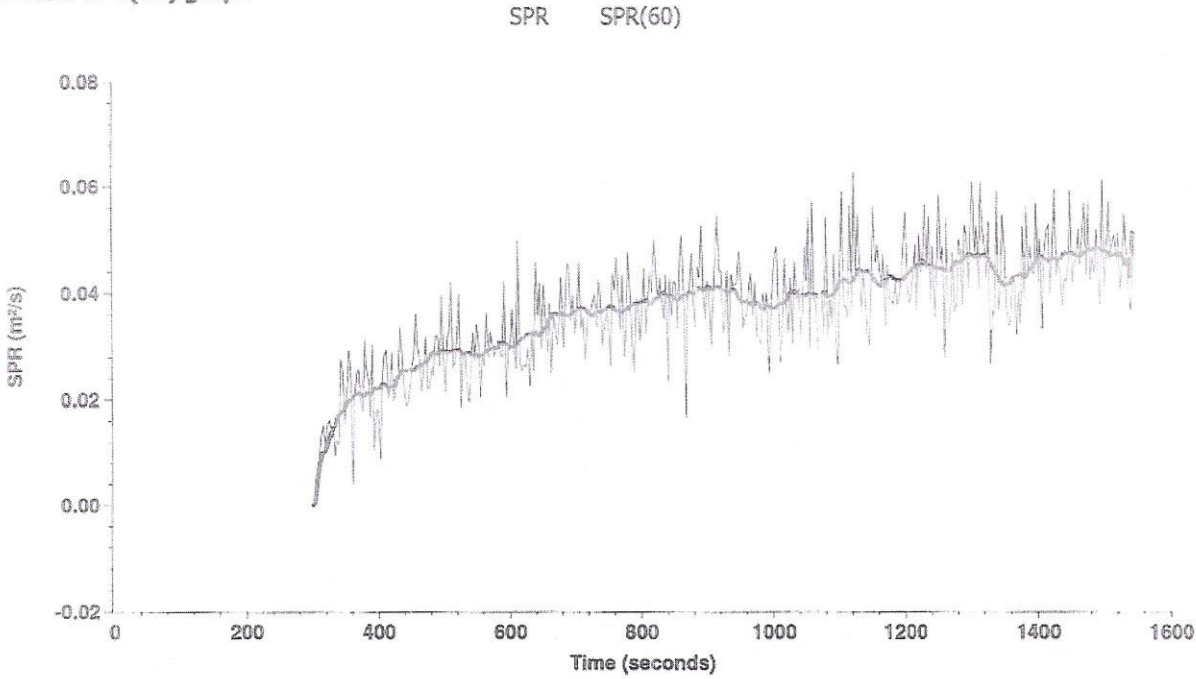
The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.



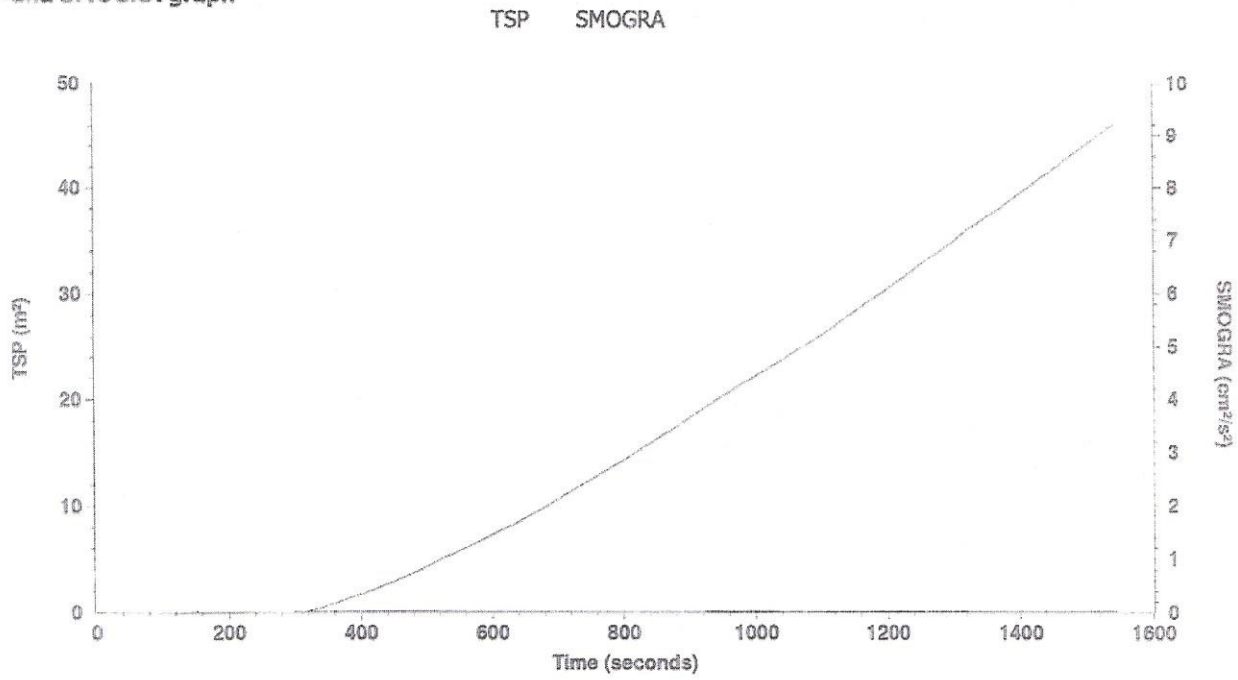
# SBICalc Test Report

Laboratory name MeKA Testing Laboratory  
Operator Edgars Buksans  
Filename C:\SBICALC\Data\1139\1139-1-1.csv  
Report Identification 1139-1-1  
Product Identification Facade front termopanel with klinker tiles

SPR and SPR(60) graph



TSP and SMOGRA graph



The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

**SBI Test Report**

Laboratory name MeKA Testing Laboratory  
 Operator Edgars Buksans  
 Filename C:\SBICALC\Data\1139\1139-1-2.csv  
 Report identification 1139-1-2  
 Product identification Facade front termopanel with klinker tiles

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Test		Pre-test conditions	Specimen conditioning
Standard used	EN 13823:2010	Baseline duct temperature 292.28 K	Method Constant mass
Date of test	10/04/2014	Ambient temperature 292.25 K	Time interval 144 hours
Date of report	10/04/2014	Ambient pressure 103.278 kPa	Mass 1 26181 g
E'	17.2 MJ/m <sup>2</sup>	Relative humidity 35%	Mass 2 26182 g
Apparatus specifications		Baseline conditions	Temperature 23°C
		Baseline ambient oxygen 20.792%	RH 50%
		Baseline oxygen 20.950%	
		Baseline carbon dioxide 0.0504%	
		Baseline smoke 100.05%	
kt	0.89		
kp	1.08		
Duct diameter	0.315 m		
O2 calibration delay time	12 s		
CO2 calibration delay time	10 s		

**Specimen information**

Thickness	40 mm	Mounting method	5.2.2 b) in EN 13823:2010
Density		Joints	none
Surface mass/area		Fixed to substrate?	Yes
Specimen number	2	Fixing method	screw
Date of arrival	18/02/2014	Substrate	plywood
		Manufacturer	Plitker OU
		Sponsor	Plitker OU

**Test validity criteria****Test drifts**

	Initial	Final	Change
Oxygen	20.950%	20.966%	0.016%
CO2	0.050%	0.043%	0.007%
Smoke	100.05%	99.49%	0.006

Exposure time 1254 s

**Synchronisation details**

Duct temp. dropped by 2.5 K from baseline of 315.56 K at 303 s  
 Oxygen rose by 0.05% from baseline of 20.673% at 303 s  
 CO2 dropped by 0.02% from baseline of 0.220% at 303 s

**Burner details**

Burner HRR	30.290 kW
Burner HRR std. dev.	0.572 kW
Burner CO2/O2 ratio	0.613
Burner SPR	0.031 m <sup>2</sup> /s
Burner SPR std. dev.	0.005 m <sup>2</sup> /s
Burner response time (s)	12 s

**Other checks**

Minimum duct flow	0.554 m <sup>3</sup> /s
Maximum duct flow	0.645 m <sup>3</sup> /s
No T/C failure	

Classification results	Classification observations	Potential classification
FIGRA(0.2) threshold not reached	LFS to edge? No	Class A2/B
FIGRA(0.4) threshold not reached	FDP flaming <= 10s? No	Smoke production s1
THR(600) 0.2 MJ	FDP flaming > 10s? No	Flaming droplets/particles d0
SMOGRA threshold not reached		
TSP(600) 15.9 m <sup>2</sup>		

**Recorded events** Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No  
 Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

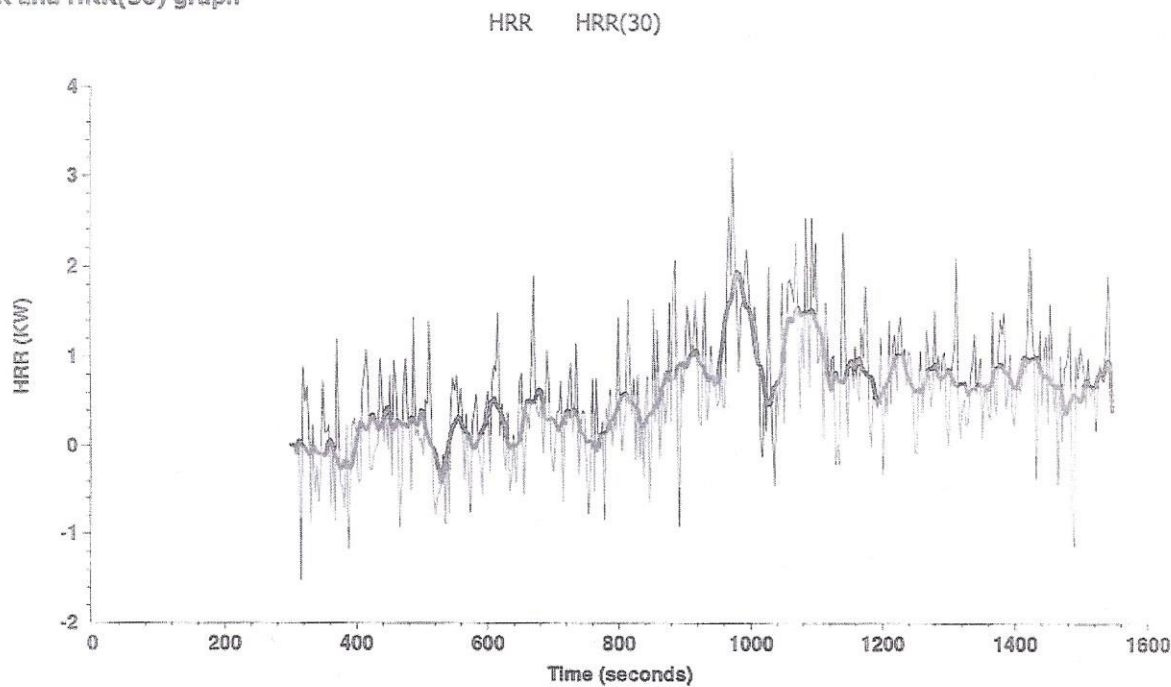
**Pre-test comments****After-test comments**



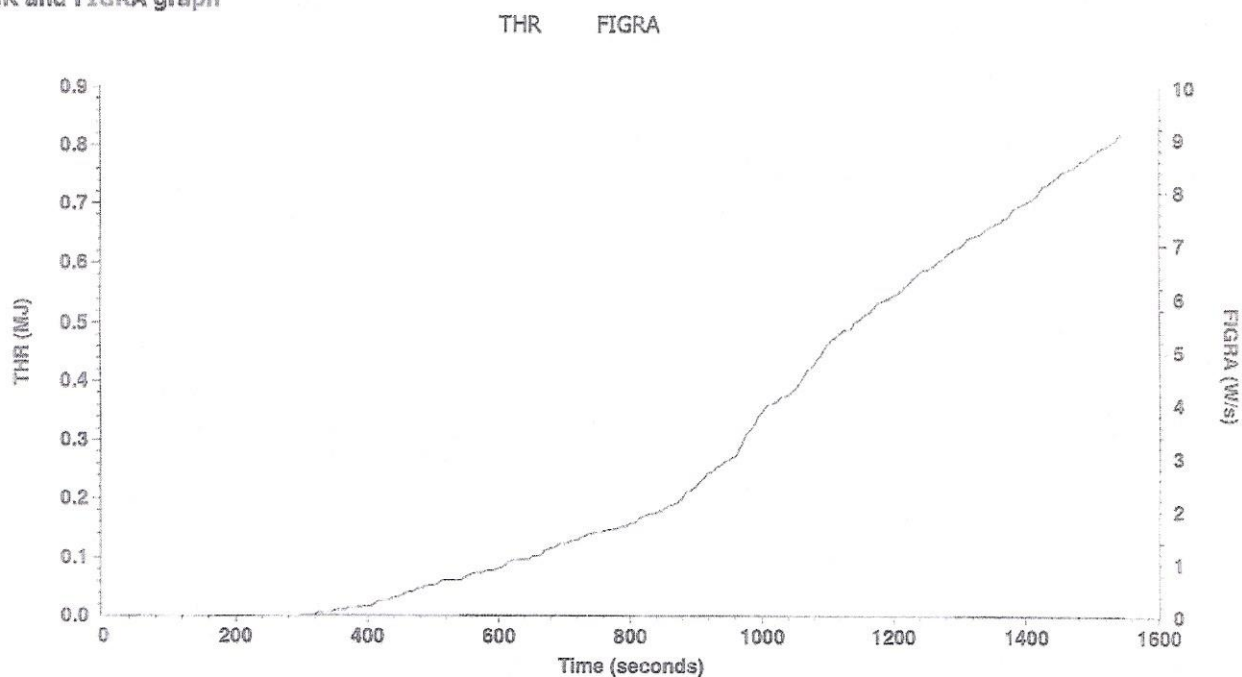
## SBI Test Report

Laboratory name MeKA Testing Laboratory  
Operator Edgars Buksans  
Filename C:\SBICALC\Data\1139\1139-1-2.csv  
Report identification 1139-1-2  
Product identification Facade front termopanel with klinker tiles

### HRR and HRR(30) graph



### THR and FIGRA graph

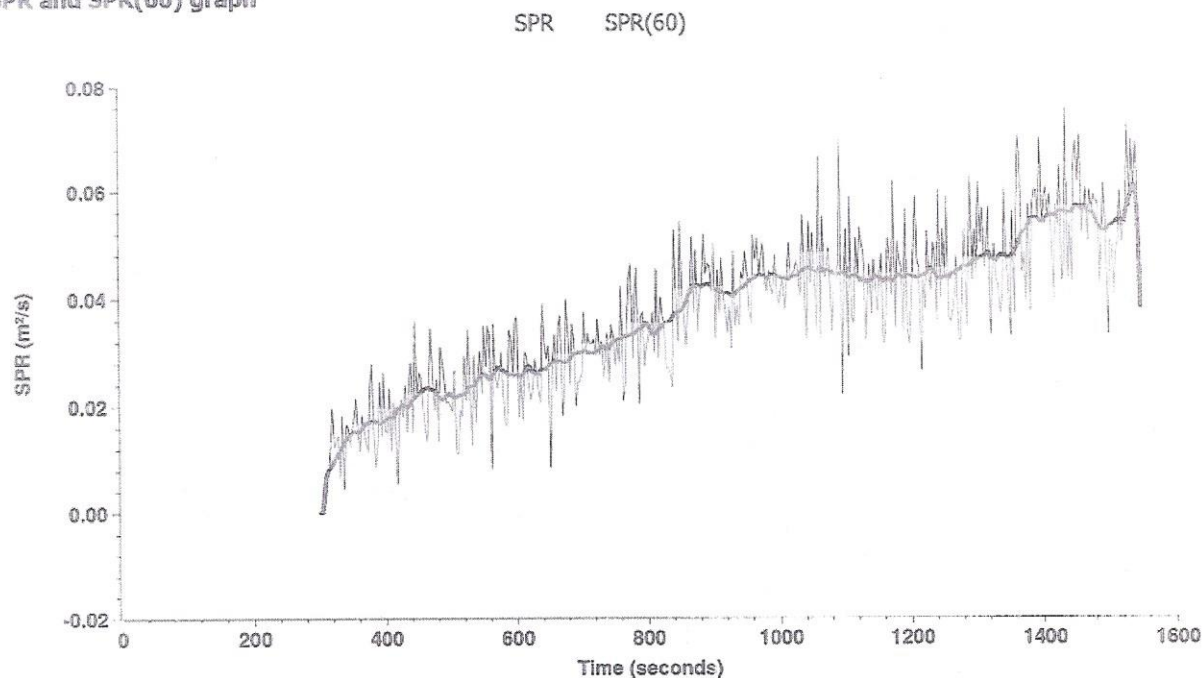


The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

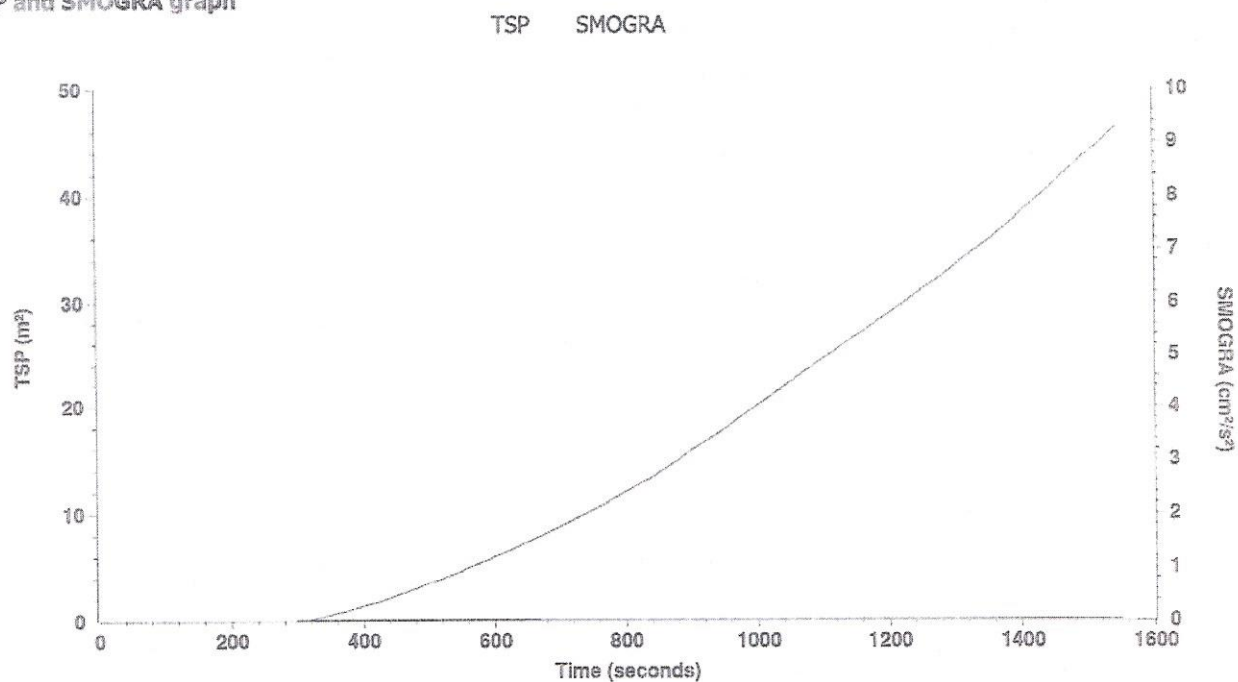
## SBI Test Report

Laboratory name MeKA Testing Laboratory  
Operator Edgars Buksans  
Filename C:\SBICALC\Data\1139\1139-1-2.csv  
Report identification 1139-1-2  
Product identification Facade front termopanel with klunker tiles

### SPR and SPR(60) graph



### TSP and SMOGRA graph



The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.



# SBI Test Report

Laboratory name MeKA Testing Laboratory  
 Operator Edgars Buksans  
 Filename C:\SBICALC\Data\1139\1139-1-3.csv  
 Report identification 1139-1-3  
 Product identification Facade front termopanel with klinker tiles

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Test	Pre-test conditions	Specimen conditioning
Standard used EN 13823:2010	Baseline duct temperature 292.94 K	Method Constant mass
Date of test 10/04/2014	Ambient temperature 292.15 K	Time interval 144 hours
Date of report 10/04/2014	Ambient pressure 103.272 kPa	Mass 1 26181 g
E <sup>+</sup> 17.2 MJ/m <sup>2</sup>	Relative humidity 30%	Mass 2 26182 g
		Temperature 23°C
		RH 50%
Apparatus specifications	Baseline conditions	
kt 0.89	Baseline ambient oxygen 20.812%	
kp 1.08	Baseline oxygen 20.953%	
Duct diameter 0.315 m	Baseline carbon dioxide 0.0434%	
O <sub>2</sub> calibration delay time 12 s	Baseline smoke 100.05%	
CO <sub>2</sub> calibration delay time 10 s		

## Specimen information

Thickness 40 mm	Mounting method 5.2.2 b) in EN 13823:2010
Density	Joints none
Surface mass/area	Fixed to substrate? Yes
Specimen number 3	Fixing method screw
Date of arrival 18/02/2014	Substrate plywood
	Manufacturer Plitker OU
	Sponsor Plitker OU

## Test validity criteria

### Test drifts

	Initial	Final	Change
Oxygen	20.953%	20.962%	0.009%
CO <sub>2</sub>	0.043%	0.046%	0.003%
Smoke	100.05%	99.52%	0.005

Exposure time 1254 s

### Synchronisation details

Duct temp. dropped by 2.5 K from baseline of 316.27 K at 303 s  
 Oxygen rose by 0.05% from baseline of 20.678% at 303 s  
 CO<sub>2</sub> dropped by 0.02% from baseline of 0.214% at 306 s

### Burner details

Burner HRR	30.551 kW
Burner HRR std. dev.	0.527 kW
Burner CO <sub>2</sub> /O <sub>2</sub> ratio	0.623
Burner SPR	0.034 m <sup>2</sup> /s
Burner SPR std. dev.	0.005 m <sup>2</sup> /s
Burner response time (s)	12 s

### Other checks

Minimum duct flow	0.563 m <sup>3</sup> /s
Maximum duct flow	0.653 m <sup>3</sup> /s
No T/C failure	

Classification results	Classification observations	Potential classification
FIGRA(0.2) threshold not reached	LFS to edge? No	Class A2/B
FIGRA(0.4) threshold not reached	FDP flaming <= 10s? No	Smoke production s1
THR(600) 0.2 MJ	FDP flaming > 10s? No	Flaming droplets/particles d0
SMOGRA threshold not reached		
TSP(600) 20.6 m <sup>2</sup>		

**Recorded events** Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No  
 Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

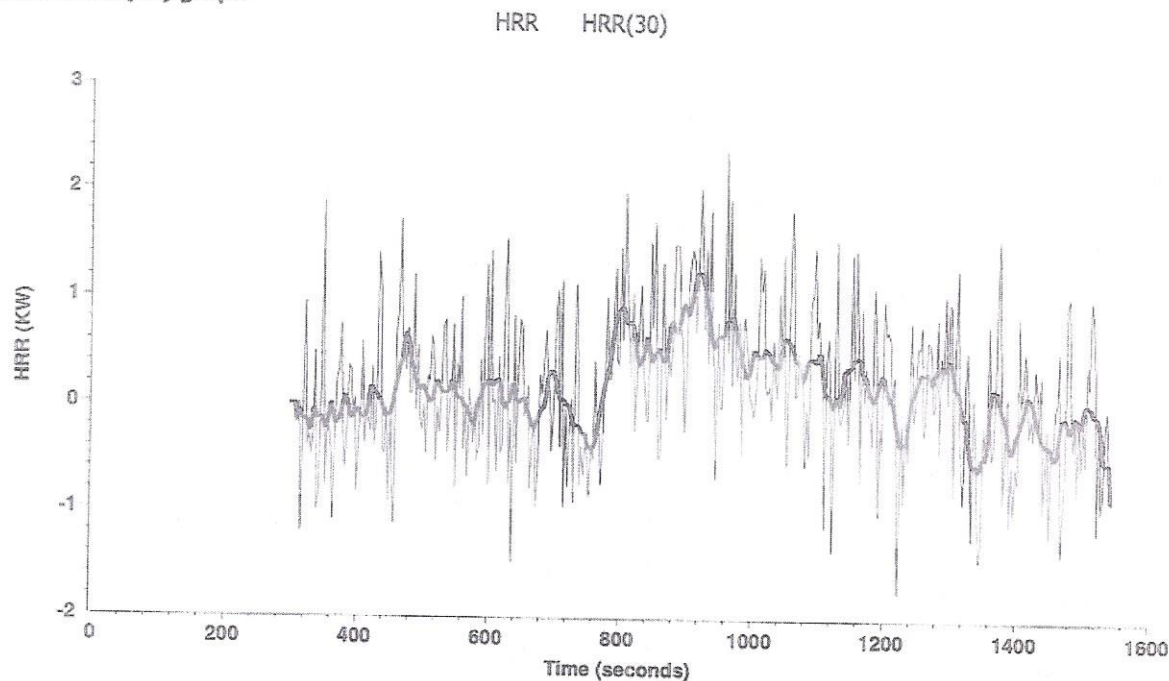
### Pre-test comments

### After-test comments

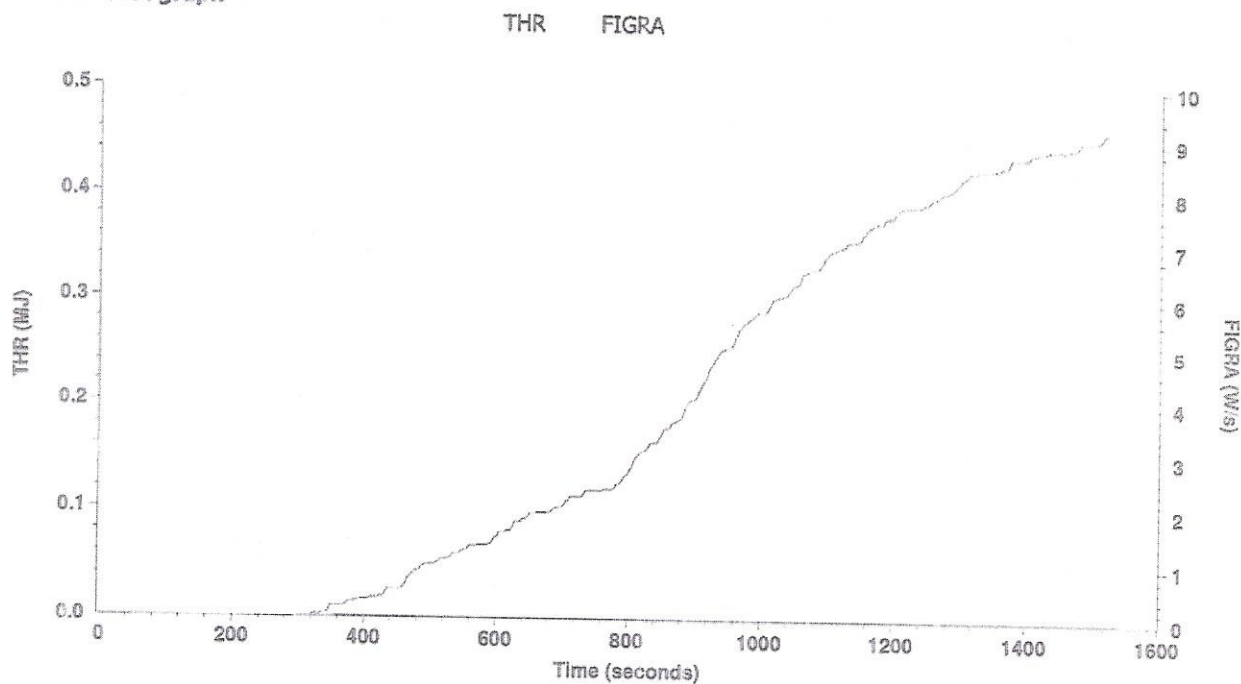
## SBI Test Report

Laboratory name MeKA Testing Laboratory  
Operator Edgars Buksans  
Filename C:\SBICALC\Data\1139\1139-1-3.csv  
Report identification 1139-1-3  
Product identification Facade front termopanel with klunker tiles

### HRR and HRR(30) graph



### THR and FIGRA graph



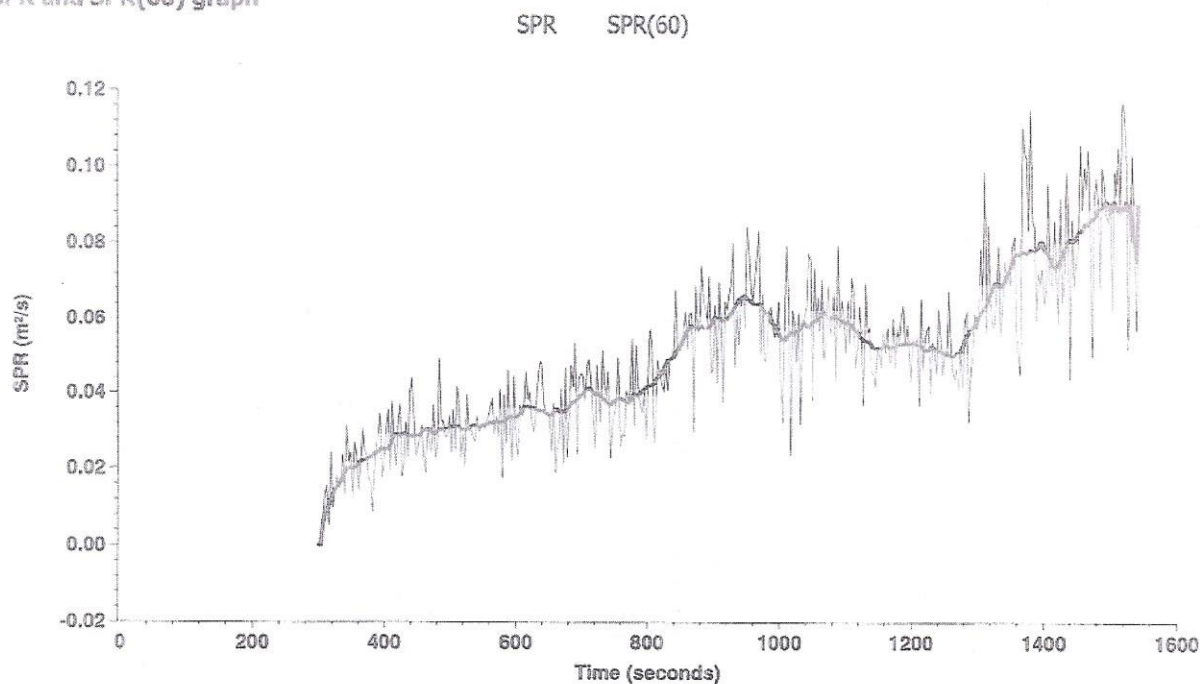
The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.



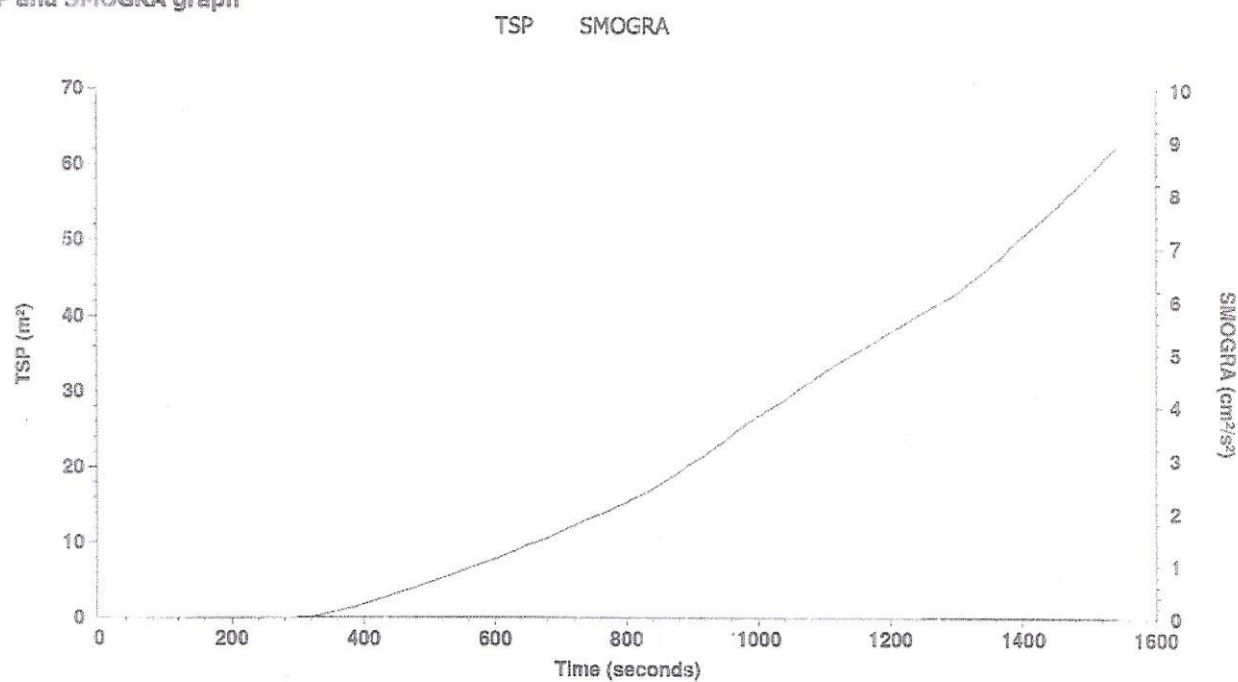
# SBI Test Report

Laboratory name MeKA Testing Laboratory  
 Operator Edgars Buksans  
 Filename C:\SBICALC\Data\1139\1139-1-3.csv  
 Report identification 1139-1-3  
 Product identification Facade front termopanel with klinker tiles

SPR and SPR(60) graph



TSP and SMOGRA graph



The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

### Test parameter explanation

Parameter	Explanation
Specimen	Specimen consisting of two wings (short wing - 495 x 1500mm and long wing 1000x1500mm) mounted perpendicular each to other.
Test start	Start of data collection
Ignition of the specimen	Ignition of specimen long wing initiated by main burner
Flaming particles and droplets	Specimen particles which have fall down on trolley at distance more than 300 mm distance from specimen corner and continue burning. It should be observed if flaming time is less or more than 10 s.
Lateral flame spread on the long wing LFS 1000 mm	Lateral flame spread is recorded when sustained flames reach's the far edge of specimen at height between 500 to 1000mm.
HRR, kW	Heat release rate of material between ignition of main burner and end of the test, burner heat output excluded, as a 60 s running average value.
SPR, $m^2/s^2$	Smoke production rate of material between ignition of the main burner and end of test burner smoke production output excluded, as 60 s running average value.
FIGRA <sub>0,2MJ</sub> , W/s	Fire growth rate is maximum of the quotient of heat release rate from the specimen and time of its occurrence using a THR-threshold of 0.2 MJ.
FIGRA <sub>0,4MJ</sub> , W/s	Fire growth rate is maximum of the quotient of heat release rate from the specimen and time of its occurrence using a THR-threshold of 0.4 MJ.
THR <sub>600s</sub> , MJ	Total heat release of the sample at first 600 s from ignition of main burner.
SMOGRA, $cm^2/s^2$	Maximum of the quotient of smoke production rate from the specimen and the time of its occurrence.
TSP <sub>600s</sub> , $m^2$	Total smoke production from the specimen in the first 600 s of exposure to the main burner flames.

„MEŽA UN KOKSNES PRODUKTU PĒTNIECĪBAS UN ATTĪSTĪBAS INSTITŪTS” SIA

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## Test Report No.1139-2/2014

Forest and Wood Products Research and Development Institute  
Testing Laboratory

**Customer:** Plitker OÜ.

Customer's address: Võru 13-17, Tallin, Estonia  
Reg. No. 11715021

Date of the order: 10.02.2014.

Testing was done according contract No. 57-02/14 MU.

Test samples received: 18.02.2014.

**Description of product (According to customer's information)**

- Product name: Polyurethane facade thermopanel with clinker tiles.
- Nominal thickness: 40 mm.
- Materials: Polyurethane components polyol and isocyanate Bayer (Germany), clinker tiles ABC Klinkergruppe, Strocher (Germany).

**Sampling:**

Production of the product was done by Plitker OÜ at 04.02.2014. at Tiskre str. 12, Tallinn, Estonia.

Sampling was done by Plitker OÜ at 10.02.2014. at Tiskre str. 12, Tallinn, Estonia. Specimens were sampled randomly from store.

**Application of building product (according to customer's information):**

Product is intended to use as facade thermo insulation panels.

**Specimen preparation for testing:**

Specimens were prepared for testing by Plitker OÜ. 18 specimens with dimensions 90x250 mm were prepared.

**Substrates used:**

Substrates were not used.

**Conditioning of specimens:**

Specimens were conditioned according to standard EN 13238:2010.

Conditioning method: constant mass.

Temperature:  $t = 23 \pm 1$  °C.

Relative humidity:  $RH = 50 \pm 5\%$ .

Conditioning period: 52 days.

**Test standard:** EN ISO 11925-2:2010.

**Test date:** 11.04.2014.



**SBI Test Report**

Laboratory name MeKA Testesanas laboratorija  
 Operator Edgars Buksans  
 Filename C:\SBICALC\DATA\514\514-2.csv  
 Report identification 514-2  
 Product identification Facade front termopanel

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Test		Pre-test conditions	Specimen conditioning
Standard used	EN 13823:2002	Baseline duct temperature 296.16 K	Method Constant mass
Date of test	09/08/2011	Ambient temperature 295.86 K	Time interval 24 hours
Date of report	11/08/2011	Ambient pressure 101.237 kPa	Mass 1 462 g
E'	17.2 MJ/m <sup>3</sup>	Relative humidity 50%	Mass 2 462 g
Apparatus specifications		Baseline conditions	Temperature 23°C
kt	0.93	Baseline ambient oxygen 20.664%	RH 50%
kp	1.08	Baseline oxygen 20.956%	
Duct diameter	0.315 m	Baseline carbon dioxide 0.0429%	
O2 calibration delay time	12 s	Baseline smoke 100.02%	
CO2 calibration delay time	9 s		

**Specimen information**

Thickness	65 mm	Mounting method	5.2.2b) in EN 13823:2002
Density		Joints	Vertical and horizontal
Surface mass/area		Fixed to substrate?	Yes
Specimen number	2	Fixing method	screw
Date of arrival	22/07/2011	Substrate	cementparticleboard
		Manufacturer	
		Sponsor	

**Test validity criteria****Test drifts**

	Initial	Final	Change
Oxygen	20.956%	20.963%	0.008%
CO2	0.043%	0.041%	0.002%
Smoke	100.02%	100.24%	0.002

Exposure time 1254 s

**Synchronisation details**

Duct temp. dropped by 2.5 K from baseline of 319.73 K at 303 s  
 Oxygen rose by 0.05% from baseline of 20.673% at 303 s  
 CO2 dropped by 0.02% from baseline of 0.222% at 306 s

**Burner details**

Burner HRR	30.908 kW
Burner HRR std. dev.	0.712 kW
Burner CO2/O2 ratio	0.634
Burner SPR	0.023 m <sup>2</sup> /s
Burner SPR std. dev.	0.004 m <sup>2</sup> /s
Burner response time (s)	9 s

**Other checks**

Minimum duct flow	0.547 m <sup>3</sup> /s
Maximum duct flow	0.666 m <sup>3</sup> /s
No T/C failure	

**Classification results**

FIGRA(0.2)	6.4 W/s at 831 s
FIGRA(0.4)	6.4 W/s at 831 s
THR(600)	0.7 MJ
SMOGRA	5.1 cm <sup>2</sup> /s <sup>2</sup> at 1026 s
TSP(600)	47.6 m <sup>2</sup>

**Classification observations**

LFS to edge?	No
FDP flaming ≤ 10s?	No
FDP flaming > 10s?	No

**Potential classification**

Class	A2/B
Smoke production	s1
Flaming droplets/particles	d0

**Recorded events**

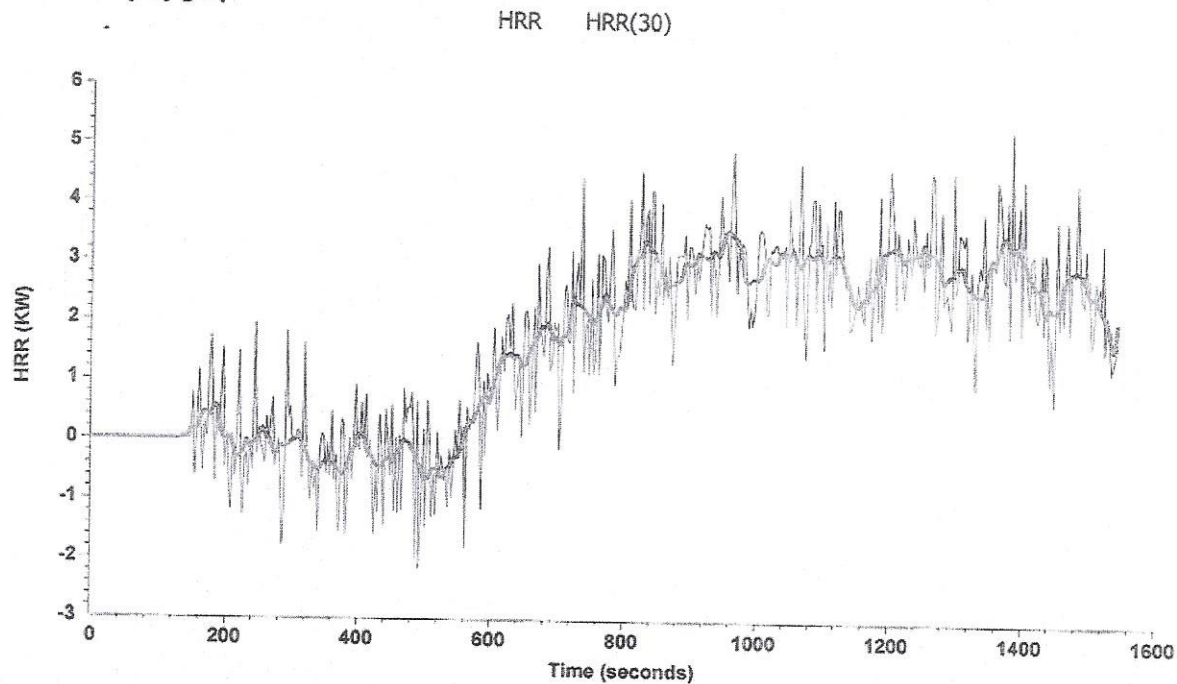
Surface flashes? No; Falling specimen parts? No; Smoke not entering hood? No  
 Mutual fixing of backing board failed? No; Distortion/collapse of specimen? No

**Pre-test comments****After-test comments**

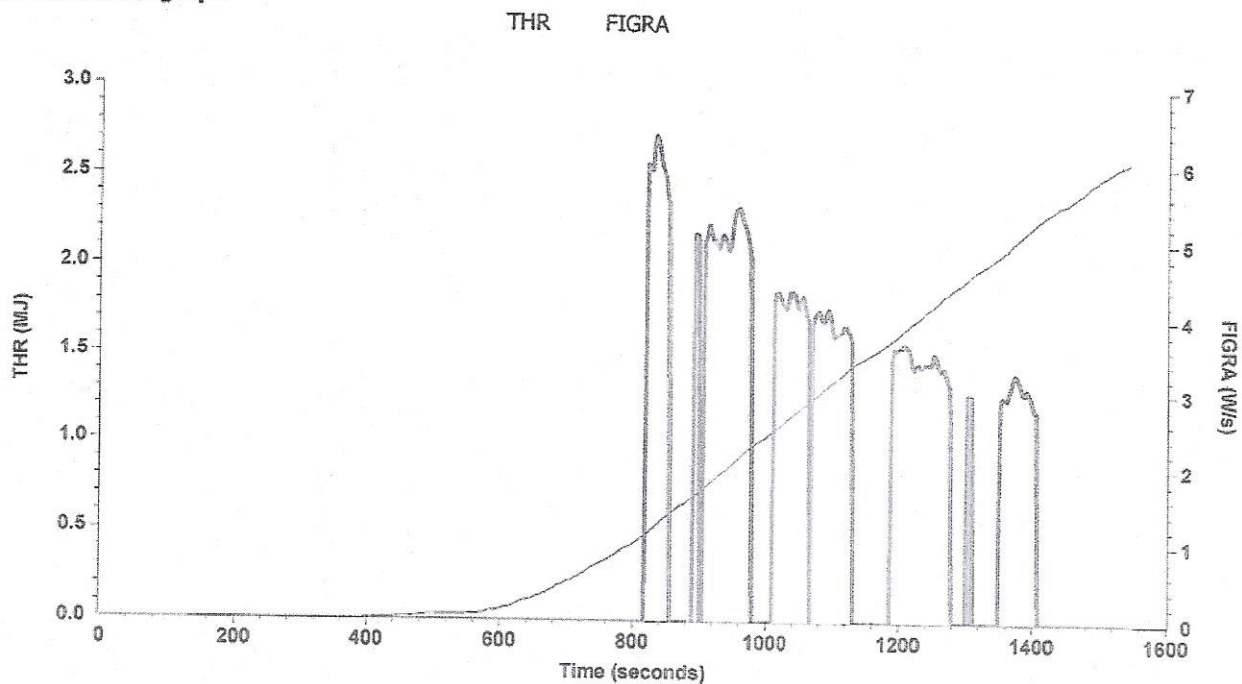
## SBI Test Report

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Report identification 514-2  
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### HRR and HRR(30) graph



### THR and FIGRA graph

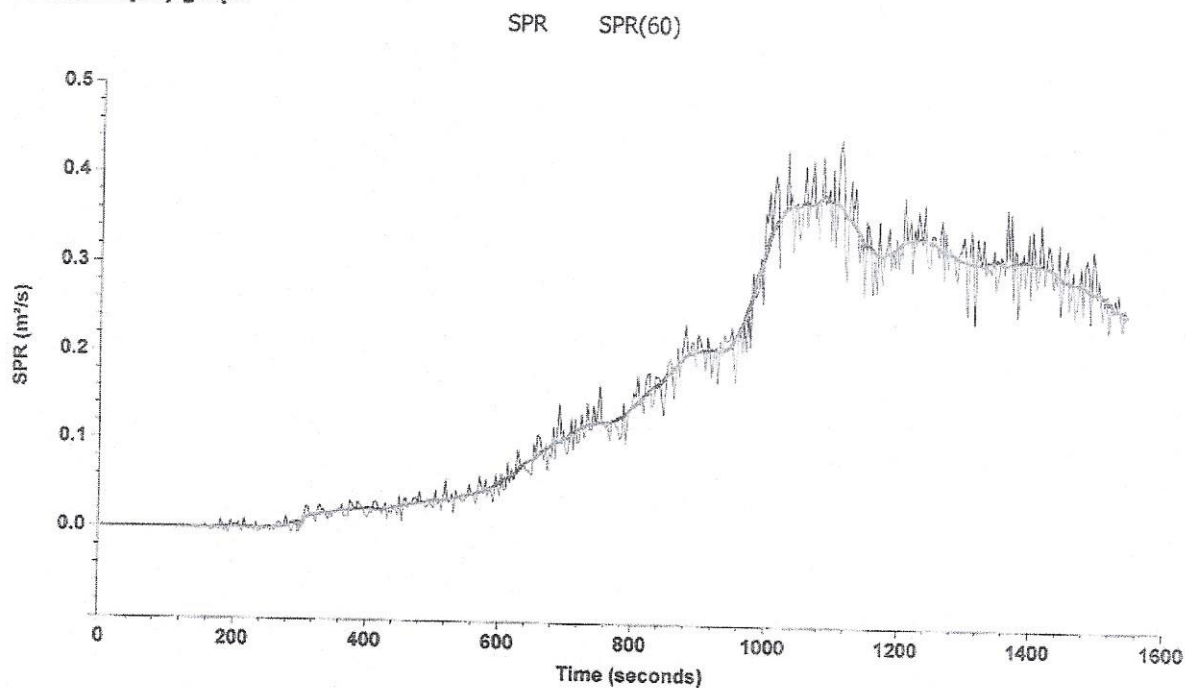


The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

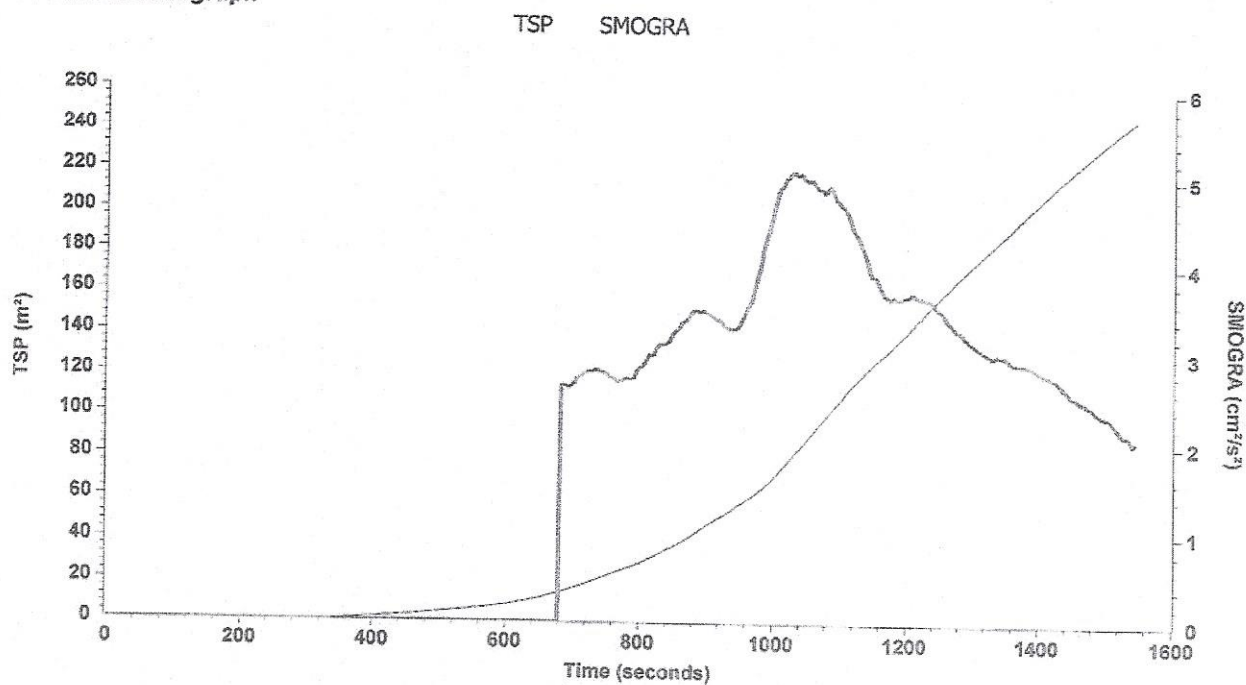
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SPR and SPR(60) graph



TSP and SMOGRA graph



The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.



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**Test results:**

Test results are given in the annex 1 and test protocols in the annexes 2 to 4.

According to LVS EN 13823:2003 test results relate to the behaviour of test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

**Annexes:**

- Annex 1 (Test results, 2 pp.)
- Annex 2 (SBI test protocol Nr. 514-1, 3 pp.)
- Annex 3 (SBI test protocol Nr. 514-2, 3 pp.)
- Annex 4 (SBI test protocol Nr. 514-5, 3 pp.)
- Annex 5 (test parameter explanation, 1 pp.)

Date of issue: 17.08.2011.



Head of Laboratory

K.Būmanis

(signature and name)

Tests carried out by

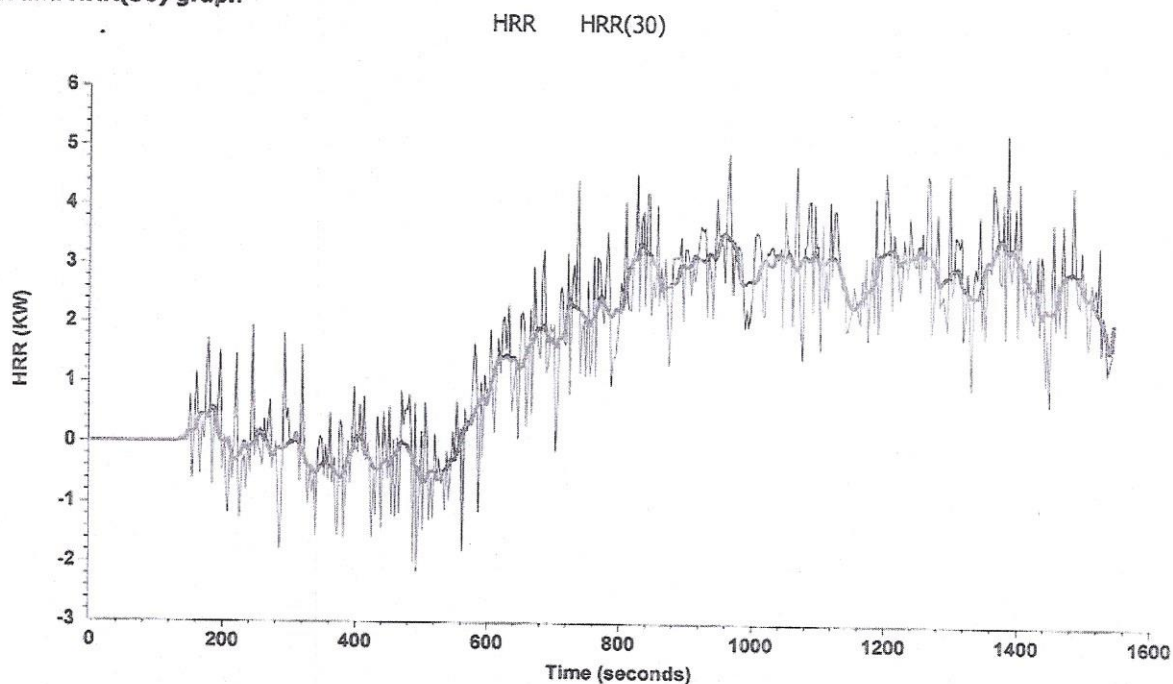
E.Bukšāns

(signature and name)

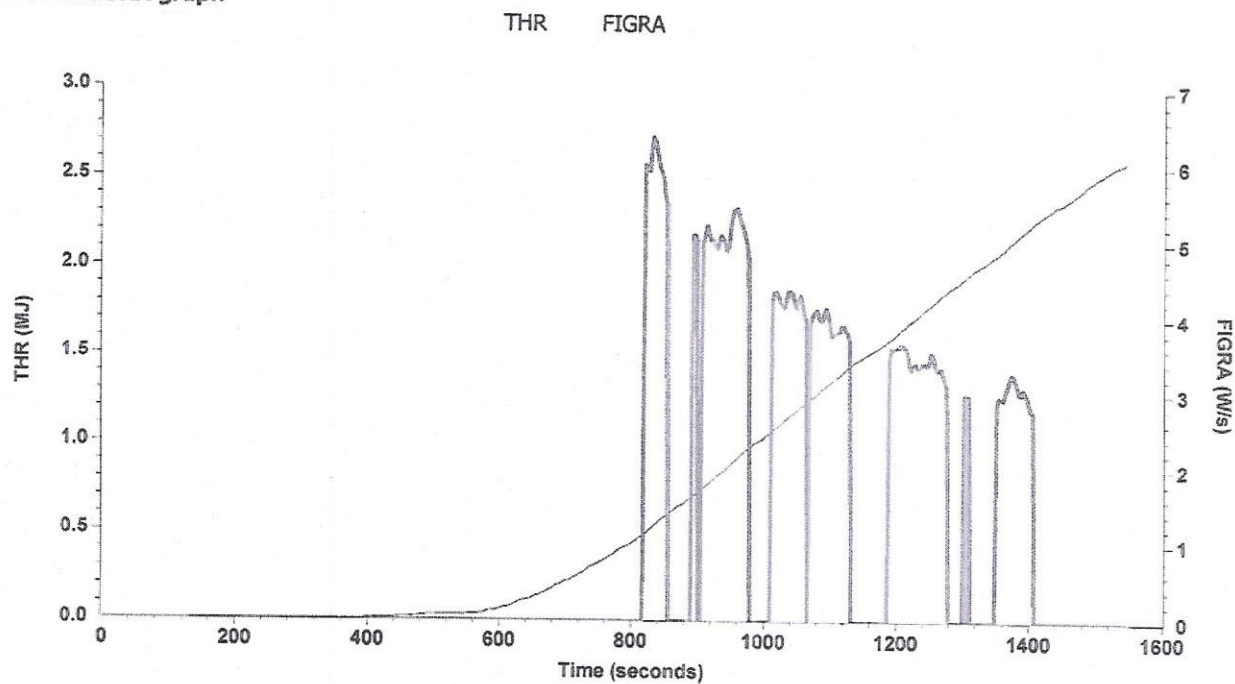
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 Report identification 514-2  
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### HRR and HRR(30) graph



### THR and FIGRA graph

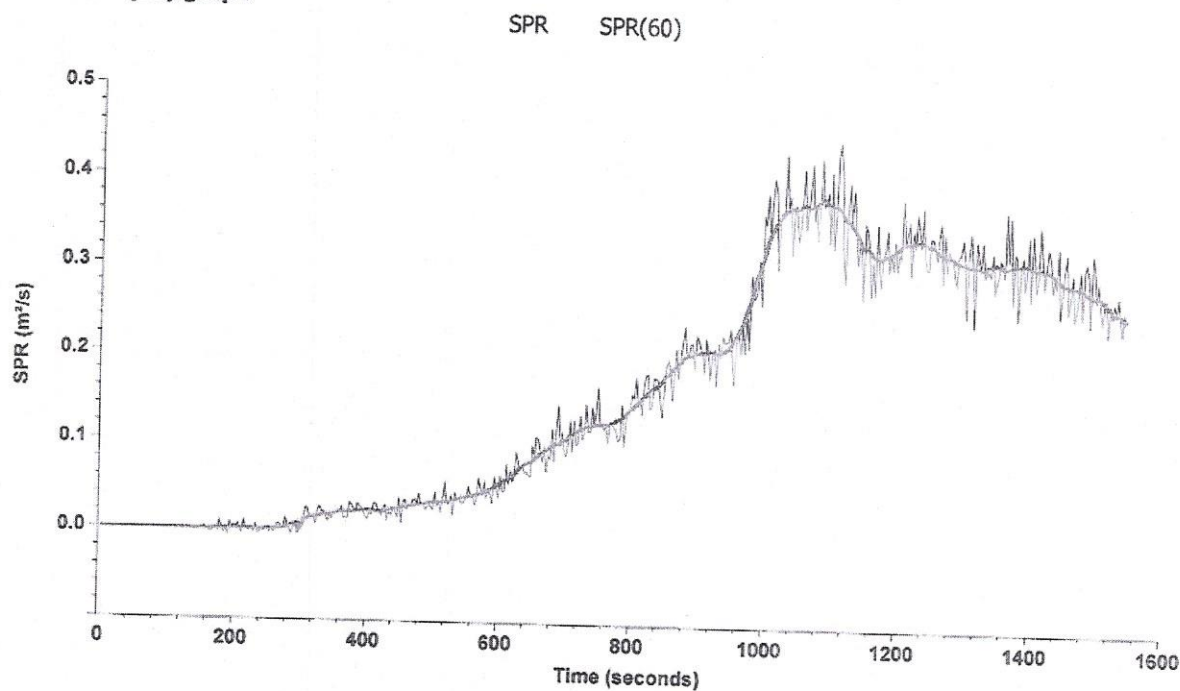


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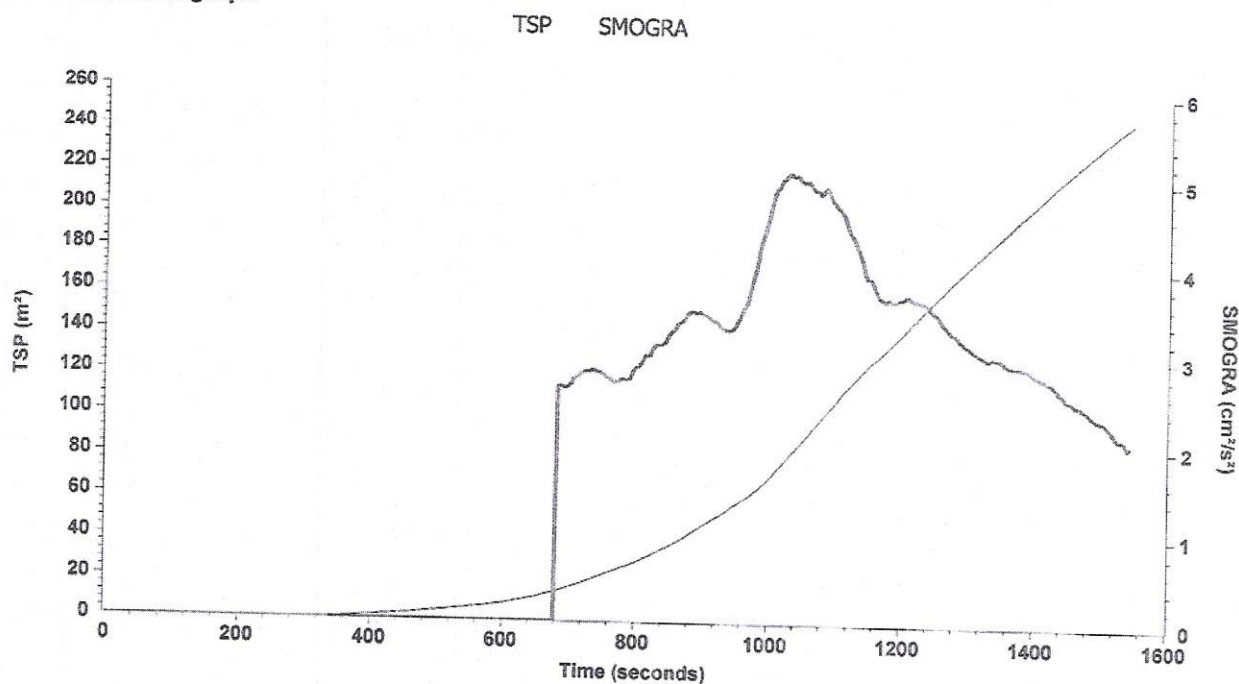
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## SPR and SPR(60) graph



## TSP and SMOGRA graph



The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.



Annex 1 to test report No.514-1/2011

## TEST RESULTS

### Product:

- Test specimens: Facade front thermopanel
- Number of test specimens and identification: 5 test specimens (514-1 - 514-5).
- Measured thickness: 65mm.

### Test standard:

LVS EN 13823:2003

### Mounting:

Specimens were mounted in SBI trolley with horizontal joints between panels in accordance with standard LVS EN 13823:2003 paragraph 5.2.2 b. Tight corner joint was secured by high temperature resistant sealant. There was not ventilated air gap between the specimen and calcium silicate backing board (see Fig. 1.). Calcium silicate backing board and substrate – particle board complies with standard LVS EN 13238:2003 requirements.

### Test result summary

Five specimens were tested without failure. Data statistical analyze is done out of the test data of three specimens (No.514-1; 514-2; 514-5). Test results of specimens No 514-3 and 514-4 were not used for calculations (highest and lowest TSP<sub>600s</sub> values)

Specimen No.	514-1	514-2	514-5	Average	Standard deviation	Standard error
<b>General information</b>						
Test start, min:s	0:00	0:00	0:00	-	-	-
Auxiliary burner ignited, min:s	2:00	2:00	2:00	-	-	-
Main burner ignited, min:s	5:03	5:03	5:03	-	-	-
Main burner stopped, min:s	26:00	26:00	26:00	-	-	-
<b>Observations</b>						
Ignition of specimen	9:25	9:20	9:20	-	-	-
First flaming droplets, particles, min:s	No	No	No	-	-	-
Burning droplets, particles, >10s	No	No	No	-	-	-
Lateral flame spread, LFS	No	No	No	-	-	-
Falling specimen parts, min:s	No	No	No	-	-	-
<b>Fire performance, see annexes 2 - 4</b>						
FIGRA <sub>0,2MJ</sub> , W/s	10.8	6.4	7	8.1	2.4	1.38
FIGRA <sub>0,4MJ</sub> , W/s	10.8	6.4	7	8.1	2.4	1.38
THR <sub>600s</sub> , MJ	1.2	0.7	0.9	0.93	0.3	0.15
SMOGR <sub>A</sub> , cm <sup>2</sup> /s <sup>2</sup>	4.9	5.1	4.5	4.83	0.3	0.22
Time of maximal smoke growth rate (SMOGR <sub>A</sub> ), s	960	1026	1143	1043	92	65
TSP <sub>600s</sub> , m <sup>2</sup>	49.5	47.6	37.8	45.0	6.3	3.63

### Observations during the test

There were not flaming droplets observed during all test. There were no lateral flame spread nor specimen collapse during all test, see Fig. 2.

### Deviations from standard:

No

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**Test results:**

Test results are given in the annex 1 and test protocols in the annexes 2 to 4.

According to LVS EN 13823:2003 test results relate to the behaviour of test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

**Annexes:**

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- Annex 2 (SBI test protocol Nr. 514-1, 3 pp.)
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- Annex 5 (test parameter explanation, 1 pp.)

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Head of Laboratory

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Tests carried out by

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