



Bruay-la-Buissière, le 19 avril 2013

M. Manny Tesfaye
SCIGRIP
600 Ellis Rd.
NC 27703 Durham - RTP
US

Subject: Test results

Mister Tesfaye,

Thanks to your request, tests according to the European railway standard EN 45545-2 were realized on the following reference:

- SG 300 Series – CREPIM reference: CREPIM 1579/01/063 B – Amdt 1

The test results, attached to this document with the same study reference number, allow us to conclude that:

- SG 300 Series : **HL3 Classification** for the requirement R1 of the EN45545-2 : 2013

I stay available if you need more information about this classification,

Best Regards,

M. Stéphane BOISSEL

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Head of Fire Testing Activity

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ACCREDITATION N°1-0989
Scope on request @ www.cofrac.fr

Test report

Test report n° **RE 58 - 1579/01/063 B - Amdt 1**
Date 12/04/13
Amendment date 18/04/13
Manager Stéphane BOISSEL
Order number 7145.7600.030
Date of order 12/04/13
Page 1 on 2

To
Company SCIGRIP
Name M. Manny Tesfaye
Address 600 Ellis Rd.
Postcode NC 27703 Town Durham - RTP
Country US
Phone 9195982425 Fax 91 95 98 24 39

This test report RE58 1579/01/063 B - Amdt 1 cancels and replaces the test report RE58 1579/01/063 B

Test standard : **ISO 5658-2: Reaction to fire test - Spread of flame**
Part 2: Lateral spread on building and transport products in vertical configuration

Accredited COFRAC test : COFRAC accreditation attests competence of the laboratories for the only tests covered by the accreditation

Tested

Commercial Name : **SG300 Series**
Description : Aluminum (3,2 mm) / MMA Adhesive (2 mm) /Aluminum (3,2 mm)
Density : 2699 Kg/m³
Colour : Black (adhesive)
Size : 800 mm x 155 mm x 8,4 mm
Conditionning : 23 ± 2 °C, 50 ± 5 % HR

The attention is drawn to the fact that the results obtained with the sample object of this test report are not generalizable without justification. The test results are related only to the behavior of the product under the particular conditions of the test

Results

Reception date : 04/03/13

The sample which have the commercial name
SG300 Series
obtain following results

Critical Heat Flux at Extinguishment : CFE (kW/m²)

>50,5

Remarks :



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ACCREDITATION N°1-0989
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Test report

Test report n° RE 58 - 1579/01/063 B - Amdt 1
Page 2 on 2

Test data

Test date : 03/04/13

Type of pilot flame : Propane

	Time (s)			Distance covered (mm)		
Ignition	/	/	/			
Extinction	/	/	/	0	0	0

	Spread of flame - Time (s)		
D (mm)	Specimen 1	Specimen 2	Specimen 3
50	No ignition		
100			
150			
200			
250			
300			
350			
400			
450			
500			
550			
600			
650			
700			
750			
800			

D (mm) = Distance covered in mm

T (s) = Time to reach corresponding distance in second

Critical heat flux at	>50,5	kW/m ² (specimen 1)
extinguishment - CFE	>50,5	kW/m ² (specimen 2)
(kW/m²)	>50,5	kW/m ² (specimen 3)
Average	>50,5	kW/m ²

Observations: No ignition

O. DOBOSZ
Test Officer

S. BOISSEL
Technical Manager



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ACCREDITATION N°1-0989
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Test report

Test report n° RE IR - 1579/01/063 B -
Amdt 1

Date 12/04/13
Amendment date 18/04/13
Order number 7145.7600.030
Date of order 12/04/2013

Number of pages 2

Company SCIGRIP

Name M. Manny Tesfaye

Address 600 Ellis Rd.

Postcode NC 27703 Town Durham - RTP
Country US
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This test report RE IR 1579/01/063 B - Amdt 1 cancels and replaces the test report RE IR 1579/01/063 B

Test standard : PR CEN/TS 45545-2: Railway application – Fire protection on railway vehicles,
Part 2 : Requirements for fire behaviour of materials and components.
Annex C : Testing methods for determination of toxic gases from railway products.

Accredited COFRAC test : COFRAC accreditation attests competence of the laboratories for the only tests covered by the accreditation

Tested product

Commercial name : SG300 Series

Description : Aluminum (3,2 mm) / MMA Adhesive (2 mm) /Aluminum (3,2 mm)

Colour : Black (adhesive) Size : 76 mm x 76 mm x 8,4 mm

Conditionning : 23 ± 2 °C, 50 ± 5 % HR Density : 2699 Kg/m³

The attention is drawn to the fact that the results obtained with the sample object of this test report are not generalizable without justification. The test results are related only to the behavior of the product under the particular conditions of the test

Results at 4 mn

Test mode : 50 kW/m²

Test date : 10/04/2013

Test apparatus

Optical test bench : A81/0904

IR Cell : A41/1102

Smoke chamber : E67/1002

	test 1	test 2	test 3	test 4	test 5	test 6	Average
CO ₂ (mg/m ³)	Not quantifiable			Not led for the EN45545-2			0,00
CO (mg/m ³)	Not quantifiable						0,00
HBr (mg/m ³)	Not detected						0,00
HCl (mg/m ³)	Not detected						0,00
HCN (mg/m ³)	Not detected						0,00
HF (mg/m ³)	Not detected						0,00
NO (mg/m ³)	Not detected						0,00
NO ₂ (mg/m ³)	Not detected						0,00
SO ₂ (mg/m ³)	Not detected						0,00
CIT	0.00	0.00	0.00				0,00

Remarks :

Not quantifiable (NQ) involve that measurements made are under method limit of quantification.



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ACCREDITATION N°1-0989
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Test report n° RE IR - 1579/01/063 B - Amdt 1

Results at 8 mn

Test mode : 50 kW/m²

Test date : 10/04/2013

Test apparatus

Optical test bench : A81/0904

IR Cell :

A41/1102

Smoke chamber :

E67/1002

	test 1	test 2	test 3	test 4	test 5	test 6	Average
CO ₂ (mg/m ³)	Not quantifiable			Not led for the EN45545-2			0,00
CO (mg/m ³)	Not quantifiable						0,00
HBr (mg/m ³)	Not detected						0,00
HCl (mg/m ³)	Not detected						0,00
HCN (mg/m ³)	Not detected						0,00
HF (mg/m ³)	Not detected						0,00
NO (mg/m ³)	Not detected						0,00
NO ₂ (mg/m ³)	Not detected						0,00
SO ₂ (mg/m ³)	Not detected						0,00
CIT	0.00	0.00	0.00				0.00

Remarks :

Not quantifiable (NQ) involve that measurements made are under method limit of quantification.

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L. PANKEWITCH Test Officer	
S. BOISSEL Technical Manager	



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ACCREDITATION N°1-0989
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Test report

Test report n°	RE 59 - 1579/01/063 B - Amdt 1	Company	SCIGRIP		
Date	12/04/2013	Name	M. Manny Tesfaye		
Amendment date	18/04/13	Address	600 Ellis Rd.		
Order number	7145.7600.030	Postcode	NC 27703	Town	Durham - RTP
Date of order	12/04/13	Country	US		
Number of pages	2	Phone	91 95 98 24 25	Fax	91 95 98 24 39

This test report RE 59 1579/01/063 B - Amdt 1 cancels and replaces the test report RE 59 1579/01/063 B

Test standard :	NF EN ISO 5659-2 : Plastics — Smoke generation — Part 2 : Determination of optical density by a single chamber test.
Accredited COFRAC test :	COFRAC accreditation attests competence of the laboratories for the only tests covered by the accreditation

Tested Product	
Commercial name :	SG300 Series
Description :	Aluminum (3,2 mm) / MMA Adhesive (2 mm) /Aluminum (3,2 mm)
Colour :	Black (adhesive)
Size :	76 mm x 76 mm x 8,4 mm
Conditionning :	23 ± 2 °C, 50 ± 5 % HR
Recovering :	Not applicable
<i>The attention is drawn to the fact that the results obtained with the sample object of this test report are not generalizable without justification The test results are related only to the behavior of the product under the particular conditions of the test</i>	

Test results			
Reception date :	04/03/13	Metal grid :	NON
Test date :	10/04/13	Smoke chamber	E67/1002
Test mode :	50 kW/m2	Test duration :	1200 secondes

	test 1	test 2	test 3	test 4	test 5	test 6	average
Thickness (mm)	8,40	8,40	8,40	Not led for the EN45545-2			8,50
Mass (g)	112,50	117,40	113,90				114,60
Mass loss (%)	0,98	0,34	0,79				0,70
VOF4	0,14	0,00	1,41				0,52
Ds1.5	0,00	0,00	0,40				0,13
Ds4	0,00	0,00	0,51				0,17
DS10	1,28	0,00	1,01				0,76
Dsmax	1,32	0,00	1,01	0,78			

Remarks :



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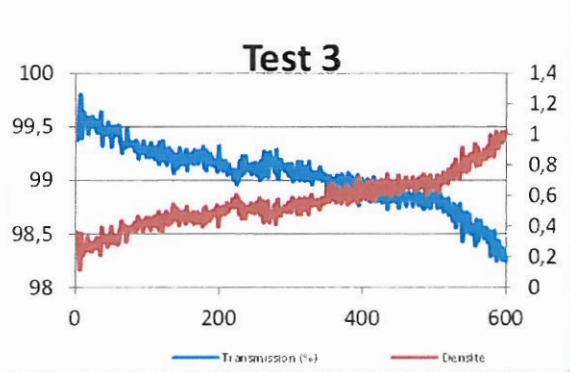
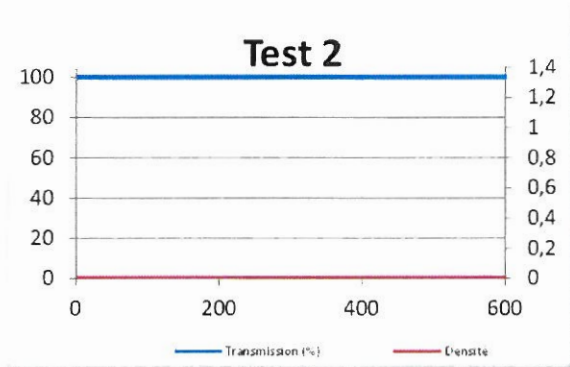
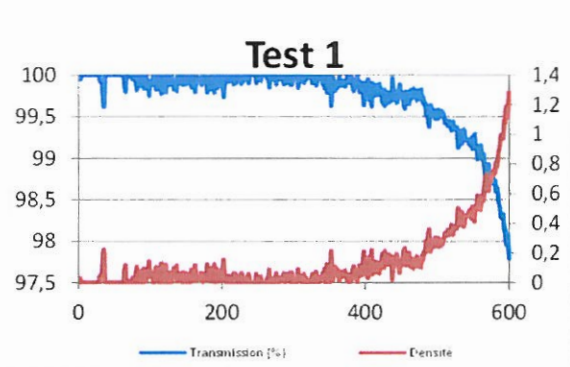


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Scope on request @ www.cofrac.fr

Test report n°

RE 59 - 1579/01/063 B - Amdt 1

Graphics



O. DOBOSZ Test Officer	
S. BOISSEL Technical Manager	

Test report

Test report n° **RE 60 - 1579/01/063 B - Amdt 1**

Date 12/04/2013

Amendment date 18/04/13

Order number 7145.7600.030

Date of order 12/04/13

Number of pages 4

To

Company SCIGRIP

Name M. Manny Tesfaye

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Phone 91 95 98 24 25 Fax 91 95 98 24 39

This test report RE 60 1579/01/063 B - Amdt 1 cancels and replaces the test report RE 60 1579/01/063 B

Test standard : **ISO 5660: Reaction to fire tests — Heat release, smoke production and mass loss rate**

Part 1: Heat release rate (cone calorimeter method)

Partie 2: Smoke production rate (dynamic measurement)

Accredited COFRAC test : COFRAC accreditation attests competence of the laboratories for the only tests covered by the accreditation

Commercial name : **SG300 Series** Tested product

Description : Aluminum (3,2 mm) / MMA Adhesive (2 mm) /Aluminum (3,2 mm)

Density : 2699 Kg/m³

Colour : Black (adhesive)

Size : 100 mm x 100 mm x 8,4 mm

Conditionning : 23 ± 2 °C, 50 ± 5 % HR Recovering : Not applicable

The attention is drawn to the fact that the results obtained with the sample object of this test report are not generalizable without justification. The test results are related only to the behavior of the product under the particular conditions of the test

Test condition

Reception date : 04/03/13 Test apparatus : E62/1001

Test irradiation : 50 kW/m²

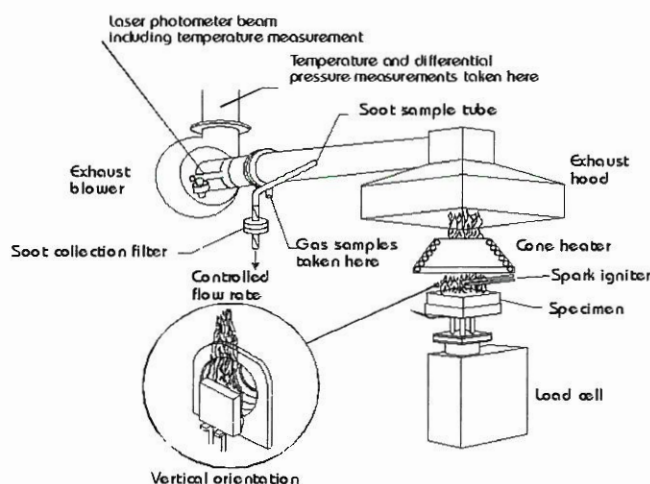
Calibration factor : 0,03506

Intumescent material : NON

Metal grid : NON

Tested face : Not applicable

Test duration : 1200 secondes





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Test report n° : RE 60 - 1579/01/063 B - Amdt 1

Test report

Test results

Test date : 09/04/13

	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Average
Thickness (mm)	8,4	8,4	8,4	Not led for the EN45545-2			8,4
Weight (g)	200,2	201,3	205,9				202,5
Mass loss (%)	2,8	0,7	0,8				1,4
Ti (s)	No ignition						0
Tf (s)							0
RHR Peak (kW/m²)	0	0	0				0
RHR 180 (kW/m²)	0	0	0				0
RHR 300 (kW/m²)	0	0	0				0
THR (MJ/m²)	0	0	1				0
S _A	0,0	12,0	0,1				4,0
S _{A,1}	0,0	12,0	0,1				4,0
S _{A,2}	0,0	0,0	0,0				0,0
MAHRE (kW/m²)	0,0	0,0	0,0				0,0

Notes:

Ti: Ignition time (s)

Tf: End test time (s)

S_A: Total smoke production (m² · m⁻²)

S_{A,1}: Total smoke production before ignition (m² · m⁻²).

S_{A,2}: Total smoke production after ignition (m² · m⁻²).

RHR (kW/m²): Heat rate release

RHR 180 (kW/m²): Heat rate release at 180 s after ignition

RHR 300 (kW/m²): Heat rate release at 300 s after ignition

MAHRE (kW/m²): Maximum average rate of heat release

Remarks : /



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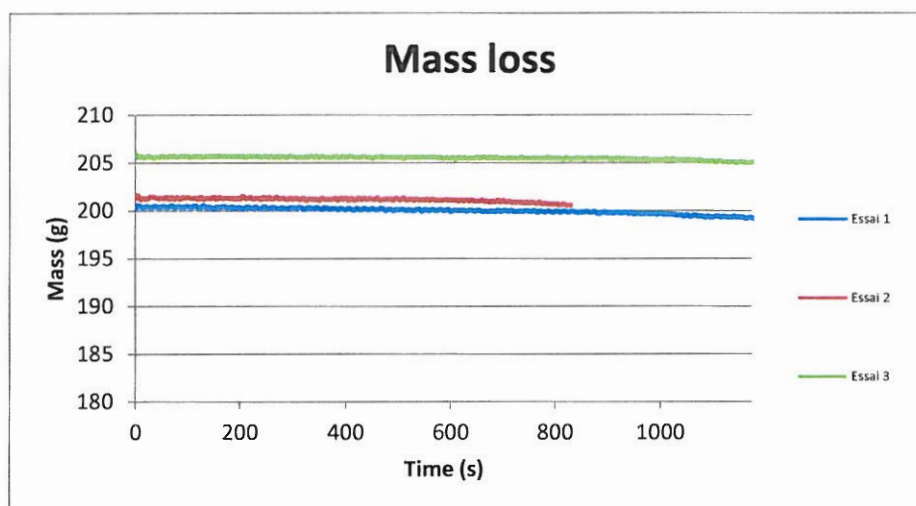


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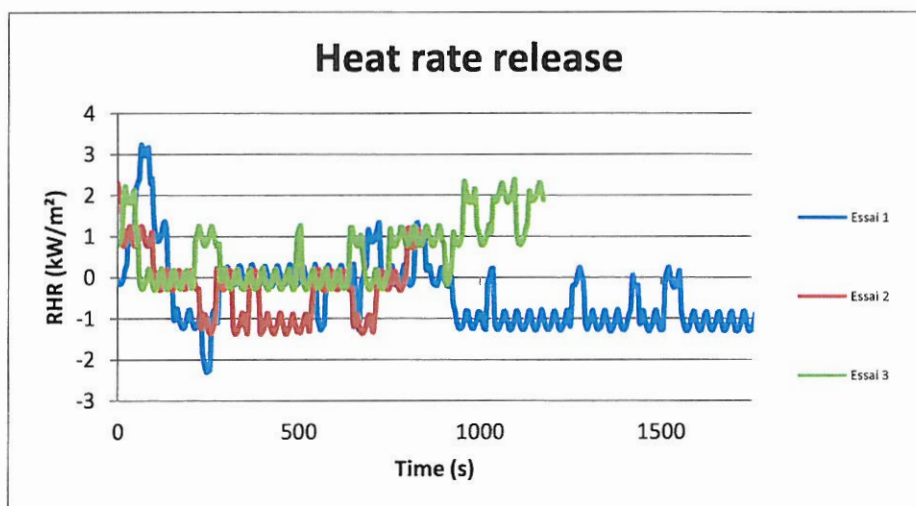
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Graphics

Mass loss :



Heat rate release :





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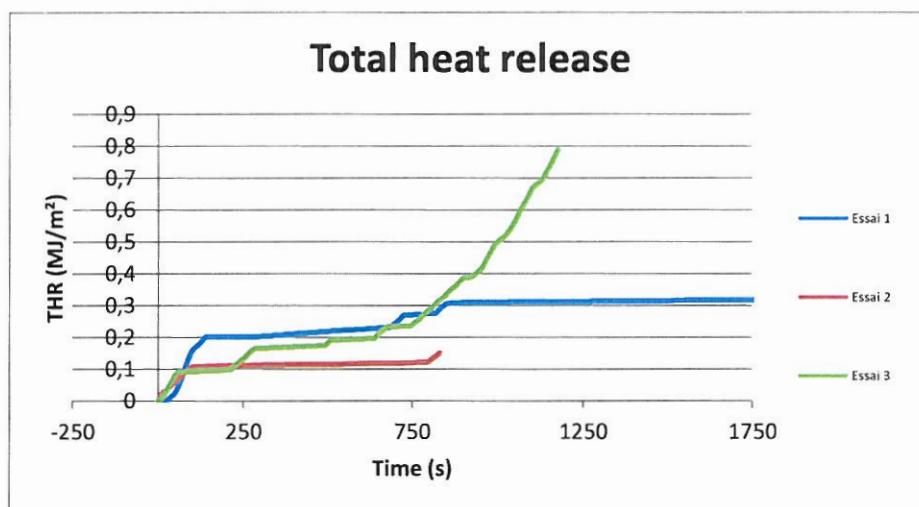


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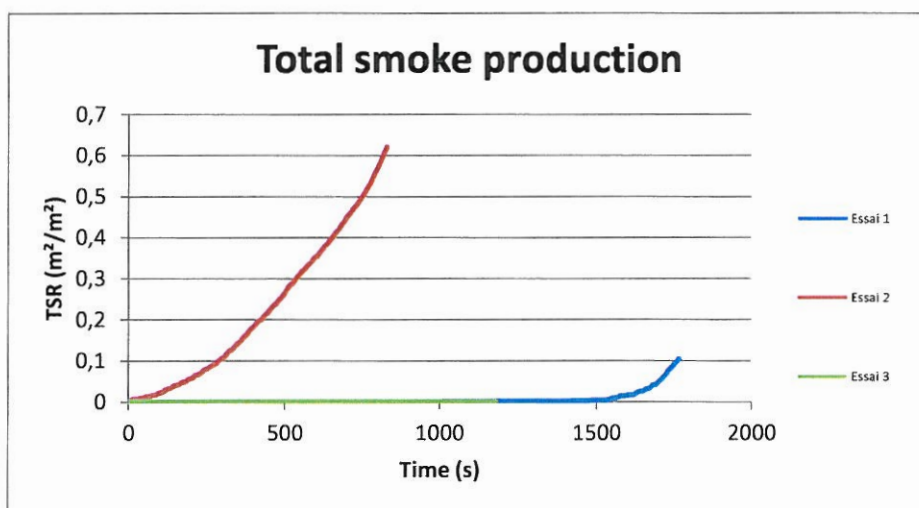
Test report n° : RE 60- 1579/01/063 B - Amdt 1

Graphics

Total heat release :



Total smoke production :



L. PANKEWITCH
Test Officer

S. BOISSEL
Technical Manager