Efectis Nederland BV
P.O. Box 554 | 2665 ZN Bleiswijk
Brandpuntlaan Zuid 16 | 2665 NZ Bleiswijk
The Netherlands
+31 88 3473 723
nederland@efectis.com

REPORT

.

Reaction to fire testing of different types of impregnated wood with white primer
Floor Radiant Panel test according to EN ISO 9239-1:2010

Report no.	2022-Efectis-R001131
Sponsor	Nederlandse Brancheverenigging voor de Timmerindustrie Sectie Trappen Westeinde 10 1334 BK ALMERE THE NETHERLANDS
Prepared by	Efectis Nederland BV
Author(s)	G. van der Lee M.Sc. A.J. Lock
Project number	ENL-21-000785
Date of issue	November 2022
Number of pages	9

1. PRODUCT IDENTIFICATION

Different types of impregnated wood with white primer, further referred to as 'the product'.

2. ABSTRACT

Determination of the reaction to fire properties of the product, when exposed to the thermal attack by a **Radiant Panel** according to EN ISO 9239-1, with the objective to obtain the reaction to fire classification according to EN 13501-1.

3. DETAILS OF THE PRODUCT TESTED

3.1 INTENDED APPLICATION

The product will be used as the horizontal part of a staircase construction.

3.2 MANUFACTURER/IMPORTER

Nederlandse Branchevereniging voor de Timmerindustrie
Sectie Trappen
Westeinde 10
1334 BK ALMERE
THE NETHERLANDS

3.3 PRODUCT DESCRIPTION

According to the sponsor the product is composed of spruce wood (Picea abies).
The tested panels are:

- 37.6 ± 0.4 mm and have a density from 400 kg/m³ to 500 kg/m³;
- impregnated with Holzprof Fire Retardant Wood protection by immersing it two times during 30 seconds; the impregnating agent yield is within the range of 112 - 146 g/m²;
- coated with Magma Industries, Fire Sheen 101 with a usage of 306 – 356 g/m².

Impregnation was carried out with control from certification body SKH. The treatment report, Ref. 22/2851 BH/sg is kept on file by Efectis.

The wood types stated hereafter have been treated and coated the same way as the spruce wood.

Oak wood (Quercus robur)	
Surface density (average)	26.5 kg/m²
Impregnation usage	From 98 g/m² to 131 g/m²
Beech wood (Fagus sylvatica)	
Surface density (as stated by the sponsor)	From 25.9 kg/m² to 28.2 kg/m²
Impregnation usage	From 340 g/m² to 416 g/m²
Sapeli (Mahogany) wood (Entandrophragma cylindricum)	
Surface density (average)	25.2 kg/m²
Impregnation usage	From 85 g/m² to 111 g/m²

4. DETAILS OF THE EXAMINATION

4.1 SAMPLE

Sampling procedure	The specimens were prepared and submitted by the sponsor.
Age	At the time of receipt: no information received.
Date of receipt	March 23rd 2022

4.2 SPECIMEN PREPARATION

Preparation	The specimens were prepared by Efectis Nederland
Substrate used	Not Applicable
Method of fixing	Loosely laid

4.3 CONDITIONING

Prior to the examinations, the specimens were conditioned until constant mass achieved at a temperature of (23 ± 2) ºC and a relative humidity of (50 ± 5) % according to §4.1 of EN 13238.

4.4 METHOD OF EXAMINATION

Number of tests	A total of six Radiant Panel Flooring tests were carried out, all in accordance with EN ISO 9239-1.
Deviations from the test method	None
Assessment	One test has been performed on each wood type (spruce, oak, beech, Sapeli (Mahogany)) before deciding to perform the full series on the impregnated spruce wood panels and the impregnated spruce wood panels according to the Harmonised product standard mentioned above. The test results on all these wood panels (impregnate with the same technology) are all very comparable.

4.5 EXAMINATION

Date of examination	May 19th, 25th and June 15th 2022
Location of examination	Efectis Nederland BV, Bleiswijk, The Netherlands
Performed by	LEG

The results are given in Table 1 of the Appendix: Results.

5. CONCLUSIONS

A formal classification is to be assessed in accordance with EN 13501-1, “Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests”.

Graphs of (Critical) Heat Flux, Attenuation (smoke), Smoke density (smoke) are presented hereafter followed by a photograph of the samples tested.

Remarks:
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.

G. van der Lee M.Sc.
Project leader Reaction to Fire

A.J. Lock
Manager Testing Reaction to Fire

APPENDIX: RESULTS

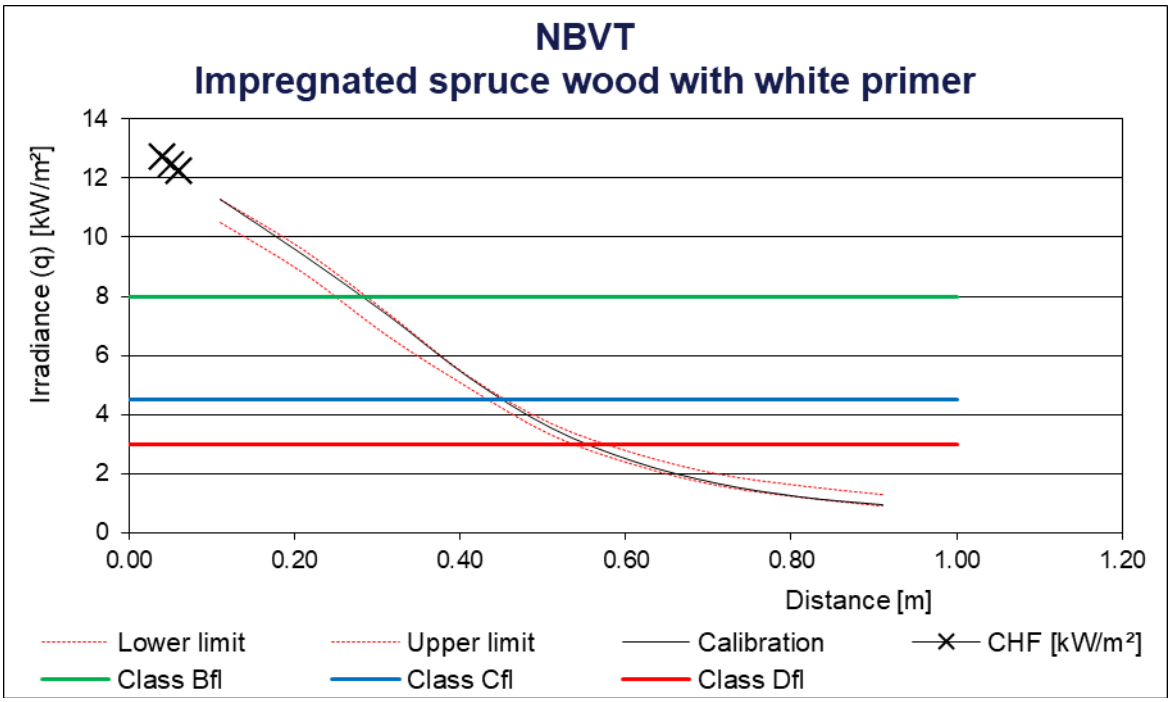
Table 1: Horizontal surface spread of flame, heat flux and light attenuation

Sample number		1	2	3	**Classification parameter**	4		5
Orientation/Description		Impregnated spruce wood				Oak	Beech	Sapeli
Spread of flame								
Distance	[mm]	Time [s]						
	60	145	582	744		733	749	738
	110							
	160							
	210							
	260							
	310							
	360							
	410							
	460							
	510							
	560							
	610							
	660							
	710							
	760							
	810							
	860							
	910							
Maximum spread of flame								
Distance	[mm]	60	60	40		40	30	50
Flameout	[s]	732	758	744		738	749	733
(Critical) Heat Flux(CHF)								
CHF	[kW/m²]	>=11	>=11	>=11	**>=11**	>=11	>=11	>=11
Heat flux (HF) after 10, 20, 30 minutes								
Time	[min]	HF [kW/m²]						
	10	>=11	>=11	>=11	>=11	>=11	>=11	>=11
	20	>=11	>=11	>=11	>=11	>=11	>=11	>=11
	30	>=11	>=11	>=11	>=11	>=11	>=11	>=11
Light attenuation (LA)								
Smoke density	[%.min]	5	15	24	**15**	60	27	35
Test end	[s]	1800	1800	1800		1800	1800	1800

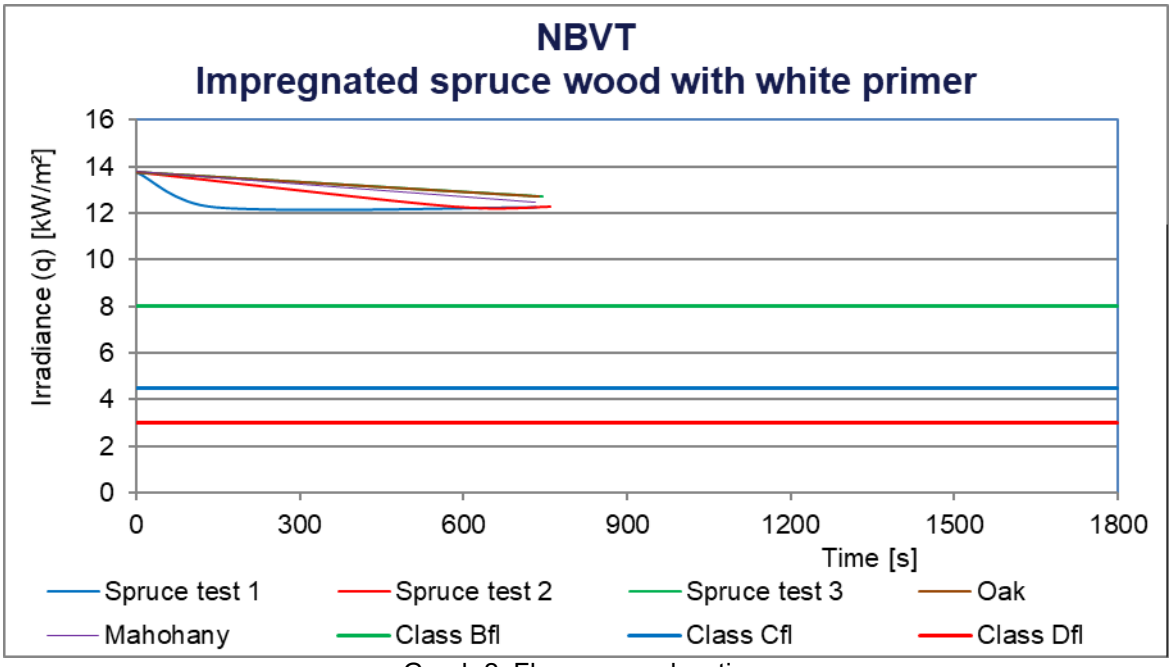
Observations of physical behavior of the test specimen: The specimens continues to darken after flameout, until approx. 300 mm (see Picture).

APPENDIX: GRAPHS

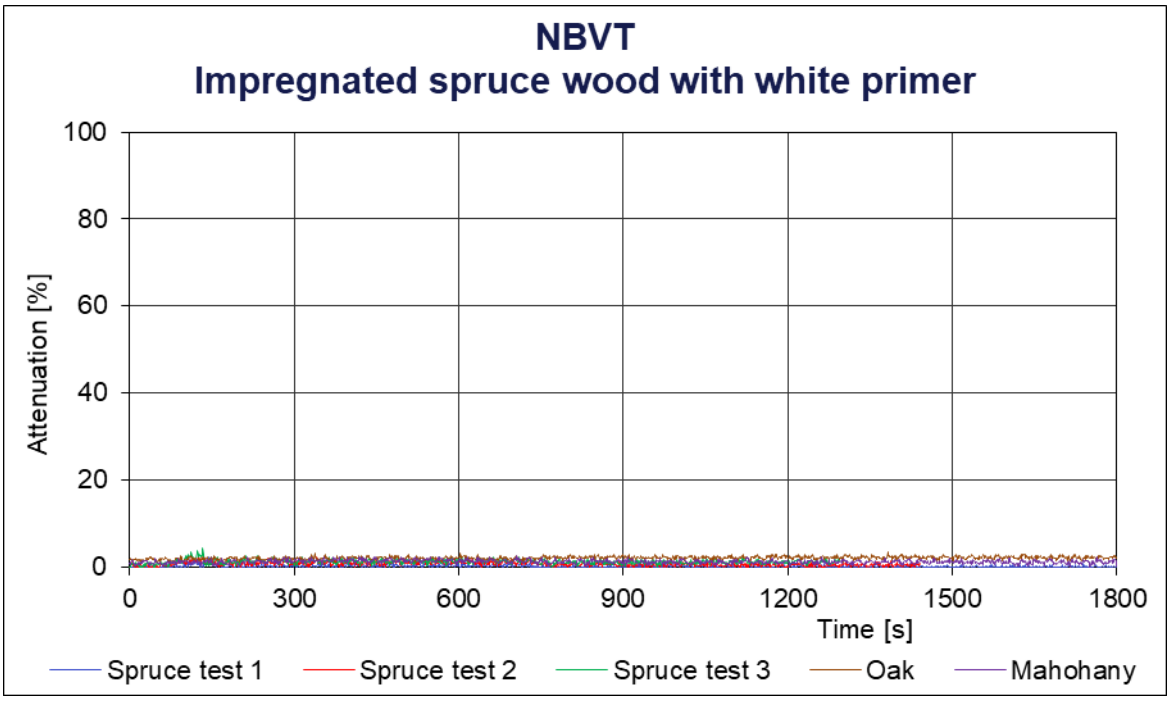
Graph 1: (Critical) Heat Flux, Radiant Panel Flooring Test
Graph 2: Flame spread vs time
Graph 3: Attenuation [%]
Graph 4: Smoke density [%.min]



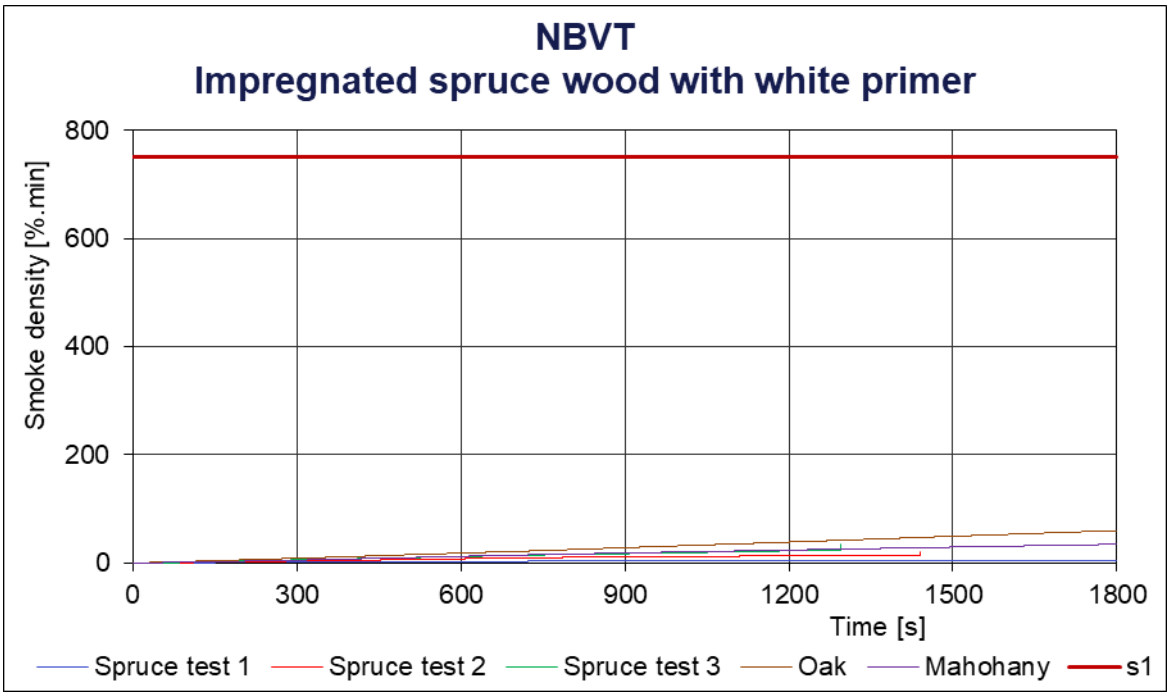
Graph 1: (Critical) Heat Flux, Radiant Panel Flooring Test



Graph 2: Flame spread vs time



Graph 3: Attenuation [%]



Graph 4: Smoke density [%.min]

APPENDIX: PHOTOGRAPH

Photograph 1: Specimens after testing