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## Test Report No.2549-1/2017

Forest and Wood Products Research and Development Institute  
Testing Laboratory

**Customer:** TreeTops A/S.

Customer's address: Egtvedvej 104, 6000 Kolding, Denmark.  
Reg. No. 33749368.

Date of the order: 12.09.2017.

Testing was done according contract No. 95-10/17 MU.

Test samples received: 08.09.2017. and 03.10.2017.

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

- Product name: Wood-plastic composite (WPC) decking Kirkedal SOLID.
- Manufacturer: TreeTops A/S.
- Materials used for manufacturing:
  - wooden dust;
  - plastic;
  - coupling agents;
  - color batches;
  - lubricant.
- Board dimensions: 130 × 4000 × 18 mm.
- Product weight: 3.3 kg/m.

### Sampling:

Specimens were manufactured at 08.06.2017. and sampling was done by TreeTops A/S Egtvedvej 104, 6000 Kolding, Denmark at 17.07.2017. Specimens were taken from warehouse of ready production.

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

Wood-plastic composite (WPC) decking Kirkedal SOLID is intended to use as decking boards. Product is identified by product standard EN 15534-1:2014.

### Specimen preparation for testing:

Specimens were prepared for testing by TreeTops A/S and delivered to testing laboratory by Hedinberg SIA at 08.09.2017. and 03.10.2017.

### Substrates used:

Fibre cement board substrate was used. Substrate complies with standard EN 13238:2010.

### Conditioning of specimens:

Specimens were conditioned according standard EN 13238:2010.

Conditioning method: constant mass.

Temperature:  $t = 23 \pm 1$  °C.

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

Conditioning period: 4-10 days.

**Test standard:** EN ISO 9239-1:2010.

**Test date:** 12.09.2017 and 13.10.2017.

**Test results:**

Specimen identification in laboratory: No. 2549-1-1 and 2549-1-3...2549-1-5 (longitudinal direction (→)) and No. 2549-1-2 (crosswise direction (↑)). First one sample of each direction was tested. As the test results of product with longitudinal direction were worse as in crosswise direction, last two tests were done of product with longitudinal direction. To extend product application for board both sides, last test (No. 2549-1-5) was done for board other side with wood grain texture.

Average values of reaction to fire criteria were calculated from test results of specimens with longitudinal grain orientation. Results are shown in tables 1 and 2. Specimens after the tests are shown in Fig. 2.

**Table 1. Test results**

Specimen No.	Orientation	CHF	$S_t$	$S_p$	$D_{10}$	$D_{20}$	$D_{30}$	$D_{max}$	HF-10	HF-20	HF-30
		kW/m <sup>2</sup>	% . min	%	mm	mm	mm	mm	kW/m <sup>2</sup>	kW/m <sup>2</sup>	kW/m <sup>2</sup>
2549-1-1	→	N/A	28.9	10.4	130.0	280.0	350.0	350.0	10.8	7.7	6.2
2549-1-2	↑	N/A	81.9	9.8	160.0	300.0	340.0	340.0	10.3	7.2	6.4
2549-1-3	→	N/A	77.7	10.3	170.0	320.0	410.0	410.0	10.1	6.8	5.0
2549-1-4	→	N/A	51.6	9.1	210.0	350.0	430.0	430.0	9.4	6.2	4.7
2549-1-5	→	N/A	43.9	5.5	160.0	300.0	390.0	390.0	10.3	7.2	5.4
<b>Average</b>	-	-	<b>50.5</b>	<b>8.8</b>	<b>167.5</b>	<b>312.5</b>	<b>395.0</b>	<b>395.0</b>	<b>10.1</b>	<b>7.0</b>	<b>5.3</b>
Standard deviation	-	-	20.4	2.3	33.0	29.9	34.2	34.2	0.6	0.6	0.7

**Test parameter explanation:**

- CHF Critical heat flux
- $S_t$  Integrated smoke value
- $S_p$  Maximum light attenuation
- $D_{10}$  Flame spread distance at 10 min
- $D_{20}$  Flame spread distance at 20 min
- $D_{30}$  Flame spread distance at 30 min
- $D_{max}$  Final maximum flame spread distance
- HF-10 Heat flux at 10 min
- HF-20 Heat flux at 20 min
- HF-30 Heat flux at 30 min

**Table 2. Ignition and extinguishing times**

Specimen No.	Ignition time, s	Extinguishing time, s	End of test, s
2549-1-1	273	no flameout	1800
2549-1-2	238	no flameout	1800
2549-1-3	143	no flameout	1800
2549-1-4	142	no flameout	1800
2549-1-5	196	no flameout	1800

**Observations:**

Burn through of specimens was not observed.

**Deviations from standard:**

No.

Photo:



Fig. 1. Test specimens before test.



Fig. 2. Test specimens after the test.

**Annexes:**

- Annex 1 (FRP test protocol No. 2549-1-1, 3 pp.)
- Annex 2 (FRP test protocol No. 2549-1-2, 3 pp.)
- Annex 3 (FRP test protocol No. 2549-1-3, 3 pp.)
- Annex 4 (FRP test protocol No. 2549-1-4, 3 pp.)
- Annex 4 (FRP test protocol No. 2549-1-4, 3 pp.)

According to LVS EN ISO 9239-1:2010 test results relate to the behavior 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.

Date of issue: 19.10.2017.



Head of Laboratory

K.Būmanis

(signature and name)

Tests carried out by

E.Bukšāns

(signature and name)

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002  
Laboratory : MeKA Testing laboratory  
Sponsor : TREE TOPS AS  
Date of test : Sep. 12 2017

Specimen description : KIRKEDAL 130x18 SOLID  
Test name : 2549  
File name : C:\FRPSOFT\DATA\2549\2549-1.CSV  
Test number in series : 1

Flux calibration file name : C:\FRPSOFT\CALIB\FLX17001.CSV

Thickness (mm) : 18.8  
Density (kg/m<sup>3</sup>) :

Test duration : 30 minutes (1800 s)  
Substrate used? : Yes  
Substrate : Fibre cement board  
Fixing method : none  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

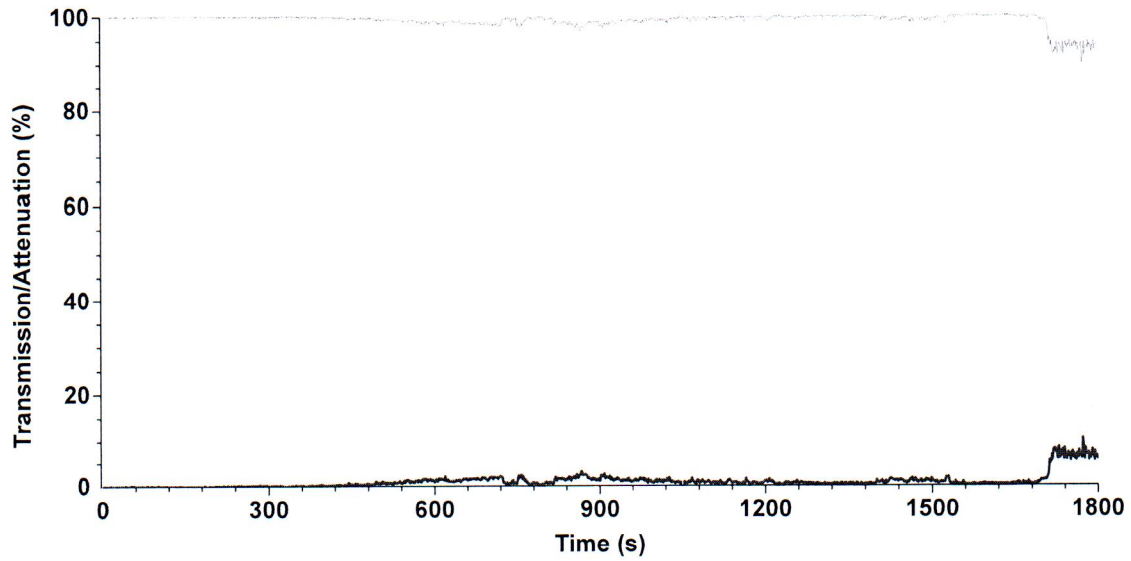
### Test Results

Time to ignition : 4 minutes 33 seconds (273 s)  
Time to flameout : Not recorded  
Extent of burning (mm) : 350  
Critical flux at extinguishment (kW/m<sup>2</sup>) : N/A (no flameout)  
HF-10 (kW/m<sup>2</sup>) : 10.79  
HF-20 (kW/m<sup>2</sup>) : 7.69  
HF-30 (kW/m<sup>2</sup>) : 6.17  
Flame spread at 10 minutes (mm) : 130  
Flame spread at 20 minutes (mm) : 280  
Flame spread at 30 minutes (mm) : 350  
Peak light attenuation (%) : 10.36  
Time to peak light attenuation : 29 minutes 33 seconds (1773 s)  
Total integrated smoke (%.min) : 28.87

**Potential classification** : **C(f)**  
**Smoke production classification** : **s1**

These results relate only to the behaviour of the specimens of the 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.

### Smoke Graph



Test name : 2549  
 File name : C:\FRPSOFT\DATA\2549\2549-1.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	392	12.1	4.357	510	-	3.4	-
110	533	11.1	5.485	560	-	2.9	-
160	697	10.3	6.515	610	-	2.4	-
210	868	9.3	7.070	660	-	2.0	-
260	1088	8.1	7.619	710	-	1.7	-
310	1327	7.0	7.908	760	-	1.5	-
360	-	6.0	-	810	-	1.3	-
410	-	5.0	-	860	-	1.1	-
460	-	4.1	-	910	-	1.0	-

### Comments

Specimen was extinguished manually after end of test.

These results relate only to the behaviour of the specimens of the 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.

## Tabulated Results

Time (s)	T (%)	Attenuation (%)	Time (s)	T (%)	Attenuation (%)
0	100.2	-0.216			
30	100.1	-0.136	1230	99.75	0.25
60	100	-0.028	1260	99.52	0.481
90	99.95	0.055	1290	99.71	0.287
120	100.2	-0.153	1320	99.61	0.388
150	100	-0.045	1350	99.54	0.462
180	100	-0.043	1380	99.77	0.227
210	99.95	0.047	1410	98.9	1.098
240	99.94	0.061	1440	98.89	1.113
270	99.97	0.031	1470	98.47	1.529
300	100	-0.002	1500	98.64	1.364
330	100.2	-0.159	1530	98.62	1.384
360	99.97	0.029	1560	99.68	0.322
390	99.86	0.138	1590	99.69	0.306
420	99.77	0.234	1620	99.75	0.253
450	99.52	0.481	1650	99.57	0.429
480	99.62	0.382	1680	99.72	0.278
510	99.25	0.753	1710	97.49	2.509
540	99.34	0.656	1740	92.91	7.092
570	99.08	0.923	1770	93.2	6.801
600	99.08	0.916	1800	94.18	5.819
630	99	0.997			
660	98.77	1.226			
690	98.26	1.743			
720	97.88	2.122			
750	99.3	0.697			
780	99.26	0.738			
810	99.33	0.667			
840	98.5	1.502			
870	97.73	2.267			
900	99	1.002			
930	98.69	1.312			
960	99.09	0.915			
990	98.9	1.104			
1020	99.04	0.957			
1050	37030	-36929			
1080	99.16	0.84			
1110	99.24	0.761			
1140	99.39	0.608			
1170	99.38	0.62			
1200	98.98	1.019			

These results relate only to the behaviour of the specimens of the 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.

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002  
Laboratory : MeKA Testing laboratory  
Sponsor : Tree Tops A/S  
Date of test : Oct. 13 2017

Specimen description : WPC decking Kirkedal SOLID  
Test name : 2549-1-2  
File name : C:\FRPSOFT\DATA\2549\2549-1-2.CSV  
Test number in series : 2

Flux calibration file name : C:\FRPSOFT\CALIB\FLX17001.CSV

Thickness (mm) : 18  
Density (kg/m<sup>3</sup>) :

Test duration : 30 minutes (1800 s)  
Substrate used? : Yes  
Substrate : Fibre cement board  
Fixing method : none  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

### Test Results

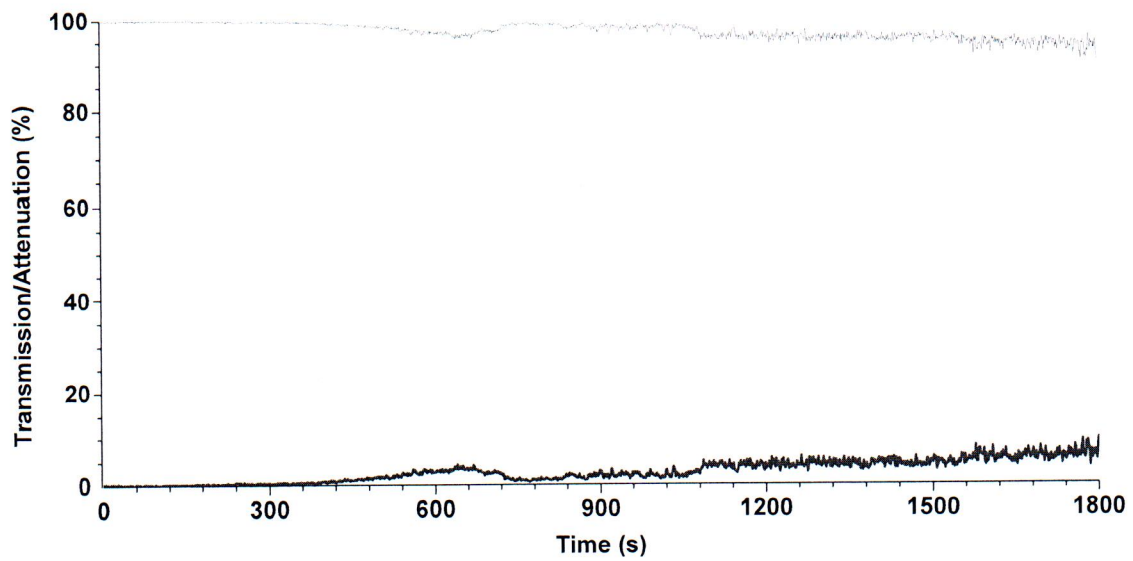
Time to ignition : 3 minutes 58 seconds (238 s)  
Time to flameout : Not recorded  
Extent of burning (mm) : 340  
Critical flux at extinguishment (kW/m<sup>2</sup>) : N/A (no flameout)  
HF-10 (kW/m<sup>2</sup>) : 10.29  
HF-20 (kW/m<sup>2</sup>) : 7.23  
HF-30 (kW/m<sup>2</sup>) : 6.38  
Flame spread at 10 minutes (mm) : 160  
Flame spread at 20 minutes (mm) : 300  
Flame spread at 30 minutes (mm) : 340  
Peak light attenuation (%) : 9.78  
Time to peak light attenuation : 30 minutes (1800 s)  
Total integrated smoke (%.min) : 81.94

**Potential classification** : **C(f)**  
**Smoke production classification** : **s1**

These results relate only to the behaviour of the specimens of the 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.



### Smoke Graph



Test name : 2549-1-2  
 File name : C:\FRPSOFT\DATA\2549\2549-1-2.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	339	12.1	3.768	510	-	3.4	-
110	471	11.1	4.847	560	-	2.9	-
160	596	10.3	5.571	610	-	2.4	-
210	820	9.3	6.679	660	-	2.0	-
260	1050	8.1	7.353	710	-	1.7	-
310	1324	7.0	7.890	760	-	1.5	-
360	-	6.0	-	810	-	1.3	-
410	-	5.0	-	860	-	1.1	-
460	-	4.1	-	910	-	1.0	-

### Comments

Specimen was extinguished manually after end of test.

These results relate only to the behaviour of the specimens of the 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.

## Tabulated Results

Time (s)	T (%)	Attenuation (%)	Time (s)	T (%)	Attenuation (%)
0	99.77	0.233			
30	99.88	0.116	1230	96	4.004
60	99.82	0.182	1260	95.95	4.049
90	99.98	0.02	1290	96.04	3.959
120	99.81	0.192	1320	95.37	4.632
150	99.84	0.157	1350	96.74	3.256
180	99.78	0.225	1380	95.83	4.174
210	99.85	0.155	1410	95.66	4.338
240	99.42	0.578	1440	95.57	4.434
270	99.68	0.316	1470	95.25	4.751
300	99.55	0.451	1500	95.48	4.525
330	99.6	0.397	1530	95.4	4.604
360	99.48	0.517	1560	95.72	4.283
390	99.43	0.567	1590	93.71	6.294
420	99.41	0.59	1620	94.81	5.192
450	99.01	0.987	1650	94.41	5.591
480	98.51	1.495	1680	93.28	6.722
510	97.98	2.017	1710	95.44	4.558
540	97.72	2.283	1740	95.05	4.954
570	97.89	2.114	1770	92.2	7.804
600	97.31	2.695	1800	90.22	9.785
630	96.65	3.346			
660	97.05	2.955			
690	97.7	2.3			
720	97.71	2.291			
750	98.97	1.026			
780	98.92	1.081			
810	99.11	0.889			
840	98.27	1.733			
870	98.8	1.204			
900	97.06	2.944			
930	98.23	1.771			
960	97.9	2.098			
990	96.9	3.096			
1020	96.9	3.098			
1050	98.54	1.462			
1080	98.01	1.986			
1110	95.75	4.255			
1140	96.42	3.584			
1170	94.9	5.105			
1200	96.75	3.254			

These results relate only to the behaviour of the specimens of the 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.

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002  
 Laboratory : MeKA Testing laboratory  
 Sponsor : Tree Tops A/S  
 Date of test : Oct. 13 2017

Specimen description : WPC decking Kirkedal SOLID  
 Test name : 2549-1-3  
 File name : C:\FRPSOFT\DATA\2549\2549-1-3.CSV  
 Test number in series : 3

Flux calibration file name : C:\FRPSOFT\CALIB\FLX17001.CSV

Thickness (mm) : 18  
 Density (kg/m<sup>3</sup>) :

Test duration : 30 minutes (1800 s)  
 Substrate used? : Yes  
 Substrate : Fibre cement board  
 Fixing method : none  
 Conditioned? : Yes  
 Conditioning temp. (°C) : 23  
 Conditioning RH (%) : 50

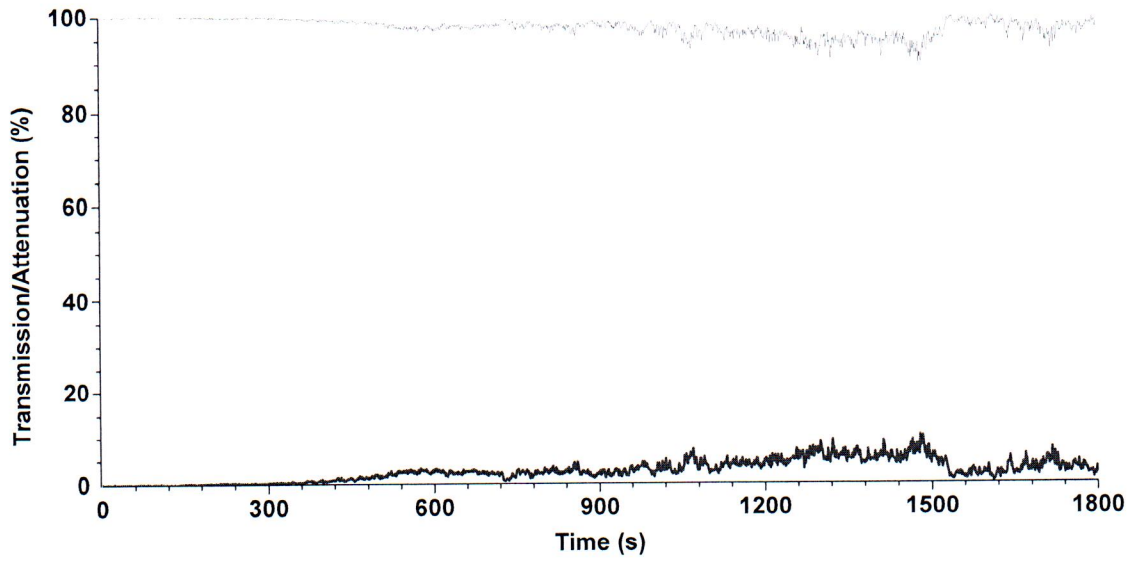
### Test Results

Time to ignition : 2 minutes 23 seconds (143 s)  
 Time to flameout : Not recorded  
 Extent of burning (mm) : 410  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : N/A (no flameout)  
 HF-10 (kW/m<sup>2</sup>) : 10.1  
 HF-20 (kW/m<sup>2</sup>) : 6.79  
 HF-30 (kW/m<sup>2</sup>) : 5  
 Flame spread at 10 minutes (mm) : 170  
 Flame spread at 20 minutes (mm) : 320  
 Flame spread at 30 minutes (mm) : 410  
 Peak light attenuation (%) : 10.3  
 Time to peak light attenuation : 24 minutes 39 seconds (1479 s)  
 Total integrated smoke (%.min) : 77.74

**Potential classification** : **C(f)**  
**Smoke production classification** : **s1**

These results relate only to the behaviour of the specimens of the 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.

### Smoke Graph



Test name : 2549-1-3  
 File name : C:\FRPSOFT\DATA\2549\2549-1-3.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	301	12.1	3.346	510	-	3.4	-
110	429	11.1	4.415	560	-	2.9	-
160	545	10.3	5.094	610	-	2.4	-
210	708	9.3	5.767	660	-	2.0	-
260	890	8.1	6.233	710	-	1.7	-
310	1151	7.0	6.859	760	-	1.5	-
360	1407	6.0	7.028	810	-	1.3	-
410	1790	5.0	7.396	860	-	1.1	-
460	-	4.1	-	910	-	1.0	-

### Comments

Specimen was extinguished manually after end of test.

These results relate only to the behaviour of the specimens of the 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.

## Tabulated Results

Time (s)	T (%)	Attenuation (%)	Time (s)	T (%)	Attenuation (%)
0	99.9	0.099			
30	100.2	-0.155	1230	95.15	4.852
60	100.2	-0.151	1260	93.26	6.744
90	100.1	-0.128	1290	93.03	6.967
120	100.2	-0.247	1320	93.33	6.672
150	99.88	0.125	1350	94.65	5.354
180	99.97	0.033	1380	96.04	3.958
210	99.85	0.15	1410	94.5	5.498
240	99.66	0.338	1440	95.57	4.428
270	99.71	0.293	1470	92.43	7.57
300	99.65	0.355	1500	94.32	5.678
330	99.65	0.355	1530	98.29	1.715
360	99.57	0.433	1560	98.63	1.367
390	99.33	0.672	1590	98.6	1.398
420	99.2	0.798	1620	97.6	2.405
450	98.69	1.308	1650	97.96	2.036
480	98.87	1.13	1680	96.98	3.021
510	98.42	1.584	1710	94.22	5.777
540	97.4	2.605	1740	98.14	1.861
570	97.66	2.336	1770	97.38	2.623
600	97.52	2.485	1800	98.02	1.982
630	97.71	2.294			
660	97.37	2.634			
690	97.92	2.085			
720	98	2.002			
750	97.2	2.798			
780	98.25	1.746			
810	97.73	2.275			
840	97.68	2.322			
870	97.63	2.368			
900	97.84	2.157			
930	97.45	2.553			
960	97.15	2.85			
990	97.28	2.717			
1020	94.84	5.156			
1050	96.83	3.166			
1080	97.39	2.613			
1110	96.35	3.652			
1140	96.07	3.935			
1170	95.73	4.27			
1200	95.21	4.793			

These results relate only to the behaviour of the specimens of the 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.

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002  
 Laboratory : MeKA Testing laboratory  
 Sponsor : Tree Tops A/S  
 Date of test : Oct. 13 2017

Specimen description : WPC decking Kirkedal SOLID  
 Test name : 2549-1-4  
 File name : C:\FRPSOFT\DATA\2549\2549-1-4.CSV  
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX17001.CSV

Thickness (mm) : 18  
 Density (kg/m<sup>3</sup>) :

Test duration : 30 minutes (1800 s)  
 Substrate used? : Yes  
 Substrate : Fibre cement board  
 Fixing method : none  
 Conditioned? : Yes  
 Conditioning temp. (°C) : 23  
 Conditioning RH (%) : 50

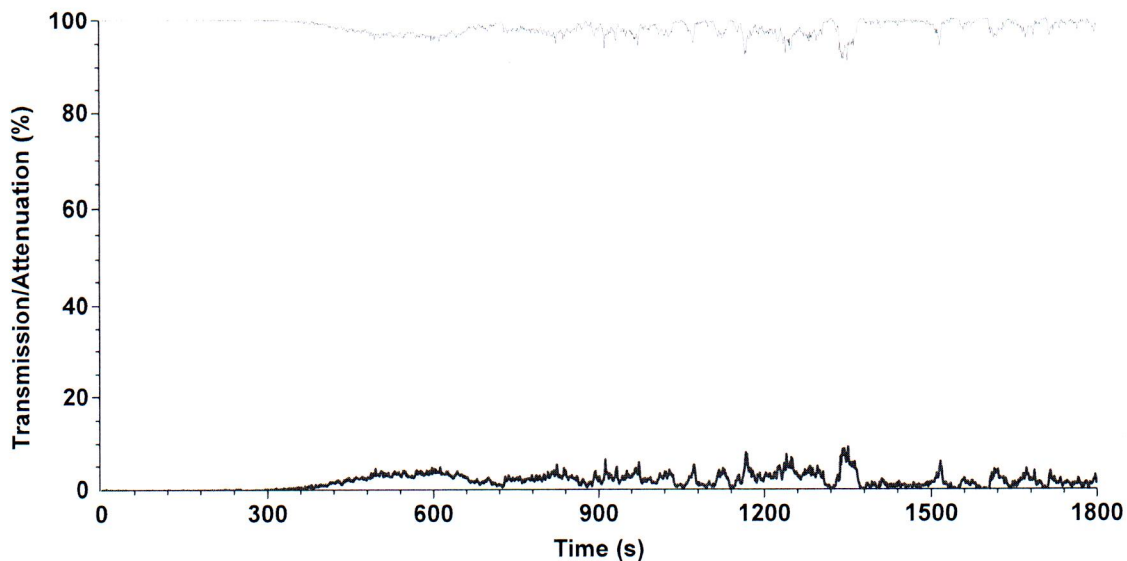
### Test Results

Time to ignition : 2 minutes 22 seconds (142 s)  
 Time to flameout : Not recorded  
 Extent of burning (mm) : 430  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : N/A (no flameout)  
 HF-10 (kW/m<sup>2</sup>) : 9.35  
 HF-20 (kW/m<sup>2</sup>) : 6.17  
 HF-30 (kW/m<sup>2</sup>) : 4.65  
 Flame spread at 10 minutes (mm) : 210  
 Flame spread at 20 minutes (mm) : 350  
 Flame spread at 30 minutes (mm) : 430  
 Peak light attenuation (%) : 9.09  
 Time to peak light attenuation : 22 minutes 31 seconds (1351 s)  
 Total integrated smoke (%.min) : 51.62

**Potential classification** : **C(fl)**  
**Smoke production classification** : **s1**

These results relate only to the behaviour of the specimens of the 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.

### Smoke Graph



Test name : 2549-1-4  
 File name : C:\FRPSOFT\DATA\2549\2549-1-4.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	294	12.1	3.268	510	-	3.4	-
110	383	11.1	3.941	560	-	2.9	-
160	488	10.3	4.561	610	-	2.4	-
210	596	9.3	4.854	660	-	2.0	-
260	734	8.1	5.140	710	-	1.7	-
310	940	7.0	5.601	760	-	1.5	-
360	1214	6.0	6.064	810	-	1.3	-
410	1574	5.0	6.504	860	-	1.1	-
460	-	4.1	-	910	-	1.0	-

### Comments

Specimen was extinguished manually after end of test.

These results relate only to the behaviour of the specimens of the 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.

## Tabulated Results

Time (s)	T (%)	Attenuation (%)	Time (s)	T (%)	Attenuation (%)
0	100.2	-0.21			
30	100	-0.035	1230	96.29	3.711
60	100.2	-0.176	1260	97.28	2.724
90	100.2	-0.225	1290	96.76	3.239
120	100.2	-0.223	1320	99.66	0.337
150	100.1	-0.057	1350	91.63	8.367
180	100.2	-0.2	1380	99.93	0.067
210	99.99	0.006	1410	98.85	1.151
240	100	-0.035	1440	99.24	0.758
270	100.1	-0.088	1470	99.29	0.708
300	99.89	0.115	1500	98.53	1.469
330	99.71	0.294	1530	99.45	0.549
360	99.58	0.416	1560	97.62	2.381
390	99.28	0.722	1590	100.1	-0.122
420	98.58	1.42	1620	95.86	4.136
450	98.22	1.779	1650	99.25	0.748
480	97.73	2.275	1680	97.63	2.371
510	97.09	2.91	1710	99.96	0.041
540	97.2	2.801	1740	98.84	1.156
570	95.86	4.142	1770	98.79	1.207
600	95.93	4.075	1800	98.3	1.698
630	96.75	3.247			
660	97.58	2.416			
690	98.3	1.701			
720	99.12	0.881			
750	97.64	2.362			
780	98.1	1.897			
810	97.59	2.414			
840	96.01	3.995			
870	98.36	1.639			
900	97.34	2.656			
930	97.32	2.677			
960	97.53	2.471			
990	97.72	2.284			
1020	96.3	3.705			
1050	99.11	0.887			
1080	98.67	1.326			
1110	99.3	0.7			
1140	99.43	0.572			
1170	94.1	5.901			
1200	97.45	2.555			

These results relate only to the behaviour of the specimens of the 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.



## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002  
Laboratory : MeKA Testing laboratory  
Sponsor : Tree Tops A/S  
Date of test : Oct. 13 2017

Specimen description : WPC decking Kirkedal SOLID  
Test name : 2549-1-5  
File name : C:\FRPSOFT\DATA\2549\2549-1-5.CSV  
Test number in series : 5

Flux calibration file name : C:\FRPSOFT\CALIB\FLX17001.CSV

Thickness (mm) : 18  
Density (kg/m<sup>3</sup>) :

Test duration : 30 minutes (1800 s)  
Substrate used? : Yes  
Substrate : Fibre cement board  
Fixing method : none  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

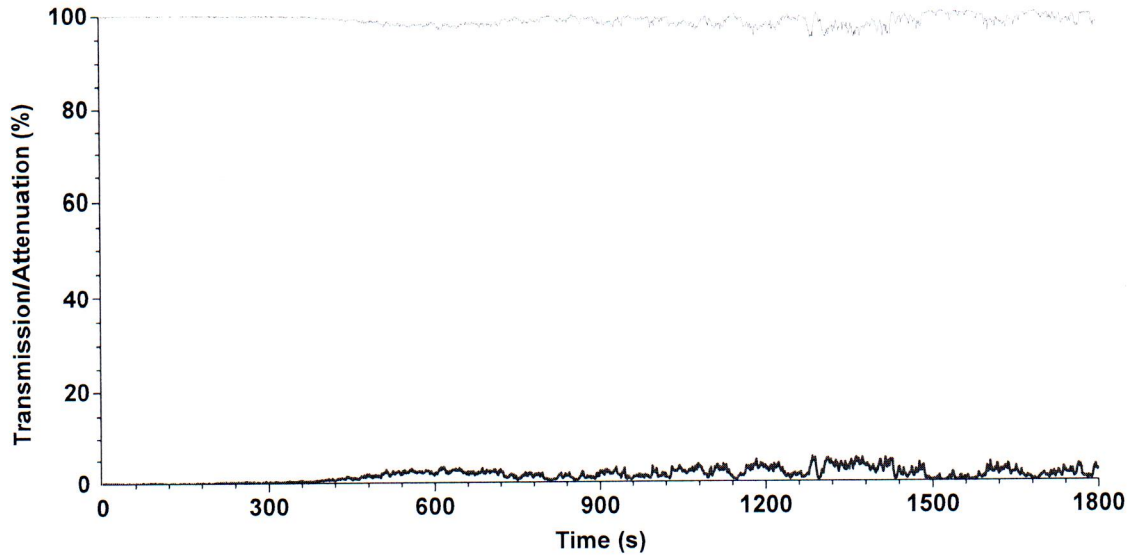
### **Test Results**

Time to ignition : 3 minutes 16 seconds (196 s)  
Time to flameout : Not recorded  
Extent of burning (mm) : 390  
Critical flux at extinguishment (kW/m<sup>2</sup>) : N/A (no flameout)  
HF-10 (kW/m<sup>2</sup>) : 10.29  
HF-20 (kW/m<sup>2</sup>) : 7.23  
HF-30 (kW/m<sup>2</sup>) : 5.38  
Flame spread at 10 minutes (mm) : 160  
Flame spread at 20 minutes (mm) : 300  
Flame spread at 30 minutes (mm) : 390  
Peak light attenuation (%) : 5.51  
Time to peak light attenuation : 21 minutes 24 seconds (1284 s)  
Total integrated smoke (%.min) : 43.91

**Potential classification** : **C(fl)**  
**Smoke production classification** : **s1**

These results relate only to the behaviour of the specimens of the 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.

### Smoke Graph



Test name : 2549-1-5  
 File name : C:\FRPSOFT\DATA\2549\2549-1-5.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	329	12.1	3.657	510	-	3.4	-
110	467	11.1	4.806	560	-	2.9	-
160	590	10.3	5.515	610	-	2.4	-
210	735	9.3	5.987	660	-	2.0	-
260	936	8.1	6.555	710	-	1.7	-
310	1210	7.0	7.210	760	-	1.5	-
360	1550	6.0	7.742	810	-	1.3	-
410	-	5.0	-	860	-	1.1	-
460	-	4.1	-	910	-	1.0	-

### Comments

Specimen was extinguished manually after end of test.

These results relate only to the behaviour of the specimens of the 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.

## Tabulated Results

Time (s)	T (%)	Attenuation (%)	Time (s)	T (%)	Attenuation (%)
0	99.91	0.09			
30	99.92	0.08	1230	97.17	2.827
60	99.99	0.015	1260	98.32	1.682
90	99.96	0.039	1290	96.54	3.462
120	100.2	-0.192	1320	96.14	3.86
150	100	-0.048	1350	97.55	2.455
180	99.93	0.066	1380	96.43	3.572
210	99.95	0.055	1410	97.27	2.731
240	99.95	0.05	1440	97.02	2.976
270	99.79	0.208	1470	97.47	2.53
300	99.94	0.057	1500	99.83	0.169
330	99.75	0.248	1530	99.02	0.98
360	99.46	0.538	1560	99.68	0.325
390	99.43	0.57	1590	99.25	0.75
420	99.46	0.544	1620	97.96	2.045
450	99.03	0.968	1650	96.85	3.147
480	98.47	1.535	1680	99.67	0.327
510	97.83	2.168	1710	99.52	0.478
540	98.23	1.774	1740	97.84	2.161
570	97.7	2.304	1770	98.87	1.135
600	98.09	1.911	1800	97.61	2.391
630	97.6	2.398			
660	97.62	2.38			
690	97.63	2.372			
720	97.53	2.473			
750	99.55	0.453			
780	98.46	1.538			
810	99.37	0.635			
840	98.49	1.514			
870	98.56	1.436			
900	97.61	2.395			
930	97.76	2.236			
960	99.16	0.838			
990	99.13	0.873			
1020	99.04	0.957			
1050	97.57	2.434			
1080	96.8	3.199			
1110	97.11	2.892			
1140	99.26	0.744			
1170	97.33	2.667			
1200	96.8	3.205			

These results relate only to the behaviour of the specimens of the 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.