

EN 252 Test Report

Order no. 779277



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TECHNOLOGICAL
INSTITUTE**

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Assignor:	WTT Holding ApS Jyllandsvej 9 DK-7330 Brande	Side 1 af 1 andc/rdi/jos Order no.: 779277 No. of appendices: 2																																																																																																																																																																																
Subject:	ThermoTreat2.0 modified pine sapwood, beech, and spruce. The wood was tested with and without oil post-treatment. The reference preservative was CCA, F2597/1, according to EN252. Untreated control samples of beech and pine sapwood were exposed as well.																																																																																																																																																																																	
Sampling:	The wood was modified (03 to 09-01-2018) and delivered by WTT Holding ApS. Oil treatment was performed in 30-01-2018 by Danish Technological Institute (DTI). The reference preservative was in stock.																																																																																																																																																																																	
Method:	EN 252: 2014 "Wood preservatives – Field test method for determining the relative protective effectiveness of a wood preservative in ground contact.																																																																																																																																																																																	
Period:	Exposure was initiated on 23-05-2018 at Danish Technological Institute field test site in Taastrup, Denmark.																																																																																																																																																																																	
Result:	<table border="1"> <thead> <tr> <th rowspan="3">Treatment</th> <th rowspan="3">Mean oil/preservative Retention kg/m³</th> <th colspan="10">Exposure test site: Taastrup, Denmark</th> </tr> <tr> <th colspan="10">Average rating</th> </tr> <tr> <th colspan="10">Year</th> </tr> <tr> <th></th> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>Beech, TT 2.0, No oil</td> <td>-</td> <td>0.0</td> <td>0.0</td> <td>0.1</td> <td>0.3</td> <td>0.6</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Beech, TT 2.0, Oil</td> <td>131.4</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Pine, TT 2.0, No oil</td> <td>-</td> <td>0.1</td> <td>0.1</td> <td>0.1</td> <td>0.1</td> <td>0.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Pine, TT 2.0, Oil</td> <td>65.6</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Spruce, TT 2.0, No oil</td> <td>-</td> <td>0.3</td> <td>0.1</td> <td>0.3</td> <td>0.5</td> <td>1.5</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Spruce, TT 2.0, Oil</td> <td>25.7</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.1</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Beech, Oil only</td> <td>94.9</td> <td>0.0</td> <td>0.2</td> <td>0.3</td> <td>1.2</td> <td>2.2</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Beech, Untreated</td> <td>-</td> <td>0.6</td> <td>0.8</td> <td>0.8</td> <td>2.7</td> <td>3.9</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Pine, Untreated</td> <td>-</td> <td>0.4</td> <td>0.4</td> <td>0.4</td> <td>2.1</td> <td>3.3</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Pine, CCA</td> <td>2.2</td> <td>0.0</td> <td>0.3</td> <td>0.3</td> <td>0.3</td> <td>0.3</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>Pine, CCA</td> <td>9.5</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>		Treatment	Mean oil/preservative Retention kg/m ³	Exposure test site: Taastrup, Denmark										Average rating										Year												1	2	3	4	5	6	7	8	9	10	Beech, TT 2.0, No oil	-	0.0	0.0	0.1	0.3	0.6	-	-	-	-	-	Beech, TT 2.0, Oil	131.4	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	Pine, TT 2.0, No oil	-	0.1	0.1	0.1	0.1	0.5	-	-	-	-	-	Pine, TT 2.0, Oil	65.6	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-	Spruce, TT 2.0, No oil	-	0.3	0.1	0.3	0.5	1.5	-	-	-	-	-	Spruce, TT 2.0, Oil	25.7	0.0	0.0	0.0	0.0	0.1	-	-	-	-	-	Beech, Oil only	94.9	0.0	0.2	0.3	1.2	2.2	-	-	-	-	-	Beech, Untreated	-	0.6	0.8	0.8	2.7	3.9	-	-	-	-	-	Pine, Untreated	-	0.4	0.4	0.4	2.1	3.3	-	-	-	-	-	Pine, CCA	2.2	0.0	0.3	0.3	0.3	0.3	-	-	-	-	-	Pine, CCA	9.5	0.0	0.0	0.0	0.0	0.0	-	-	-	-	-
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Note:	The interpretation and practical conclusions that can be drawn from a test report demand a specialized knowledge of the subject of wood preservation and, for this reason this test report by itself cannot constitute an approval certificate.																																																																																																																																																																																	
Storage:	The test material will be destroyed after 1 month, unless otherwise agreed.																																																																																																																																																																																	
Terms:	This test was conducted accredited in accordance with international requirements (ISO/IEC 17025:2017) and in accordance with the General Terms and Conditions of Danish Technological Institute. The test results solely apply to the tested item. This analysis report/ test report may be quoted in extract only if Danish Technological Institute has granted its written consent.																																																																																																																																																																																	
Date/place:	25-05-2022, Danish Technological Institute, Wood and Biomaterials, Taastrup																																																																																																																																																																																	
Signature:	<p><i>Digitally signed by:</i></p> <p>Andreas W. Christof, Consultant Phone: +45 7220 1470 E-mail: andc@dti.dk</p> <p>Test responsible</p>	<p><i>Digitally signed by:</i></p> <p>Jonas Stenbæk, Team Manager Phone: +45 7220 1139 E-mail: jos@dti.dk</p> <p>Co-signatory</p>																																																																																																																																																																																

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Details on retention and inspection data

Treatment under testing:	WTT ThermoTreat2.0 modified (TT2.0) wood with and without oil posttreatment (not containing biocides).								
Active ingredients:	Not relevant, Oil density 0.94 kg/dm ³ at 15 °C.								
Solvent/diluent:	None								
Date of treatment:	30-01-2018								
Treatment method:	90 °C at 0.5 bar in 5 minutes and 1 bar in 10 minutes.								
Drying:	At ambient temperature in 113 days								
Concentrations:	Not relevant, uptake depending on the wood species. The thermal modification resulted in the following average Equilibrium Moisture Content at 65% RH at 20 °C. <table border="1" data-bbox="389 698 836 824"> <thead> <tr> <th>Wood species</th> <th>EMC_{65%}</th> </tr> </thead> <tbody> <tr> <td>Beech</td> <td>5.7</td> </tr> <tr> <td>Pine sapwood</td> <td>5.8</td> </tr> <tr> <td>Spruce</td> <td>5.8</td> </tr> </tbody> </table> Dimensions of modified stakes: 45x24x500 mm Dimensions of unmodified stakes: 50x25x500 mm	Wood species	EMC _{65%}	Beech	5.7	Pine sapwood	5.8	Spruce	5.8
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Beech	5.7								
Pine sapwood	5.8								
Spruce	5.8								
No. of replicates:	10								
Wood species and mean density:	Mean density: Beech (<i>Fagus sylvatica</i> L.) after TT 2.0 modification: 636.2 kg/m ³ Scots pine sapwood (<i>Pinus sylvestris</i> L.) after TT 2.0 modification: 534.0 kg/m ³ Spruce (<i>Picea abies</i> L.) after TT 2.0 modification: 438.3 kg/m ³ Beech (<i>Fagus sylvatica</i> L.) not modified: 728.2 kg/m ³ Scots pine sapwood (<i>Pinus sylvestris</i> L.) not modified: 661.2 kg/m ³								

References:																					
Active ingredients:	<table border="1" data-bbox="389 1200 1386 1323"> <thead> <tr> <th></th> <th>Nominal value</th> <th>Analysed value</th> <th>2.2 kg CCA/m³</th> <th>9.5 kg CCA/m³</th> </tr> </thead> <tbody> <tr> <td>Cu-%</td> <td>8.91 %</td> <td>8.62 %</td> <td>0.19 kg Cu/m³</td> <td>0.82 kg Cu/m³</td> </tr> <tr> <td>Cr-%</td> <td>15.91 %</td> <td>14.96 %</td> <td>0.33 kg Cr /m³</td> <td>1.42 kg Cr /m³</td> </tr> <tr> <td>As-%</td> <td>11.27 %</td> <td>9.98 %</td> <td>0.22 kg As /m³</td> <td>0.95 kg As /m³</td> </tr> </tbody> </table>		Nominal value	Analysed value	2.2 kg CCA/m ³	9.5 kg CCA/m ³	Cu-%	8.91 %	8.62 %	0.19 kg Cu/m ³	0.82 kg Cu/m ³	Cr-%	15.91 %	14.96 %	0.33 kg Cr /m ³	1.42 kg Cr /m ³	As-%	11.27 %	9.98 %	0.22 kg As /m ³	0.95 kg As /m ³
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Solvent/diluent:	Deionized water																				
Date of treatment:	08-04-2018 (2 kg/m ³) and 09-04-2018 (9 kg/m ³)																				
Treatment method:	10 kPa in 60 min and 1300 kPa in 120 min																				
Drying:	At ambient temperature in 45 (2 kg/m ³) and 44 days (9 kg/m ³)																				
Concentrations:	2																				
No. of replicates:	10																				
Wood species and mean density:	Scots pine sapwood (<i>Pinus sylvestris</i> L.) 542 kg/m ³																				

Field and evaluations:																					
Test site:	Danish Technological Institute, Denmark. 55°39'36.4"N; 12°16'34.5"E. Elevation: about 34 m. Average temperatures; maximum: 9-20°C, minimum: -2-5°C. Average annual precipitation: about 672 mm. Humidity: 70-80%. The test site is located in an urban grassland pasture ecosystem without high vegetation. The soil type can be characterized as clay till, between Luvisol and Cambisol.																				
Installation date:	23-05-2018																				
Date of inspection:	<table border="0" data-bbox="389 1939 1225 2067"> <thead> <tr> <th></th> <th colspan="2">DENMARK</th> <th colspan="2">DENMARK</th> </tr> </thead> <tbody> <tr> <td>1 year</td> <td>10-05-2019</td> <td>4 years</td> <td>23-05-2022</td> <td></td> </tr> <tr> <td>2 years</td> <td>04-05-2020</td> <td>5 years</td> <td>24-05-2023</td> <td></td> </tr> <tr> <td>3 years</td> <td>28-05-2021</td> <td>6 years</td> <td></td> <td></td> </tr> </tbody> </table>		DENMARK		DENMARK		1 year	10-05-2019	4 years	23-05-2022		2 years	04-05-2020	5 years	24-05-2023		3 years	28-05-2021	6 years		
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Details on retention and inspection data

Grading system	Rating	Classification	Definition of condition					
	0	No attack	No change perceptible by the means at the disposal of the inspection in the field. If only a change of colour is observed, it shall be rated 0.					
	1	Slight attack	Perceptible changes, but very limited in their intensity and their position or distribution: changes, which only reveal themselves externally by superficial degradation, softening of the wood being the most common symptom.					
	2	Moderate attack	Clear changes: softening of the wood to a depth of at least 2 mm over a surface area covering at least 10 cm ² , or softening to a depth of at least 5 mm over a surface area less than 1 cm ² .					
	3	Severe attack	Severe changes: marked decay in the wood to a depth of at least 3 mm over a wider surface (covering at least 25 cm ²), or softening to a depth of at least 10 mm over a more limited surface area.					
4	Failure	Impact failure of the stake in the field.						

Treatment data:	Product/ Preservative	Conc. Tested % m/m	Target uptake kg/m ³	Treatment solution uptake*			Oil/Preservative Retention		
				Mean	min	max	mean	min	max
				l/m ³	l/m ³	l/m ³	kg/m ³	kg/m ³	kg/m ³
	Beech, TT2.0 No oil	-	-	-	-	-	-	-	-
	Beech, TT2.0 Oil	100%	-	140	62	204	131.4	57.9	191.7
	Pine, TT2.0 No oil	-	-	-	-	-	-	-	-
	Pine, TT2.0 Oil	100%	-	70	28	145	65.6	26.0	136.3
	Spruce, TT2.0 No oil	-	-	-	-	-	-	-	-
	Spruce, TT2.0 Oil	100%	-	27	19	37	25.7	17.6	34.9
	Beech, Oil only	100%	-	101	39	180	94.9	36.6	169.1
	Beech, Untreated	-	-	-	-	-	-	-	-
	Pine, Untreated	-	-	-	-	-	-	-	-
	Pine, CCA-2 kg/m ³	0.3%	2.2	639	615	660	2.17	2.09	2.24
	Pine, CCA-9 kg/m ³	1.9%	9.5	656	621	677	9.51	9.01	9.81

**The treatment solutions uptake in L/m³ are calculated from a oil density of 0.94 g/cm³ at 15 °C (ASTM D4052).*

Details on retention and inspection data

Product: Beech, TT 2.0, No oil **EMC_{65%}:** 5.7 %
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
2015-821	670.26	-	-	0	0	1	2	2	0	-	-	-	-	-	-	-	-	-
2015-822	618.28	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
2015-823	645.46	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
2015-824	626.54	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
2015-825	603.80	-	-	0	0	0	0	0	1	-	-	-	-	-	-	-	-	-
2015-826	632.41	-	-	0	0	0	1	2	0	-	-	-	-	-	-	-	-	-
2015-827	640.81	-	-	0	0	0	0	1	0	-	-	-	-	-	-	-	-	-
2015-828	650.87	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
2015-829	613.33	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
2015-830	665.17	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
Average	636.7	-	-	0	0	0.1	0.3	0.6										
Max	670.3	-	-	0	0	1	2	2										
Min	603.8	-	-	0	0	0	0	0										
Std. Dev.	21.91	-	-	0.00	0.00	0.32	0.67	0.84										
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		

Details on retention and inspection data

Product: Beech, TT 2.0, Oil **EMC_{65%}:** 5.7 %
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
2015-831	666.54	139.9	139.9	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-832	604.43	57.9	57.9	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-833	663.37	110.3	110.3	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-834	622.26	106.2	106.2	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-835	610.61	191.0	191.0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-836	615.35	150.8	150.8	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-837	581.54	191.7	191.7	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-838	649.61	133.4	133.4	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-839	673.50	118.7	118.7	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-840	670.20	114.2	114.2	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
Average	635.7	131.4	131.4	0	0	0	0	0	0	0	0	0	0	0				
Max	673.5	191.7	191.7	0	0	0	0	0	0	0	0	0	0	0				
Min	581.5	57.9	57.9	0	0	0	0	0	0	0	0	0	0	0				
Std. Dev.	32.77	40.25	40.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Attack: B = brown rot, W = white rot, SR = soft rot																		
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Details on retention and inspection data

Product: Pine, TT 2.0, No oil **EMC_{65%}:** 5.8 %

Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack			
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr	
2015-841	487.93	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-842	503.59	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-843	540.33	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-
2015-844	488.61	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-845	518.26	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-846	537.04	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-847	532.00	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-848	523.50	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-849	551.24	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-850	647.96	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
Average	533.0	-	-	0.1	0.1	0.1	0.1	0.1	0.5	-	-	-	-	-	-	-	-
Max	648.0	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-
Min	487.9	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-
Std. Dev.	45.70	-	-	0.32	0.32	0.32	0.32	0.32	0.53	-	-	-	-	-	-	-	-
Attack: B = brown rot, W = white rot, SR = soft rot																	
Notes:																	

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Initials: andc/rdi/jos

Details on retention and inspection data

Product: Pine, TT 2.0, Oil **EMC_{65%}:** 5.8 %

Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
2015-851	525.70	56.5	56.5	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-852	559.70	42.0	42.0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-853	557.30	37.6	37.6	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-854	530.30	26.0	26.0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-855	508.39	45.5	45.5	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-856	599.63	65.2	65.2	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-857	555.15	88.8	88.8	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-858	500.06	92.4	92.4	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-859	462.35	66.0	66.0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
2015-860	551.37	136.3	136.3	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
Average	535.0	65.6	65.6	0	0	0	0	0	0	0	0	0	0	0	0			
Max	599.6	136.3	136.3	0	0	0	0	0	0	0	0	0	0	0	0			
Min	462.4	26.0	26.0	0	0	0	0	0	0	0	0	0	0	0	0			
Std. Dev.	38.40	32.74	32.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		

Details on retention and inspection data

Product: Spruce, TT 2.0, No oil **EMC_{65%}:** 5.8 %
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack								
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr						
2015-861	384.72	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
2015-862	438.69	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	X	
2015-863	480.52	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	
2015-864	365.06	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	
2015-865	480.48	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	
2015-866	450.26	-	-	2	1	2	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	X
2015-867	437.48	-	-	1	0	1	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2015-868	438.37	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-
2015-869	468.59	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-
2015-870	491.57	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Average	443.6	-	-	0.3	0.1	0.3	0.5	0.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Max	491.6	-	-	2	1	2	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Min	365.1	-	-	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Std. Dev.	41.39	-	-	0.67	0.32	0.67	0.97	0.97	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-
Attack: B = brown rot, W = white rot, SR = soft rot																						
Notes:																						

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Initials: andc/rdi/jos

Details on retention and inspection data

Product: Spruce, TT 2.0, Oil **EMC_{65%}:** 5.8 %
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
2015-871	379.04	26.7	26.7	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-872	467.87	17.6	17.6	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-873	435.31	26.6	26.6	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-874	377.91	19.5	19.5	0	0	0	0	0	0	1	0	0	0	0	-	-	-	-
2015-875	472.13	18.8	18.8	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-876	434.94	34.9	34.9	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-877	435.89	26.1	26.1	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-878	448.30	26.5	26.5	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-879	441.44	26.7	26.7	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
2015-880	437.87	33.6	33.6	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
Average	433.1	25.7	25.7	0	0	0	0	0	0	0.1	0	0	0	0				
Max	472.1	34.9	34.9	0	0	0	0	0	0	1	0	0	0	0				
Min	377.9	17.6	17.6	0	0	0	0	0	0	0	0	0	0	0				
Std. Dev.	31.69	5.79	5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.32				
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		

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Initials: andc/rdi/jos

Details on retention and inspection data

Product: Beech, Oil only **Target:** -
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
2015-881	722.59	36.6	36.6	0	0	0	0	0	0	1	-	-	-	-	-	-	-	-
2015-882	716.69	52.0	52.0	0	0	1	4	4	4	4	-	-	-	-	-	-	-	-
2015-883	723.49	70.5	70.5	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-884	762.56	89.3	89.3	0	0	0	0	0	0	1	-	-	-	-	-	-	-	X
2015-885	743.31	65.0	65.0	0	1	1	2	4	4	4	-	-	-	-	-	-	-	X
2015-886	725.76	58.2	58.2	0	1	1	4	4	4	4	-	-	-	-	-	-	-	-
2015-887	659.04	147.7	147.7	0	0	0	0	0	0	2	-	-	-	-	-	-	-	-
2015-888	654.88	156.9	156.9	0	0	0	1	4	4	4	-	-	-	-	-	-	-	X
2015-889	753.38	103.6	103.6	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-
2015-890	703.81	169.1	169.1	0	0	0	1	2	2	2	-	-	-	-	-	-	-	-
Average	716.6	94.9	94.9	0	0.2	0.3	1.2	1.2	2.2	2.2								
Max	762.6	169.1	169.1	0	1	1	4	4	4	4								
Min	654.9	36.6	36.6	0	0	0	0	0	0	0								
Std. Dev.	35.95	47.53	47.53	0.00	0.42	0.48	1.62	1.62	1.69	1.69								
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		

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Initials: andc/rdi/jos

Details on retention and inspection data

Product: Beech, Untreated **Target:** -
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
2015-891	765.14	-	-	0	0	0	4	4	4	-	-	-	-	-	-	-	-	-
2015-892	705.97	-	-	0	0	0	2	4	4	-	-	-	-	-	-	-	-	-
2015-893	790.90	-	-	0	1	2	4	4	4	-	-	-	-	-	-	-	-	-
2015-894	737.07	-	-	2	2	2	2	4	4	-	-	-	-	-	-	-	-	-
2015-895	762.90	-	-	0	0	0	2	4	4	-	-	-	-	-	-	-	-	-
2015-896	706.43	-	-	0	0	0	2	3	4	-	-	-	-	-	-	-	-	-
2015-897	699.31	-	-	1	0	0	2	4	4	-	-	-	-	-	-	-	-	-
2015-898	813.12	-	-	2	2	2	3	4	4	-	-	-	-	-	-	-	-	-
2015-899	699.71	-	-	1	1	1	4	4	4	-	-	-	-	-	-	-	-	-
2015-900	718.21	-	-	0	2	2	2	4	4	-	-	-	-	-	-	-	-	-
Average	739.9	-	-	0.6	0.8	0.8	2.7	3.9	3.9	-	-	-	-	-	-	-	-	-
Max	813.1	-	-	2	2	2	4	4	4	-	-	-	-	-	-	-	-	-
Min	699.3	-	-	0	0	0	2	3	3	-	-	-	-	-	-	-	-	-
Std. Dev.	41.01	-	-	0.84	0.92	0.92	0.95	0.32	0.32	-	-	-	-	-	-	-	-	-
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		

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Initials: andc/rdi/jos

Details on retention and inspection data

Product: Pine, Untreated **Target:** -
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack			
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr	
2015-901	635.79	-	-	0	0	0	2	4	-	-	-	-	-	-	-	-	-
2015-902	658.82	-	-	0	0	0	0	2	-	-	-	-	-	-	-	-	-
2015-903	640.80	-	-	1	1	2	4	4	-	-	-	-	-	-	-	-	-
2015-904	640.42	-	-	1	1	4	4	4	-	-	-	-	-	-	-	-	-
2015-905	649.62	-	-	0	0	0	2	4	-	-	-	-	-	-	-	-	-
2015-906	672.48	-	-	0	0	0	1	1	-	-	-	-	-	-	-	-	-
2015-907	686.30	-	-	1	1	1	2	4	-	-	-	-	-	-	-	-	-
2015-908	643.70	-	-	1	1	2	2	4	-	-	-	-	-	-	-	-	-
2015-909	659.58	-	-	0	0	0	2	3	-	-	-	-	-	-	-	-	-
2015-910	724.77	-	-	0	0	0	2	3	-	-	-	-	-	-	-	-	-
Average	661.2	-	-	0.4	0.4	0.9	2.1	3.3	-	-	-	-	-	-	-	-	-
Max	724.8	-	-	1	1	4	4	4	-	-	-	-	-	-	-	-	-
Min	635.8	-	-	0	0	0	0	1	-	-	-	-	-	-	-	-	-
Std. Dev.	27.37	-	-	0.52	0.52	1.37	1.20	1.06	-	-	-	-	-	-	-	-	-
Attack: B = brown rot, W = white rot, SR = soft rot																	
Notes:																	

Details on retention and inspection data

Product: Pine, CCA 2 kg **Target:** 2.2 kg/m³
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
13141	541.57	656.8	2.2	0	1	1	1	1	1	-	-	-	-	-	-	-	-	-
13142	604.50	615.0	2.1	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13143	599.49	632.8	2.2	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13144	507.28	651.6	2.2	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13145	552.02	644.7	2.2	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13146	531.22	659.8	2.2	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13147	563.06	618.9	2.1	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13148	577.07	615.5	2.1	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13149	508.35	641.6	2.2	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
13150	542.86	650.3	2.2	0	2	2	2	2	2	-	-	-	-	-	-	-	-	-
Average	552.7	638.7	2.2	0	0.3	0.3	0.3	0.3	0.3	-	-	-	-	-	-	-	-	-
Max	604.5	659.8	2.2	0	2	2	2	2	2	-	-	-	-	-	-	-	-	-
Min	507.3	615.0	2.1	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-
Std. Dev.	33.81	17.15	0.06	0.00	0.67	0.67	0.67	0.67	0.67	-	-	-	-	-	-	-	-	-
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		

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Initials: andc/rdi/jos

Details on retention and inspection data

Product: Pine, CCA 9 kg **Target:** 9.5 kg/m³
Test site: Danish Technological Institute, Taastrup, Denmark

Field no.:	Density [kg/m ³]	Solution uptake [kg/m ³]	Product uptake [kg/m ³]	Exposure period										Attack				
				1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year	7 th year	8 th year	9 th year	10 th year	B	W	Sr		
13151	546.34	663.7	9.6	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13152	607.07	621.2	9.0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13153	558.88	657.6	9.5	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13154	528.27	657.1	9.5	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13155	537.60	655.8	9.5	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13156	577.73	632.2	9.2	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13157	534.11	662.0	9.6	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13158	543.26	669.1	9.7	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13159	545.02	659.7	9.6	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
13160	513.46	676.8	9.8	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
Average	549.2	655.5	9.5	0	0	0	0	0	0	0	0	0	0	0				
Max	607.1	676.8	9.8	0	0	0	0	0	0	0	0	0	0	0				
Min	513.5	621.2	9.0	0	0	0	0	0	0	0	0	0	0	0				
Std. Dev.	26.66	16.63	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Attack: B = brown rot, W = white rot, SR = soft rot																		
Notes:																		