



MPA | Eberswalde

Materialprüfanstalt
Brandenburg GmbH

Prüfung, Überwachung,
Zertifizierung, Gutachten,
Forschung und Entwicklung

Test report

31/19/3442/02b

Two authentic copies

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HRB 10408 FF

Date of order: 11.02.2019

Received: 11.02.2019

Test procedure: **Assessment of the enhanced durability of modified wood against wood destroying basidiomycetes according to EN 113-2 (2020) and EN 350 (2016) in combination with leaching procedure according to EN 84 (2020)**

Test product: **“Organowood Silicium HT”**

Type of test product and further information provided: **Modified pine wood, produced by: Organo Wood AB
Treatment 7 (5% of formulation 2 +heat treatment program 2)**

Date of delivery: 21.03.2019

Persons in charge: **Dr. E.-M. Fennert, Frau S. Hoffmann**

Period of testing: **04/2019 – 03/2020**

The test was performed before EN 113-2 was published. However it adhered closely to the draft of the new standard, so that the requirements of EN 113-2 are met.

This test report comprises 9 pages. It refers exclusively to the material submitted for testing and remains property of MPA until completion of full payment. The test material is being stored for 2 years and may be given back to the contractor at his expense. Publication of test reports is only permissible if published as a whole. Publication of excerpts, references to tests for purposes of advertising and the use of contents of test reports require in every single case the revocable written consent of MPA.

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PLZ-Stelle 88A02



EC notified 0763



CARB notified TPC 18

Sampling and treatment procedure:	The test blocks were not cut from boards of modified wood as, due to limitations of the treatment apparatus only small units could be treated. Therefore, MPA Eberswalde sent untreated <i>Pinus sylvestris</i> test blocks dimensioned 50 mm x 25 mm x 15 mm ³ from different trees to Organo Wood AB for modification procedure in its labs. After modification, the blocks were sent back to MPA for durability testing. Each test was done with 30 test blocks originating in equal parts from 5 trees.		
Density of unmodified test blocks at (20±2) °C / (65±5) % RH:	Tree 5 and 6	0,45 – 0,50 g/cm ³	
	Tree 7 and XI:	0,51 – 0,55 g/cm ³	
	Tree XXV:	0,56 – 0,62 g/cm ³	
Mean density of modified test blocks at (20±2) °C / (65±5) % RH:	Tree 5: 0,45 g/cm ³	Tree 6: 0,46 g/cm ³	
	Tree 7: 0,51 g/cm ³	Tree XI: 0,53 g/cm ³	
	Tree XXV: 0,55 g/cm ³		
Species of reference timber/ average density:	<i>Pinus sylvestris</i> / 0, 52 g/cm ³ <i>Fagus sylvatica</i> / 0, 71 g/cm ³		
Species and strain number of fungi used:	<i>Coniophora puteana</i> BAM Ebw 15 <i>Rhodonia placenta</i> FPRL 280 <i>Trametes versicolor</i> CTB 863 A		
Conditioning of test blocks: at (20°C/65% RH)	21.03.2019 – 02.07.2019		
Ageing test carried out:	EN 84 02.07.2019 – 16.07.2019		
Equilibrium moisture content of modified pine blocks (e ₂) at (20 ± 2)°C / (65 ± 5)% RH:	11,3 % (after leaching and reconditioning) single data see table 1		
Method of sterilization used:	Ionising gamma - irradiation from radioactive ⁶⁰ Co source Dose: 25 to 50 kGy		
Start of incubation:	16.09.2019 (<i>Trametes versicolor</i>) 19.09.2019 (<i>Rhodonia placenta</i>) 23.09.2019 (<i>Coniophora puteana</i>)		
End of incubation:	06.01.2020 (<i>Trametes versicolor</i>) 09.01.2020 (<i>Rhodonia placenta</i>) 13.01.2020 (<i>Coniophora puteana</i>)		
Mass loss of modified test blocks (e ₁):	<i>Coniophora puteana</i> :	median 0 %	mean value 0 %
	<i>Rhodonia placenta</i> :	0 %	0 %
	<i>Trametes versicolor</i> :	1,8 %	2,8 %
	single data see table 2 – 4		

Mass loss of reference (virulence) timber (pine):	<i>C. puteana</i> : <i>R. placenta</i> : <i>T. versicolor</i> : single data see table 5	<i>median</i> 28,1 % 48,2 % 24,4 %	<i>mean value</i> 30,7 % 47,7 % 24,9 %
Mass loss of reference (virulence) timber (beech):	<i>C. puteana</i> : <i>T. versicolor</i> : single data see table 5	<i>median</i> 33,1 % 43,7 %	<i>mean value</i> 32,5 % 43,7 %
Arrangement of test blocks:	In each test vessel either two test blocks (e_1) of modified pine or two reference (virulence) timber blocks were installed		
Validity of results acc.to EN 113-2; section 7.4.2	<p>The test is valid as</p> <ul style="list-style-type: none"> - the median mass loss of the reference (virulence) timber exposed to each of the test fungi is above the minimum values given in section 5.1.1 and - the results of at least 20 test blocks per set of 30 test replicates are acceptable. <p>To check the acceptability of test samples with high moisture contents and low mass loss, the maximum moisture content of 20 test blocks was determined by vacuum impregnation.</p> <p>Their average maximum moisture content was 182 %. As 70 % of this are still considered acceptable, only samples having $\geq 127 \%$ are considered as affected by waterlogging (see 7.4.1) and not acceptable. Such samples are marked by * in the tables.</p>		
Assessment of results:	See page 4		

Assignment of durability classes of wood under fungal attack (basidiomycetes)
according to EN 113-2; annex F; table F.1 and EN 350

Durability class	Description	Median mass loss (%)
DC 1	<i>very durable</i>	≤ 5
DC 2	<i>durable</i>	> 5 to ≤ 10
DC 3	<i>moderately durable</i>	> 10 to ≤ 15
DC 4	<i>slightly durable</i>	> 15 to ≤ 30
DC 5	<i>not durable</i>	> 30

Assessment of results

Durability against wood destroying basidiomycetes according to the test fungus which caused the highest mass loss according to EN 113-2; annex F; table F.2

Type of wood	Distribution of classes of mass loss values of the tested material in different durability classes					Median all specimens with <i>T. versicolor</i> %	Durability Class
	DC 1 %	DC 2 %	DC 3 %	DC 4 %	DC 5 %		
“Organowood Silicium HT” Treatment 7 (5% of formulation 2 + Heat treatment program 2)	100	0	0	0	0	1,8	1

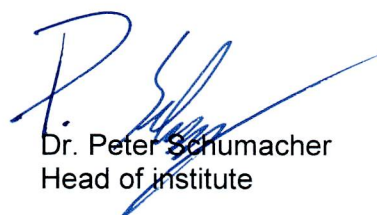
NOTE:

The interpretation and practical conclusions that may be drawn from this test report require a specialized knowledge of timber. The information contained in this report applies only to the sample of timber tested.

MPA Eberswalde
Materialprüfanstalt Brandenburg GmbH

- Holz und Holzschutz -

Eberswalde, 25.02.2021


Dr. Peter Schumacher
Head of institute

Annex: 5 pages




Dr. Eva-Maria Fennert
Specialist