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Shandong Chambroad Timber Material Co., Ltd.
Economic Development Zone, Boxing County,
Binzhou City, Shandong Province
China

Dresden, 14/01/2025
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Test Report
Order no. 2224031-2

Client: Shandong Chambroad Timber Material Co., Ltd.
Economic Development Zone, Boxing County, Binzhou City,
Shandong Province
China

Order: Testing of Chambroad Timber: Biological durability against wood-destroying fungi, molds and termites
Pos. 2: Durability against wood-destroying basidiomycete fungi

Contractor: Entwicklungs- und Prueflabor Holztechnologie GmbH
Laboratory Unit Biological Testing
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Engineer in charge: Dipl.-Ing. Kordula Jacobs

Dr. Wolfram Scheiding
Head of Laboratory Unit Biological Testing

The test report includes 4 pages. Any duplication of extracts requires the written permission of EPH. The test results refer exclusively to the tested material.

All numerical values within this document are given with a comma as decimal.

1 Task

The accredited Entwicklungs- und Prueflabor Holztechnologie GmbH was instructed by Shandong Chambroad Timber Material Co., Ltd., to test the durability of Biomass Modified Recombinant Poplar against wood-destroying basidiomycete fungi according to EN 113-3/EN 350.

2 Test material

Product name:	Chambroad Timber
Test material:	Biomass Modified Recombinant Poplar[1]
Producer:	Shandong Chambroad Timber Material Co., Ltd.
Delivery date:	15/07/2024

Finished test specimens were supplied.

3 Test performance

Test methods:	**Fungal test** according to EN 113-3:2023 (Durability of wood and wood-based products - Test method against wood destroying basidiomycetes - Part 3: Assessment of durability of wood-based panels). **Durability classification** according to EN 350:2016 (Durability of wood and wood-based products - Testing and classification of the durability to biological agents of wood and wood-based materials).
Reference timber:	Brown rot fungi: Scots pine sapwood (*Pinus sylvestris*) White rot fungi: European beech (*Fagus sylvatica*)
Test fungi:	Brown rot fungi: - *Coniophora puteana*, strain DSM 3085 (= BAM Ebw.15); obligatory test fungus for all types of wood-based panels - *Rhodonia (Poria) placenta*, strain FPRL 280; obligatory test fungus for modified wood - *Gloeophyllum trabeum*, strain DSM 3087 =BAM, Ebw.109; optional test fungus (only obligatory for pure coniferous wood-based panels) White rot fungi: - *Pleurotus ostreatus*, strain FPRL 40C; obligatory test fungus for all types of wood-based panels (attacks particularly glued wood); incubation in vermiculite - *Trametes (Coriolus) versicolor*, strain DSM 3086 (= CTB 863A); obligatory test fungus for pure hardwood-based materials
Specimen:	(50×25×15) mm³; each 16 specimens per test fungus
Ageing prior to test:	water leaching procedure according to EN 84:2020 over two weeks (01/08/2024 to 15/08/2024)
Sterilisation:	hot steam
Fungal attack period:	16 weeks (18/09/2024-08/01/2025)

[1] Details on the composition of the product (type and percentage of adhesive and of additives) were not submitted by the customer.

4 Validity of the test

The test was valid. The demanded virulence values of mean mass losses with reference wood were exceeded by all test fungi. Summarized validity data are shown in Table 1. Single values can be provided by EPH on request.

Table 1: Virulence values

test fungus	reference wood	mean mass loss in % (n=16)	median mass loss in % (n=16)	required minimum mass loss in %*
Coniophora puteana	pine sapwood	21,7 ± 3,2	21,6	20
Rhodonia (Poria) placenta		27,8 ± 3,2	27,0	
Gloeophyllum trabeum		25,3 ± 6,7	26,8	
Trametes (Coriolus) versicolor	beech	35,1 ± 2,4	35,5	20
Pleurotus ostreatus		23,9 ± 1,2	23,9	

* Required minimum mass loss (mean value) as specified in EN 113-3, section 9: at least one of the test fungi should cause a median mass loss greater than 30 %.

5 Test results

Summarized results of dry mass losses and the assigned durability classes with each fungus are shown in Tables 2. The median moisture content of the test specimens after the fungal attack is shown in Table 3. Single values can be provided by EPH on request.

Table 2: Results of the durability test of “Biomass Modified Recombinant Poplar”

Test fungus	mean dry mass loss (n = 16) [%]	median dry mass loss (n = 16) [%]	percentage of specimens in DC classes [%]					durability classification (see Table 4)
			DC 1	DC 2	DC 3	DC 4	DC 5	
C. puteana	1,0 ± 0,2	1,0	100	0	0	0	0	1
R. placenta	0,9 ± 0,2	0,9	100	0	0	0	0	1
G. trabeum	1,0 ± 0,2	1,0	100	0	0	0	0	1
P. ostreatus	1,6 ± 0,2	1,6	100	0	0	0	0	1
T. versicolor	1,0 ± 0,2	1,0	100	0	0	0	0	1

Final DC classification: DC 1 “very durable”

None of the test fungi caused a significant mass loss with the tested material. Based on this, the product “Biomass Modified Recombinant Poplar” is assigned to DC 1 “very durable”.

In comparison, untreated (native) poplar wood is classified as DC 5 “not durable” according to Table B.2 of EN 350 and the “Technical Guide to US Hardwoods” of the American Hardwood Export Council (AHEC).

Table 3: Moisture content of the test specimens after the fungal attack

test fungus	tested material		reference timber	
	mean moisture content* (n = 16) [%]	median moisture content (n = 16) [%]	median moisture content (n = 10) [%]	wood species
C. puteana	44,4 ± 2,3	45,0	58,6	pine sapwood
R. placenta	39,7 ± 2,1	40,1	58,4	
G. trabeum	42,4 ± 2,3	42,7	81,5	
P. ostreatus	46,8 ± 3,0	48,0**	104,1**	beech
T. versicolor	44,2 ± 2,9	42,9	51,4	

* no single value below 25 % as required by EN 113-3, section 8.8.3
** incubation within vermiculite package as required by EN 113-3

Table 4: Scheme for classification of durability against wood-destroying basidiomycete fungi (Table 5 of EN 350:2016 and Annex F of EN 113-3:2023)

durability class	description	median dry mass loss
DC 1	very durable	≤ 5 %
DC 2	durable	> 5 % up to ≤ 10 %
DC 3	moderately durable	> 10 % up to ≤ 15 %
DC 4	slightly durable	> 15 % up to ≤ 30 %
DC 5	not durable	> 30 %

6 Evaluation

The test was carried out with four obligatory fungi, determined acc. to EN 113-3 on the basis of the characteristics of the tested product (glued modified poplar panels). One optional test fungus was used. The test was valid as all test fungi achieved the virulence requirements.

None of the test fungi caused a significant mass loss with the tested material. Based on this, the product “Biomass Modified Recombinant Poplar” is assigned to DC 1 “very durable”.

In comparison, untreated (native) poplar wood is classified as DC 5 “not durable” according to Table B.2 of EN 350 and the “Technical Guide to US Hardwoods” of the American Hardwood Export Council (AHEC).

NOTE 1: Interpreting these results and drawing practical conclusions from it requires a fundamental knowledge of wood preservation issues. Therefore, this test report by itself does not state an official approval of the tested material.

NOTE 2: Microbiological test methods as used in this test, usually exclude a strict metrological and statistically verified calculation of the measurement uncertainty (Eurachem Guide: Accreditation for Microbiological Laboratories, 2013).

NOTE 3: Statements on conformity assessment/classification were made on the basis of the measurement results obtained. Measurement uncertainties are not included in the assessment (ILAC G8 03/2009 " Guidelines on the Reporting of Compliance with Specification" Section 2.7).

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