



Test Report

EN 113-2

Report no.: 269201-1

Page 1 af 2
Initials: troj/sbrh
Order no.: 269201
Appendices: 2

- Assignor:** Montana Wood Technologies, LLC
135 Hutton Ranch Rd.- Suite 103
Kalispell, MT59901
USA
- Purpose:** Screenings test to indicate the effect on the durability of Red Oak and Southern Yellow Pine by treating with one heat treatment process: Process 3: "Heat treatment at 190°C"
- Method:** Test according to EN 113-2;2020: *Durability of wood and wood-based products – Determination of the natural durability of solid wood against wood-destroying fungi, test methods - Part 1: Basidiomycetes.*
Durability classes 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.*
- Modifications from the standard:
Dimensions of specimens
No. of test specimens reduced to 10
No ageing procedure
Exposure on one fungus
Duration of exposure reduced to 8 weeks
- Period:** The test was carried out from 12-05-2024 to 30-08-2024.
- Results:** Durability classification according to EN 350; 2016.

Percentage mass loss (ML) according to EN 350 (2016):

Fungi <i>Coniophora puteana</i> BAM Ebw 15	Red Oak	Southern Yellow Pine
Median mass loss	-0.04	0.74
Durability class	1 Very durable	1 Very durable

Detailed results are given in Appendix 2.



DIGITALLY SIGNED DOCUMENT

6 September 2024

Order nr.: 269201
Side: 2 af 2
Initialer: troj/sbrh

Storage: The test material will be destroyed after 3 months, unless otherwise agreed.

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

Terms: This test was conducted in accordance with international requirements (EN/ISO/IEC 17025:2017) and in accordance with General Terms and Conditions of Danish Technological Institute. The test results solely apply to the tested item. This report may be quoted in extract only if Danish Technological Institute has granted its written consent.

Signature: This document is only valid with a digital signature from Danish Technological Institute. The date of issue appears from the digital signature. Approved and signed by:

Signature: Test-responsible
Digitally signed by:
Trine Østergaard Jensen
Email: troj@dti.dk
Phone: +4572201390

Co-reader:
Digitally signed by:
Sofie Brandt Hansen
Email: sbrh@dti.dk
Phone: +4572201761

Detailed information

Order no.: 269201
Appendix: 1
Side: 1 af 1
Initialer: troj/sbrh

- Treatment:** The heat treatments of the specimens were performed at the Danish Technological Institute in May and June 2024.
- Duration of conditioning after treatment:** 4 weeks according to EN 113-2; 2020 in the period from 28-05-2024 to 25-06-2024
- Sterilization:** Ionising radiation (2 × 50 kGy)
- Wood Species:** Red Oak and Southern Yellow Pine.
- Test-fungi:** *Coniophora puteana* (BAM Ebw 15)
- Exposure to fungi:** 8 weeks in the period from 03-07-2024 to 28-08-2024.
- Evaluation date:** 29-08-2024.
- Evaluation:** Results and durability classes are evaluated according to DS/EN 350; 2016

Durability class	Description	Percentage mass loss (ML) according to DS/EN 350 (2016)
1	Very durable	ML ≤ 5
2	Durable	5 < ML ≤ 10
3	Moderately durable	10 < ML ≤ 15
4	Slightly durable	15 < ML ≤ 30
5	Not durable	30 < ML
ML= highest of the median mass loss (in %) determined for test specimens exposed to each of the used fungi		

- Validity:** Virulence controls
Coniophora puteana exposed on Scots pine sapwood.
- The test is considered valid.

Detailed results

Order no.: 269201
Appendix: 2
Side: 1 af 2
Initialer: troj/sbrh

Red Oak Heat treatment at 190°C				Southern Yellow Pine Heat treatment at 190°C			
Test-fungus	Test-specimen	Moisture content after exposure to fungi (%)	Corrected Mass loss (%)	Test-fungus	Test-specimen	Moisture content after exposure to fungi (%)	Corrected Mass loss (%)
<i>Coniophora puteana</i>	1-RO	45.2	0.06	<i>Coniophora puteana</i>	1-SP	32.1	0.79
	2-RO	47.7	-0.12		2-SP	30.4	0.82
	3-RO	47.4	-0.35		3-SP	33.0	0.70
	4-RO	45.9	0.08		4-SP	36.6	0.51
	5-RO	44.6	0.12		5-SP	33.0	0.68
	6-RO	47.0	-0.73		6-SP	34.5	0.70
	7-RO	44.1	0.04		7-SP	66.4	0.10
	8-RO	43.4	0.08		8-SP	31.5	0.88
	9-RO	42.4	-0.26		9-SP	35.1	0.85
	10-RO	42.0	-0.24		10-SP	34.9	0.90
Mean		45.0	-0.13	Mean		36.8	0.69
Median		44.92	-0.04	Median		33.77	0.74
Std.dev		2.05	0.27	Std.dev		10.58	0.24

	Moisture specimens	
	Moisture content after exposure (%)	Mass loss used for correction value (%)
Wood	Mean of 4 specimens	
Red Oak	55.32	2.40
Southern Yellow Pine	62.82	0.82

Detailed results

Order no.: 269201
 Appendix: 2
 Side: 2 af 2
 Initialer: troj/sbrh

Virulence controls – Scots pine			
Fungus	Specimen	Moisture content after exposure to fungi (%)	Mass loss (%)
<i>Conio-phora puteana</i>	7-10	57.5	27.48
	8-10	59.5	26.49
	9-10	67.2	29.36
	10-10	77.2	29.64
Mean		65.3	28.2