

THE INTERNATIONAL RESEARCH GROUP ON WOOD PROTECTION

Section 2

Testing Methodology and Assessment

Western red cedar

**Natural durable timber – Field test results
IRG/WP Durability Database**

Laks, P.E.; Larkin, G.M.; Morris, P.I.; Ingram, J.K.

Disclaimer

The responsibility for the data presented in this paper falls to the authors exclusively. The data presented are raw test data and intended to get used for scientific purposes only.

**IRG SECRETARIAT
Box 5609
SE-114 86 Stockholm
Sweden
www.irg-wp.org**

AIMS AND SCOPE OF THE IRG-WP DURABILITY DATABASE

The overall aim of the IRG-WP durability data base is the allocation of wood durability test results for comparative studies and re-analyses. The data base shall serve as pool for service life prediction and modelling and shall contribute to an enhanced understanding of wood durability. It is an open web-based platform for scientific exchange in the field of wood durability and wood protection.

It is NOT the aim of the data base to promote or denigrate any product or material. The data base will contain raw data only; no statistical evaluation will be included. Thus it will be the exclusive responsibility of the user to interpret the test results published in the data base.

For each data set, the full range of information about the test method, the test material, and other relevant parameters, is required to guarantee reliability of the data. For this reason every data set submitted is reviewed and checked for completeness of all relevant data.

The database allows submission of assessment data from all kinds of standardized and non-standardized wood durability tests.

Records of the IRG/WP Durability data base shall be cited as in the following example:

Brischke C., Meyer L. (2013) Douglas fir. Natural durable timber - Field test results. IRG/WP Durability Database. Stockholm: The International Research Group on Wood Protection, IRG/WP/DDB 13-00001.

INFORMATION

Submission Date 05.06.2015

AUTHORS

Corresponding author

Peter E. Laks

Email plaks@mtu.edu

Institution Michigan Technological University

Street/PO Box 1400 Townsend Drive

City Houghton

State Michigan

Zip Code 49931-1295

Country United States of America

Author 2

Glenn M. Larkin

Email glarkin@mtu.edu

Institution Michigan Technological University

Street/PO Box 1400 Townsend Drive

City Houghton

State Michigan

Zip Code 49931-1295

Country United States of America

Author 3

Paul I. Morris

Email paul.morris@fpinnovations.ca

Institution FPIInnovations

Street/PO Box 2665 East Mall

City Vancouver

State	British Columbia
Zip Code	V6T 1Z4
Country	Canada

Author 4	Janet K. Ingram
Email	janet.ingram@fpinnovations.ca
Institution	FPInnovations
Street/PO Box	2665 East Mall
City	Vancouver
State	British Columbia
Zip Code	V6T 1Z4
Country	Canada

TESTED TIMBER

Trade name	Western red cedar
Botanical name	<i>Thuja plicata</i> Donn.
Origin	British Columbia, Canada
Number of replicates	20
Sampling (optional)	Commercial lumber. End-matched samples installed in Maple Ridge, British Columbia; Petawawa, Ontario; Gainesville, Florida and Mountain View/Kipuka, Hawaii
Timber quality (optional)	Second growth

REFERENCE TIMBER

Trade name	Ponderosa pine sapwood
Botanical name	<i>Pinus ponderosa</i>
Origin	British Columbia, Canada
Number of replicates	20

TEST METHODS

Standard method	AWPA E7-09
Reference	AWPA E7-09. Standard method of evaluating wood preservatives by field tests with stakes. American Wood Protection Association, Birmingham, AL.
Specimen dimension and shape	38 x 89 x 460 mm ³
Rating scheme	as per AWP E7-09: 10 (sound), 9.5 (trace of suspicion of attack), 9 (slight decay up to 3% of cross section), 8 (moderate decay from 3 to 10% of cross section), 7 (moderate/severe decay from 10 to 30% of cross section), 6 (severe decay from 30 to 50% of cross section), 4 (very severe decay from 50 to 75% of cross section), 0 (failure).
Address of test site	Kipuka (moved from Mountain View site in 2005) Keaau 96749 Hawaii USA
Geographic coordinates (optional)	19° 37' 11,4"N 155°02'21,6"W
Start of test	November 1 2004
Last evaluation	November 1 2012
Status of test	Terminated

RESULTS

Assessment – Fungal decay

Material	<i>Thuja plicata</i> Donn.					
Date	01.11.2005	01.11.2006	01.11.2007	01.11.2008	01.11.2009	01.11.2010
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	10	10	9	9	7	6
2	10	10	9	7	4	0
3	10	9	8	4	0	0
4	10	10	10	9	9	8
5	10	9	9	6	0	0
6	10	8	6	4	4	4
7	10	10	9	6	4	4
8	10	9	9	7	4	4
9	10	10	8	7	0	0
10	10	9	9	7	6	0
11	10	7	8	7	6	4
12	10	9	8	4	0	0
13	10	10	10	7	6	6
14	10	9	9	7	4	4
15	10	9,5	8	4	0	0
16	10	7	8	6	0	0
17	10	9,5	9	8	6	4
18	10	9	8	6	7	6
19	10	9	8	7	8	7
20	10	9	9	4	0	0

Material	<i>Thuja plicata</i> Donn.					
Date	01.11.2011	01.11.2012				
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	6	6				
2	0	0				
3	0	0				
4	6	4				
5	0	0				
6	4	6				
7	4	0				
8	0	0				
9	0	0				
10	0	0				
11	4	0				
12	0	0				
13	0	0				
14	0	0				
15	0	0				
16	0	0				
17	0	0				
18	0	0				
19	6	4				
20	0	0				

Assessment – Insect damage

Material	<i>Thuja plicata</i> Donn.					
Date	01.11.2005	01.11.2006	01.11.2007	01.11.2008	01.11.2009	01.11.2010
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	10	10	10	9	8	6
2	10	10	9	8	6	4
3	10	9	10	6	7	DF
4	10	10	10	9	9	8
5	10	9	10	7	6	DF
6	10	8	9	6	6	4
7	10	10	10	9	7	7
8	10	10	9	8	8	6
9	10	10	10	8	6	DF
10	10	9	10	8	7	7
11	10	10	10	8	7	6
12	10	10	10	7	7	DF
13	10	10	10	8	8	6
14	10	9	10	8	6	4
15	10	10	10	7	7	DF
16	10	9	10	7	7	DF
17	10	10	10	8	7	4
18	10	9	10	6	7	7
19	10	9	10	7	8	8
20	10	9	10	6	7	DF

DF = sample failed due to fungal decay

Material	<i>Thuja plicata</i> Donn.					
Date	01.11.2011	01.11.2012				
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	6	8				
2	DF	DF				
3	DF	DF				
4	6	8				
5	DF	DF				
6	6	8				
7	6	7				
8	6	DF				
9	DF	DF				
10	DF	DF				
11	6	8				
12	DF	DF				
13	6	DF				
14	6	DF				
15	DF	DF				
16	DF	DF				
17	6	DF				
18	4	DF				
19	7	8				
20	DF	DF				

DF = sample failed due to fungal decay

Assessment Reference – Fungal decay

Material	<i>Pinus ponderosa</i> sapwood					
Date	01.11.2005	01.11.2006	01.11.2007	01.11.2008	01.11.2009	01.11.2010
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	10	4	0	0	0	0
2	10	0	0	0	0	0
3	10	4	8	0	0	0
4	10	0	0	0	0	0
5	10	6	9	0	0	0
6	10	4	0	0	0	0
7	10	7	0	0	0	0
8	10	4	0	0	0	0
9	10	7	0	0	0	0
10	10	9	9	0	0	0
11	10	0	0	0	0	0
12	10	8	0	0	0	0
13	10	9	0	0	0	0
14	10	7	0	0	0	0
15	10	6	0	0	0	0
16	10	9	0	0	0	0
17	10	0	0	0	0	0
18	10	4	0	0	0	0
19	10	4	0	0	0	0
20	10	0	0	0	0	0

Material	<i>Pinus ponderosa</i> sapwood					
Date	01.11.2011	01.11.2012				
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	0	0				
2	0	0				
3	0	0				
4	0	0				
5	0	0				
6	0	0				
7	0	0				
8	0	0				
9	0	0				
10	0	0				
11	0	0				
12	0	0				
13	0	0				
14	0	0				
15	0	0				
16	0	0				
17	0	0				
18	0	0				
19	0	0				
20	0	0				

Assessment Reference – Insect damage

Material	<i>Pinus ponderosa</i> sapwood					
Date	01.11.2005	01.11.2006	01.11.2007	01.11.2008	01.11.2009	01.11.2010
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	10	10	8	DF	DF	DF
2	10	8	DF	DF	DF	DF
3	10	9	8	8	DF	DF
4	10	8	DF	DF	DF	DF
5	10	9	8	6	DF	DF
6	10	9	10	DF	DF	DF
7	10	9	7	DF	DF	DF
8	10	8	8	DF	DF	DF
9	10	9	8	DF	DF	DF
10	10	10	9	7	DF	DF
11	10	9	DF	DF	DF	DF
12	10	9	8	DF	DF	DF
13	10	10	9	DF	DF	DF
14	10	8	8	DF	DF	DF
15	10	9	9	DF	DF	DF
16	10	10	9	DF	DF	DF
17	10	9	DF	DF	DF	DF
18	10	9	10	DF	DF	DF
19	10	8	8	DF	DF	DF
20	10	9	DF	DF	DF	DF

DF = sample failed due to fungal decay

Material	<i>Pinus ponderosa</i> sapwood					
Date	01.11.2011	01.11.2012				
Assessment	1	2	3	4	5	6
Replicate ID	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]	[10-0]
1	DF	DF				
2	DF	DF				
3	DF	DF				
4	DF	DF				
5	DF	DF				
6	DF	DF				
7	DF	DF				
8	DF	DF				
9	DF	DF				
10	DF	DF				
11	DF	DF				
12	DF	DF				
13	DF	DF				
14	DF	DF				
15	DF	DF				
16	DF	DF				
17	DF	DF				
18	DF	DF				
19	DF	DF				
20	DF	DF				

DF = sample failed due to fungal decay

REFERENCES

- Laks P.E., Morris P.I., Larkin G.M., Ingram J.K. (2008) Field tests of naturally durable North American wood species. Stockholm: The International Research Group on Wood Protection, IRG/WP/ 08-10675.
- Morris P.I., Ingram J.K., Larkin, G.M., Laks P.E. (2011) Field tests of naturally durable species. Forest Products Journal 61(5): 344-351.