

THE INTERNATIONAL RESEARCH GROUP ON WOOD PROTECTION

Section 2

Testing Methodology and Assessment

Scots pine

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

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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.

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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 08.05.2014

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TESTED TIMBER

Trade name	Scots pine heartwood & sapwood
Botanical name	<i>Pinus sylvestris</i> L.
Origin	Norway
Number of replicates	13
Timber quality (optional)	Heartwood against heartwood Specimens were a mix of heartwood and sapwood. Heartwood of the top layer was facing the heartwood of the bottom layer.

REFERENCE TIMBER

Trade name	Scots pine sapwood
Botanical name	<i>Pinus sylvestris</i> L.
Origin	Norway
Number of replicates	13
Sampling (optional)	
Timber quality (optional)	

TEST METHODS

Non-standard method	Horizontal double layer (Rapp and Augusta 2004)
Reference	Rapp A.O., Augusta U. (2004) The full guideline for the “double layer test method” – A field test method for determining the durability of wood out of ground. Stockholm: The International Research Group on Wood Protection, IRG/WP/04-20190.
Specimen dimension and shape	25 x 50 x 500 mm ³
Rating scheme	0 (sound), 1 (slight decay), 2 (moderate decay), 3 (severe decay), 4 (failure) after EN 252 (1989)

Address of test site	Høgskoleveien 8, NO 1432 Ås
Geographic coordinates (optional)	59° 66' 71,45''N 10° 77' 34,23''E
Start of test	October 15 2004
Last evaluation	October 15 2013
Status of test	Still running

RESULTS

Assessment

Material	<i>Pinus sylvestris</i> L. heartwood and sapwood (heartwood against heartwood)					
Date	15.10.2005	15.10.2006	15.10.2007	15.10.2008	15.10.2009	15.10.2010
Assessment	1	2	3	4	5	6
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	0	0	0	1	1	1
2	0	0	0	0	0	1
3	0	0	0	0	1	1
4	0	0	1	1	1	1
5	0	0	1	2	2	2
6	0	0	0	0	1	1
7	0	0	0	1	1	1
8	0	0	0	0	1	1
9	0	0	0	0	1	1
10	0	0	0	1	1	1
11	0	0	0	1	1	1
12	0	0	0	1	1	1
13	0	0	0	0	0	1

Material	<i>Pinus sylvestris</i> L. heartwood and sapwood (heartwood against heartwood)					
Date	15.10.2011	15.10.2012	15.10.2013			
Assessment	7	8	9	10	11	12
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	2	2	2			
2	2	2	3			
3	2	3	3			
4	2	3	3			
5	2	2	2			
6	2	3	3			
7	2	2	3			
8	2	2	2			
9	1	2	2			
10	2	2	2			
11	1	1	2			
12	1	1	2			
13	2	2	2			

Decay types

Material	<i>Pinus sylvestris</i> L. heartwood and sapwood (heartwood against heartwood)					
Date	15.10.2005	15.10.2006	15.10.2007	15.10.2008	15.10.2009	15.10.2010
Assessment	1	2	3	4	5	6
Replicate ID						
1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Material	<i>Pinus sylvestris</i> L. heartwood and sapwood (heartwood against heartwood)					
Date	15.10.2011	15.10.2012	15.10.2013			
Assessment	7	8	9	10	11	12
Replicate ID						
1	S,W	S,W,B	S,W,B			
2	S	S,B	S,B			
3	S,W	S,W,B	S,W,B			
4	S,W,B	S,W,B	S,W,B			
5	S,W	S,W,B	S,W,B			
6	S,B	S,B	S,B			
7	S,W	S,W,B	S,W,B			
8	S,W	S,W,B	S,W,B			
9	S	S	S			
10	S,B	S,B	S,B			
11	S	S	S			
12	S,W	S,W	S,W			
13	S,W,B	S,W,B	S,W,B			

W = White rot, B = Brown rot, S = Soft rot

Assessment Reference

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	15.10.2005	15.10.2006	15.10.2007	15.10.2008	15.10.2009	15.10.2010
Assessment	1	2	3	4	5	6
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	0	0	1	1	1	1
2	0	0	0	1	1	1
3	0	0	0	1	1	1
4	0	0	0	0	0	0
5	0	0	1	2	2	2
6	0	0	1	1	1	1
7	0	1	1	3	3	3
8	0	0	0	1	2	2
9	0	0	0	0	1	1
10	0	0	0	0	0	0
11	0	0	0	1	1	1
12	0	0	0	1	1	1
13	0	0	1	2	2	2

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	15.10.2011	15.10.2012	15.10.2013			
Assessment	7	8	9	10	11	12
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	3	3	3			
2	4	4	4			
3	3	3	3			
4	3	4	4			
5	4	4	4			
6	4	4	4			
7	3	3	3			
8	2	2	3			
9	2	2	2			
10	2	2	3			
11	2	2	3			
12	2	3	3			
13	2	3	3			

Decay types reference

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	15.10.2005	15.10.2006	15.10.2007	15.10.2008	15.10.2009	15.10.2010
Assessment	1	2	3	4	5	6
Replicate ID						
1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	15.10.2011	15.10.2012	15.10.2013			
Assessment	7	8	9	10	11	12
Replicate ID						
1	S,W,B	S,W,B	S,W,B			
2	S,W,B	S,W,B				
3	S,W,B	S,W,B	S,W,B			
4	S,W,B	S,W,B				
5	S,W,B	S,W,B				
6	S,W,B	S,W,B				
7	S,W,B	S,W,B	S,W,B			
8	S,W,B	S,W,B	S,W,B			
9	S,W,B	S,W,B	S,W,B			
10	S,W,B	S,W,B	S,W,B			
11	S,W,B	S,W,B	S,W,B			
12	S,W,B	S,W,B	S,W,B			
13	S,W,B	S,W,B	S,W,B			

W = White rot, B = Brown rot, S = Soft rot

REFERENCES

Flæte P.O., Alfredsen G., Evans F. (2011) Natural durability of wood tested in different environments in Northern Europe. Stockholm: The International Research Group on Wood Protection, IRG/WP/ 11-10747.