

THE INTERNATIONAL RESEARCH GROUP ON WOOD PROTECTION

Section 2

Testing Methodology and Assessment

Silver birch / Downy birch

**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

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TESTED TIMBER

Trade name Silver birch / Downy birch
Botanical name *Betula pendula* / *B. pubescens*
Origin Norway
Number of replicates 20
Sampling (optional)
Timber quality (optional)

REFERENCE TIMBER

Trade name	Scots pine sapwood
Botanical name	<i>Pinus sylvestris</i> L.
Origin	Norway
Number of replicates	22
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	Roof of Norwegian Institute of Wood Technology's 8 floor building, Forskningsveien 3B, NO-0373 Oslo-Blindern
Geographic coordinates (optional)	59°94'48,97''N 10°71'15,77''E
Start of test	October 20 2003
Last evaluation	October 20 2013
Status of test	Still running

RESULTS

Assessment

Material	<i>Betula pendula</i> / <i>B. pubescens</i>					
Date	20.10.2004	20.10.2005	20.10.2007	20.10.2008	20.10.2009	20.10.2010
Assessment	1	2	3	4	5	6
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	0	1	2	2	3	3
2	0	1	2	2	3	3
3	0	0	2	2	3	3
4	0	0	1	1	3	3
5	0	1	2	2	3	3
6	0	1	2	2	3	3
7	0	1	3	3	3	3
8	1	1	2	2	3	3
9	0	1	2	2	3	3
10	0	0	3	3	3	3
11	0	0	1	1	3	3
12	0	0	2	2	3	4
13	0	0	3	3	3	4
14	0	0	1	2	2	3
15	0	0	1	2	3	3
16	0	0	2	2	3	3
17	0	1	2	2	3	3
18	1	2	3	3	3	4
19	0	0	2	3	3	4
20	0	2	3	3	3	3

Material	<i>Betula pendula</i> / <i>B. pubescens</i>					
Date	20.10.2011	20.10.2012	20.10.2013			
Assessment	7	8	9	10	11	12
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	3	4	4			
2	3	4	4			
3	4	4	4			
4	4	4	4			
5	4	4	4			
6	3	4	4			
7	4	4	4			
8	3	3	3			
9	4	4	4			
10	4	4	4			
11	4	4	4			
12	4	4	4			
13	4	4	4			
14	4	4	4			
15	4	4	4			
16	4	4	4			
17	3	4	4			
18	4	4	4			
19	4	4	4			
20	4	4	4			

Decay types

Material	<i>Betula pendula</i> / <i>B. pubescens</i>					
Date	20.10.2004	20.10.2005	20.10.2007	20.10.2008	20.10.2009	20.10.2010
Assessment	1	2	3	4	5	6
Replicate ID						
1		S	S	S	S, B	S, B
2		S	S	S	S, B	S, B
3			S	S	S, B	S, B
4			S	S	S, B	S, W, B
5		S	S	S	S, B	S, B
6		S	S	S	S, B	S, B
7		S	S, B	S, B	S, B	S, B
8	S	S	S	S	S, B	S, B
9		S	S, B	S, B	S, B	S, B
10					S, B	S, B
11			S	S	S, B	S, W, B
12			S, B	S, B	S, B	S, B
13			S, B	S, B	S, B	S, B
14			S	S	S, B	S, B
15			S	S	S, B	S, B
16			S	S	S, B	S, B
17		S	S	S	S, B	S, B
18	S	S	S, B	S, B	S, B	S, B
19			S, B	S, B	S, B	S, B
20		S	S	0	S, B	S, B

Material	<i>Betula pendula</i> / <i>B. pubescens</i>					
Date	20.10.2011	20.10.2012	20.10.2013			
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	S, W, B			
3	S, W, B	S, W, B	S, W, B			
4	S, W, B	S, W, B	S, W, B			
5	S, W, B	S, W, B	S, W, B			
6	S, B	S, B	S, B			
7	S, B	S, B	S, B			
8	S, B	S, B	S, W, B			
9	S, B	S, B	S, B			
10	S, B	S, B	S, B			
11	S, W, B	S, W, B	S, W, B			
12	S, B	S, B	S, B			
13	S, B	S, B	S, B			
14	S, W, B	S, W, B	S, W, B			
15	S, B	S, B	S, B			
16	S, W, B	S, W, B	S, W, B			
17	S, W, B	S, W, B	S, W, B			
18	S, B	S, B	S, B			
19	S, B	S, B	S, B			
20	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	20.10.2005	20.10.2007	20.10.2008	20.10.2009	20.10.2010	20.10.2011
Assessment	1	2	3	4	5	6
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	0	2	2	2	3	3
2	0	0	1	2	3	3
3	0	1	2	3	4	4
4	0	2	1	2	3	3
5	0	1	2	3	3	3
6	0	2	3	4	4	4
7	0	0	3	3	3	4
8	0	3	3	4	4	4
9	0	3	3	3	4	4
10	0	3	3	3	4	4
11	0	2	2	3	3	3
12	0	0	3	3	4	4
13	0	1	1	2	3	3
14	0	0	1	3	4	4
15	0	0	1	3	4	4
16	0	1	1	3	4	4
17	0	2	1	3	3	4
18	0	3	3	3	4	4
19	2	3	3	3	4	4
20	1	3	3	3	3	4
21	0	2	3	3	3	4
22	0	3	3	3	4	4

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	20.10.2012	20.10.2013				
Assessment	7	8	9	10	11	12
Replicate ID	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]	[0-4]
1	4	4				
2	4	4				
3	4	4				
4	4	4				
5	4	4				
6	4	4				
7	4	4				
8	4	4				
9	4	4				
10	4	4				
11	4	4				
12	4	4				
13	4	4				
14	4	4				
15	4	4				
16	4	4				
17	4	4				
18	4	4				
19	4	4				
20	4	4				
21	4	4				
22	4	4				

Decay types reference

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	20.10.2005	20.10.2007	20.10.2008	20.10.2009	20.10.2010	20.10.2011
Assessment	1	2	3	4	5	6
Replicate ID						
1		S	S	S	S, W	S, W
2			S	S	S, W	S, W
3		S	S	S, W	S, W	S, W
4		S	S	S, W	S, W	S, W
5		S	S	S, W	S, W	S, W
6		S	S	S, W	S, W	S, W
7			S	S, W	S, W	S, W
8		S	S	S, W	S, W	S, W
9		S	S	S, W	S, W	S, W
10		S	S	S, W	S, W	S, W
11		S	S	S, W	S, W	S, W
12			S	S, B	S, W, B	S, W, B
13		S	S	S, W	S, W	S, W
14			S	S, W	S, W	S, W
15			S	S, W	S, W	S, W
16		S	S	S, W	S, W	S, W
17		S	S	S, W	S, W	S, W
18		S	S	S, W	S, W	S, W
19	S	S	S	S, W	S, W	S, W
20	S	S	S	S, W	S, W	S, W
21		S	S	S, W	S, W	S, W
22		S	S	S, W	S, W	S, W

Material	<i>Pinus sylvestris</i> L. sapwood					
Date	20.10.2012	20.10.2013				
Assessment	7	8	9	10	11	12
Replicate ID						
1	S, W, B	S, W, B				
2	S, W, B	S, W, B				
3	S, W	S, W				
4	S, W, B	S, W, B				
5	S, W, B	S, W, B				
6	S, W	S, W				
7	S, W	S, W				
8	S, W	S, W				
9	S, W	S, W				
10	S, W	S, W				
11	S, W, B	S, W, B				
12	S, W	S, W				
13	S, W, B	S, W, B				
14	S, W	S, W				
15	S, W	S, W				
16	S, W	S, W				
17	S, W	S, W				
18	S, W	S, W				
19	S, W	S, W				
20	S, W	S, W				
21	S, W	S, W				
22	S, W	S, W				

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

REFERENCES

Evans F., Alfredsen G., Flæte P.O. (2011) Natural durability of wood in Norway – results after eight years above ground exposure. Proceedings of the 7th Meeting of the Nordic Baltic Network on Wood Material Science and Engineering, Oslo, Norway. Report from Norwegian Forest and Landscape Institute 15/2011: 1-6.