

**THE INTERNATIONAL RESEARCH GROUP ON WOOD PROTECTION**

**Section 2**

**Testing Methodology and Assessment**

**Douglas fir**

**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                | Douglas fir                                                                                                                                                 |
| Botanical name            | <i>Pseudotsuga menziesii</i> Franco                                                                                                                         |
| Origin                    | Vancouver Island, 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 <sup>3</sup>                                                                                                                                                                                                                                                                                                                       |
| Rating scheme                     | as per AWP A 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              | Petawawa Research Forest<br>Chalk River<br>K0J 1J0<br>Ontario<br>Canada                                                                                                                                                                                                                                                                             |
| Geographic coordinates (optional) | 45° 57' 23,1''N 77° 24' 15.8''W                                                                                                                                                                                                                                                                                                                     |
| Start of test                     | October 1 2004                                                                                                                                                                                                                                                                                                                                      |
| Last evaluation                   | September 1 2014                                                                                                                                                                                                                                                                                                                                    |
| Status of test                    | Terminated                                                                                                                                                                                                                                                                                                                                          |

## RESULTS

### Assessment

| Material     | <i>Pseudotsuga menziesii</i> Franco. |            |            |            |            |            |
|--------------|--------------------------------------|------------|------------|------------|------------|------------|
| Date         | 01.09.2005                           | 01.09.2006 | 01.09.2007 | 01.09.2008 | 01.09.2009 | 01.09.2010 |
| 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         | 10         | 9          | 8          |
| 2            | 9                                    | 9          | 7          | 0          | 0          | 0          |
| 3            | 10                                   | 10         | 9,5        | 9          | 9          | 8          |
| 4            | 9                                    | 6          | 0          | 0          | 0          | 0          |
| 5            | 7                                    | 6          | 4          | 4          | 4          | 4          |
| 6            | 9,5                                  | 8          | 7          | 0          | 0          | 0          |
| 7            | 9,5                                  | 9,5        | 9,5        | 9,5        | 9          | 8          |
| 8            | 9,5                                  | 9          | 9          | 9          | 6          | 0          |
| 9            | 10                                   | 9,5        | 8          | 7          | 6          | 0          |
| 10           | 10                                   | 10         | 9          | 8          | 7          | 7          |
| 11           | 10                                   | 10         | 10         | 9          | 9          | 8          |
| 12           | 10                                   | 10         | 8          | 7          | 6          | 0          |
| 13           | 8                                    | 8          | 0          | 0          | 0          | 0          |
| 14           | 9                                    | 9          | 7          | 0          | 0          | 0          |
| 15           | 9                                    | 8          | 7          | 6          | 0          | 0          |
| 16           | 9,5                                  | 9          | 8          | 8          | 7          | 7          |
| 17           | 10                                   | 10         | 10         | 9          | 6          | 6          |
| 18           | 9,5                                  | 10         | 8          | 7          | 7          | 6          |
| 19           | 9,5                                  | 9          | 6          | 0          | 0          | 0          |
| 20           | 8                                    | 7          | 0          | 0          | 0          | 0          |

| Material     | <i>Pseudotsuga menziesii</i> Franco. |            |            |            |        |        |
|--------------|--------------------------------------|------------|------------|------------|--------|--------|
| Date         | 01.09.2011                           | 01.09.2012 | 01.09.2013 | 01.09.2014 |        |        |
| Assessment   | 1                                    | 2          | 3          | 4          | 5      | 6      |
| Replicate ID | [10-0]                               | [10-0]     | [10-0]     | [10-0]     | [10-0] | [10-0] |
| 1            | 9                                    | 9          | 7          | 8          |        |        |
| 2            | 0                                    | 0          | 0          | 0          |        |        |
| 3            | 7                                    | 6          | 6          | 4          |        |        |
| 4            | 0                                    | 0          | 0          | 0          |        |        |
| 5            | 4                                    | 4          | 4          | 0          |        |        |
| 6            | 0                                    | 0          | 0          | 0          |        |        |
| 7            | 8                                    | 8          | 7          | 7          |        |        |
| 8            | 0                                    | 0          | 0          | 0          |        |        |
| 9            | 0                                    | 0          | 0          | 0          |        |        |
| 10           | 8                                    | 6          | 4          | 4          |        |        |
| 11           | 8                                    | 6          | 6          | 6          |        |        |
| 12           | 0                                    | 0          | 0          | 0          |        |        |
| 13           | 0                                    | 4          | 0          | 0          |        |        |
| 14           | 0                                    | 0          | 0          | 0          |        |        |
| 15           | 0                                    | 0          | 0          | 0          |        |        |
| 16           | 6                                    | 6          | 6          | 4          |        |        |
| 17           | 0                                    | 0          | 0          | 0          |        |        |
| 18           | 7                                    | 4          | 0          | 0          |        |        |
| 19           | 0                                    | 0          | 0          | 0          |        |        |
| 20           | 0                                    | 0          | 0          | 0          |        |        |

## Assessment Reference

| Material     | <i>Pinus ponderosa</i> sapwood |            |            |            |            |            |
|--------------|--------------------------------|------------|------------|------------|------------|------------|
| Date         | 01.09.2005                     | 01.09.2006 | 01.09.2007 | 01.09.2008 | 01.09.2009 | 01.09.2010 |
| Assessment   | 1                              | 2          | 3          | 4          | 5          | 6          |
| Replicate ID | [10-0]                         | [10-0]     | [10-0]     | [10-0]     | [10-0]     | [10-0]     |
| 1            | 9,5                            | 10         | 0          | 0          | 0          | 0          |
| 2            | 6                              | 0          | 0          | 0          | 0          | 0          |
| 3            | 8                              | 6          | 0          | 0          | 0          | 0          |
| 4            | 9,5                            | 9          | 9          | 0          | 0          | 0          |
| 5            | 0                              | 0          | 0          | 0          | 0          | 0          |
| 6            | 9                              | 7          | 0          | 0          | 0          | 0          |
| 7            | 10                             | 9          | 8          | 6          | 0          | 0          |
| 8            | 9                              | 8          | 4          | 0          | 0          | 0          |
| 9            | 0                              | 0          | 0          | 0          | 0          | 0          |
| 10           | 10                             | 9          | 7          | 4          | 4          | 0          |
| 11           | 9                              | 8          | 6          | 0          | 0          | 0          |
| 12           | 9,5                            | 9          | 6          | 4          | 0          | 0          |
| 13           | 9                              | 8          | 8          | 7          | 6          | 0          |
| 14           | 8                              | 7          | 7          | 0          | 0          | 0          |
| 15           | 9                              | 9          | 8          | 7          | 4          | 0          |
| 16           | 9                              | 8          | 7          | 4          | 0          | 0          |
| 17           | 8                              | 7          | 0          | 0          | 0          | 0          |
| 18           | 9                              | 8          | 8          | 7          | 7          | 0          |
| 19           | 4                              | 4          | 0          | 0          | 0          | 0          |
| 20           | 9,5                            | 10         | 8          | 8          | 7          | 0          |

| <b>Material</b>     | <i>Pinus ponderosa</i> sapwood |                   |                   |                   |        |        |
|---------------------|--------------------------------|-------------------|-------------------|-------------------|--------|--------|
| <b>Date</b>         | <b>01.09.2011</b>              | <b>01.09.2012</b> | <b>01.09.2013</b> | <b>01.09.2014</b> |        |        |
| <b>Assessment</b>   | 1                              | 2                 | 3                 | 4                 | 5      | 6      |
| <b>Replicate ID</b> | [10-0]                         | [10-0]            | [10-0]            | [10-0]            | [10-0] | [10-0] |
| <b>1</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>2</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>3</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>4</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>5</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>6</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>7</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>8</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>9</b>            | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>10</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>11</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>12</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>13</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>14</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>15</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>16</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>17</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>18</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>19</b>           | 0                              | 0                 | 0                 | 0                 |        |        |
| <b>20</b>           | 0                              | 0                 | 0                 | 0                 |        |        |

## 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.