PerformWOOD: Performance standards for wood in construction - delivering customer service life needs

A new initiative in Europe to develop new wood and wood based materials standards

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How long?
Specification for wood ‘performance’

- EN350-2 Natural durability
- EN335-1 Use Class
- EN460 Is it suitable?
- EN351 Treatment quality PENETRATION
- EN599 Efficacy wood preservatives RETENTION

Is it suitable?
Motivation

- **Construction Product Regulations**
  - Reliable components
  - Seven essential requirements fulfilled for a ‘reasonable service life’

- **Warranty providers**
  - Housing standards, mortgage lenders, risk management

- **End users**
  - I need to know how long! Service Life Planning, asset management

- **LCA and Environmental Product Declarations**
  - Critical in-use phase for products
Project PerformWOOD

- WP1 Strategic roadmap
- WP2 Data handling and analysis
- WP3 Reference materials
- WP4 Moisture risk in wooden components
- WP5 Service life expectations
- WP6 Draft standard
EN460 User interface

- Exposure dosage
- Material resistance

## Table 1 — Wood-destroying fungi — Guidance on the durability classes of wood species for use in hazard classes

<table>
<thead>
<tr>
<th>Hazard class</th>
<th>Durability class</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>o</td>
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<tr>
<td>2</td>
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<td>3</td>
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<tr>
<td>4</td>
<td>o</td>
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<tr>
<td>5</td>
<td>o</td>
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</tbody>
</table>

Key:
- o: natural durability sufficient.
- (X): natural durability is normally sufficient, but for critical and open_breathing spaces it may be advisable to apply protective treatment.
- (X) — (X): natural durability may be sufficient, but for critical and open_breathing spaces a protective treatment may be necessary.
- p: protective treatment necessary.

NOTE: Segments of all wood species should be regarded as durability class 5.

1. Determine consequence of failure

- Input criteria – what is the product? where is it being used?
- If COF are unacceptable then higher material resistance or techniques to reduce dose need to be selected.
2. Determine Material Resistance parameter

- Input criteria for user – what is the material?
- Inherent durability and wetting ability
- Data handling and variability
- Present MR in based on reliability and confidence limits
- Improvements to standards

Material resistance

- We have EN599 EN350 EN113
- We need
  - Durability class linked to reliability of the classification plus statistical confidence intervals
  - Wetting ability
  - MR link to use class (biological hazard)
  - Means of selecting confidence limit based on consequence of failure or tolerance of failure
  - UC3 aesthetic performance?
Material resistance

• We need (continued)
  – Hazard specific durability information
  – Keep it simple to start with!
3. Determine Exposure Dose parameter

- Input criteria for user – what is the product?, where is it being used?, design, maintenance
- Gather experience of moisture risk models and data
- Translate into moisture risk rules
- Prediction of moisture content development in wood based on climate, size, uptake properties and design

Moisture risk

- New moisture relation data
- Moving towards predictions
Exposure dose

• We have Use Class
• We need
  – Time of Wetness
    • Coating, maintenance?
  – Climate
  – Design
  – Are termites or insects present or not
  – We must keep it simple at first!

4. Determine critical biological (and other?) hazard(s)

• Input criteria for user – what is the product, where is it being used?
5. Determine performance class (EN460)

• Using only the CBH charts for the specific end application and the MR and DOSE parameters see which performance class is attained
New shape for EN460

- Consequence of failure
- Material resistance
- Exposure dose
- Critical biological hazards
- Performance classification

Framework for Europe

- National interpretation
- Short, Medium, Long
- BS8417
- DIN 66800
- FD P20-651
User expectations

• Compile and analyse user expectations for service life
  – Public perceptions and experiences (guarantees)
  – Professionals experience

• Compare expectations and reality
  – Historical database of buildings

• Improvements to standards
  – Presentation and terminology

Service life expectations - homeowners
Service life expectations - professionals

![Service life expectations graph]

European users expectations for wood product service life

Deliverable D5.2
30 December 2014

www.performwood.eu
Guarantees - homeowners

New or revised documents (EN, TS, TR)

- Durability class linked to reliability and confidence interval
- Time of wetness
- Wetting ability
- Consequence of failure
- Material resistance derivation
- Exposure dose derivation
Thank you

...project partners

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