Durability of Reaction to Fire of FRT wood products over time

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Fire retardant treatments (FRT) may considerably improve the reaction to fire properties of wood-based products and the highest fire classifications for combustible products can be reached. As a complement, a new system for the durability of the fire retardant treatments over time has been developed.

Interior and exterior building applications
Two types of building applications, both have been identified with certain risks:

- **Interior applications**: Risk for high moisture content and migration of the FR chemicals within the wood product and salt crystallisation on the product surface. Such hygroscopic properties have to be evaluated by exposure to high relative humidity.
- **Exterior applications**: Risk for decreased fire performance due to loss of the fire retardant chemicals by leaching or other mechanisms. Maintained fire performance over time has to be verified.

New Nordtest and European standards
A new system with Durability of Reaction to Fire performance (DRF) classes has been developed based on extensive research /1, 2/. It consists of a control system and suitable test procedures, published as Nordtest standards /3/. European standardisation is underway /4/.

Conclusions
- The new system with DRF classes will support the development of new products and guide potential users to find suitable FRT wood products.
- A paint coat is usually needed to maintain the fire properties at weathering.

Methodology

**Requirements for DRF (Durability of Reaction to Fire performance) classes of FRT wood products according to NT Fire 054.**

<table>
<thead>
<tr>
<th>DRF class</th>
<th>Existing fire requirements</th>
<th>Additional performance requirements at different end use applications</th>
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</thead>
<tbody>
<tr>
<td><strong>0</strong></td>
<td>Relevant fire class</td>
<td>Hygroscopic properties</td>
</tr>
<tr>
<td><strong>INT</strong></td>
<td>Relevant fire class</td>
<td>Maintained reaction to fire performance after weather exposure</td>
</tr>
<tr>
<td><strong>EXT</strong></td>
<td>Relevant fire class</td>
<td>Maintained reaction to fire performance after accelerated weathering or natural weathering</td>
</tr>
</tbody>
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**REFERENCES**