SURFACE PROPERTIES OF THERMALLY WOOD AFTER ARTIFICIAL AND NATURAL WEATHERING

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The use of wood in outdoor, above-ground applications is increasing in Europe.

More information related to service life and maintenance costs should be provided.

Despite the importance of this parameter, WEE is not completely understood.

WEE is one of the most important factors influencing service life.
MATERIALS

Scots pine sapwood
(*Pinus sylvestris*)

Norway spruce heartwood
(*Picea abies*)

Beech
(*Fagus sylvatica*)

1.5 cm × 2.5 cm × 5.0 cm

Thermal modification
Silvapro® process

3h at 230 °C

3h at 215 °C
AGING PROCEDURES
AGING PROCEDURES
WOOD CHARACTERIZATION
WOOD CHARACTERIZATION
WOOD CHARACTERIZATION
RESULTS

Mass change after exposure to different ageing procedures performed.

- Gt2
- Scc
- Blue-SF
- AAW
- OutDW-A
- OutDW-B

Diagram shows the mass change (%) for each ageing procedure with different colors representing different conditions (PsS, Pa, PaTm, Fs, FsTm).
RESULTS

Colour change after exposure to different ageing procedures performed
(OutDW-B is not included because the colour changes are similar to those of OutDW-A).
RESULTS

Short term water uptake measured with tensiometer after exposure to different ageing procedures performed.
<table>
<thead>
<tr>
<th>Material</th>
<th>Non-aged</th>
<th>Gt2</th>
<th>Scc</th>
<th>Blue-SF</th>
<th>AAW</th>
<th>OutDW-A</th>
<th>OutDW-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>PsS</td>
<td>94 (64)</td>
<td>95 (64)</td>
<td>79 (45)</td>
<td>96 (70)</td>
<td>62 (15)</td>
<td>66 (0)</td>
<td>54 (0)</td>
</tr>
<tr>
<td>Pa</td>
<td>109 (93)</td>
<td>95 (39)</td>
<td>110 (94)</td>
<td>88 (55)</td>
<td>77 (37)</td>
<td>69 (16)</td>
<td>56 (0)</td>
</tr>
<tr>
<td>PaTm</td>
<td>103 (95)</td>
<td>93 (67)</td>
<td>94 (77)</td>
<td>82 (66)</td>
<td>44 (2)</td>
<td>70 (5)</td>
<td>72 (21)</td>
</tr>
<tr>
<td>Fs</td>
<td>76 (40)</td>
<td>99 (43)</td>
<td>85 (56)</td>
<td>73 (32)</td>
<td>54 (0)</td>
<td>82 (12)</td>
<td>68 (1)</td>
</tr>
<tr>
<td>FsTm</td>
<td>90 (65)</td>
<td>82 (48)</td>
<td>84 (61)</td>
<td>75 (40)</td>
<td>37 (0)</td>
<td>76 (14)</td>
<td>65 (3)</td>
</tr>
</tbody>
</table>

Contact angle (°) of water after 1 second and 60 seconds (in parenthesis) of drop deposition to surface after exposure to different ageing procedures performed.
CONCLUSION

- WEE can be improved with TM

- Abiotic degradation had a more prominent effect on WEE than biotic factors

- Abiotic and biotic factors of degradation also acted synergistically
THANK YOU FOR YOUR ATTENTION