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Hygroscopic properties according to CEN/TS 15912

Summary

Hygroscopic testing of fire-retardant treated (FRT) wood was performed by commission of Chemwood Alvesta AB, Sweden. The hygroscopic tests included determination of moisture content according to CEN/TS 15912, Annex A, Test method A.1 Hygroscopic properties of fire-retardant treated wood-based products including those with fire-retardant coatings.

Products

According to the client:

Spruce was pressure impregnated (vacuum during 20 minutes, pressure during 30 minutes and vacuum during 30 minutes) by the client with FR treatment "HAresil" (HÖP GbR) with the following solution:

One weight unit "HAresil" (corresponding to 0,67 weight HAresil M and 0,33 water) and one weight unit water.

Measured parameters:

Treated spruce: thickness: 21,6-22,0 mm, density: 485-499 kg/m³.

Untreated spruce: thickness 18,4-18,7 mm, density: 473-587 kg/m³ (as reference).

The products were delivered to SP Trä on 15 May (treated spruce) and 23 May (untreated spruce) 2012. The products dimension was about 92x104 mm.

Hygroscopic test

The moisture content was determined by measuring the constant mass according to CEN/TS 15912 at two different humidity conditions: 50 ± 3 % RH at 23 ± 2 °C and 90 ± 5 % RH at 27 ± 2 °C. Thereafter, the specimens were dried in an oven at 103 ± 2 °C.

The weight was measured with balance Snabbvåg/Mettler/PM4800/L

Five specimens were tested for each product. The hygroscopic test was performed between 28 June and 10 August 2012.

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Test results

The test results from the hygroscopic test, CEN/TS 15912, are given in Table 1-2.

Table 1. Test results for treated spruce (“HAresil”).

Specimen	Moisture content %, at 50 % RH and 23 °C	Moisture content %, at 90 % RH and 27 °C	Observations
1	10,6	21,0	No exudation of liquid No salt at surface
2	10,6	21,0	-“-
3	10,6	21,1	-“-
4	10,6	21,1	-“-
5	10,6	21,3	-“-
Average±stdev	10,6 ± 0,0	21,1 ± 0,1	

Table 2. Test results for untreated spruce.

Specimen	Moisture content %, at 50 % RH and 23 °C	Moisture content %, at 90 % RH and 27 °C	Observations
1	10,4	19,5	-
2	10,6	20,1	-
3	10,5	19,7	-
4	10,5	19,7	-
5	10,5	19,8	-
Average±stdev	10,5 ± 0,1	19,8 ± 0,2	

Statement

The test results relate to the behaviour of the test specimens of the products under the particular conditions of the test.

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