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Xikou Industrial Zone, Longyou County, Zhejiang
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Dresden, 09.04.2019

Test Report
Order no. 2218044/pos. 4

Client:	Zhejiang Xinhaiye Bamboo Technology Co., Ltd. Xikou Industrial Zone, Longyou County, Zhejiang, China
Date of order:	04/12/2018
Order position	Laboratory test of resistance against blue-stain fungi according to EN 152 after artificial weathering by QUV
Contractor:	Entwicklungs- und Prüflabor Holztechnologie GmbH Laboratory Unit Biological Testing Zellescher Weg 24 01217 Dresden Germany
Engineer in charge:	Dipl.-Ing. Kordula Jacobs

Dr. Wolfram Scheiding
Head of Laboratory Biological Testing

Task

Determination of the resistance against blue-stain fungi according to EN 152:2011 after artificial weathering by QUV

Test material

Product name:	DASSO DassoXTR exterior strand woven bamboo decking
Producer:	Jiangxi Zhushang Bamboo Industry Co., Ltd. Gaofu modern Bamboo Industrial Park, Zixi County, Jiangxi Province
Delivery date:	4 December 2018

Test performance

Test standard:	EN 152:2011
Test fungi:	*Aureobasidium pullulans* DSM 3497 *Sydowia polyspora* DSM 3498
Specimens:	110 mm × 40 mm × 10 mm (length × width × thickness), each 6 test replicates with and without weathering before the fungal test
Reference timber:	Scots pine sapwood (*Pinus sylvestris*)
Weathering:	4 weeks QUV weathering with cycle 1 according to EN 152 (Annex F)
Sterilization	ionising irradiation ≥ 25 kGy
Incubation period:	6 weeks (13 February 2019 – 27 March 2019)

Results

The summarized results are given in table 1. Single values are not listed, because they were identical for each six replicates. Figure 1 shows the surface of specimens after different test steps. Due to the dark colour of the test material, the fungal growth was analysed more comprehensively by additional microscopic investigation with up to 50x magnification in a reflected light microscope as well as 600x magnification in a transmitted light microscope.

Table 1: Evaluation of the specimens after the fungal test (each 6 replicates)

material	evaluation of the specimens	
	surface*	interior (after cutting twice)
test specimens with prior weathering	0	not blue-stained over the entire cross section
test specimens without prior weathering	0	not blue-stained over the entire cross section
reference specimens	3	completely blue-stained

* Rating of surface of the specimens acc. to EN 152 (visual and microscopic evaluation with up to 600x magnification):

0 Not blue stained: no blue stain can be detected visually on the surface.
1 Insignificantly blue stained: the surface exhibits only individual small blue stained spots none larger than 1,5 mm in width and 4 mm in length, and not more than 5 in number.
2 Blue-stained: the surface is continuously blue stained up to a maximum of one third, or blue stained partially or in streaks up to half the total area.
3 Strongly blue stained: more than one third of the surface is continuously blue stained or more than half is partially blue stained.

Figure 1: Surface of representative test specimens before (left side) and after (right side) 4 weeks of QUV weathering

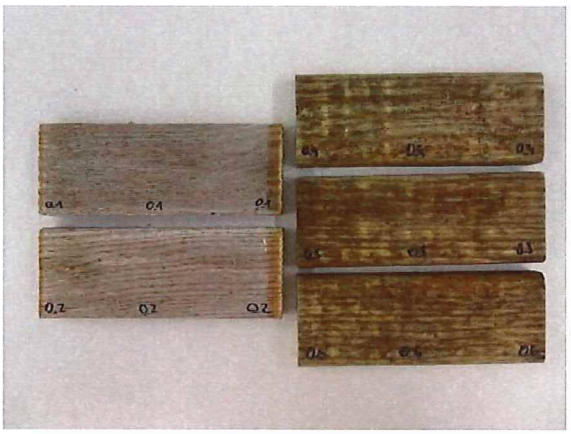

Figure 2: Surface of reference specimens (Scots pine sapwood) after QUV weathering and fungal attack (left side) and after fungal attack without prior QUV weathering (right side)

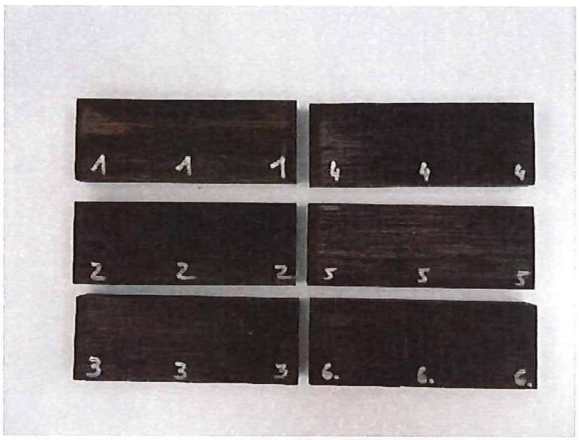

Figure 3: Surface of all test specimens after QUV weathering and fungal attack showing no fungal growth or any blue staining

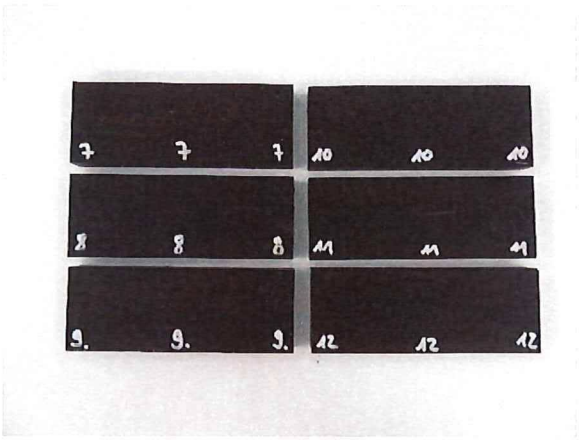

Figure 4: Surface of test specimens after fungal attack without prior QUV weathering showing no fungal growth or any blue staining

Evaluation

The test was valid because the reference specimens of Scots pine sapwood were completely and permanently blue-stained after the fungal attack (rating 3 in the surface evaluation and entirely blue-stained interior). The test material was not infested by blue-stain fungi and achieved the rating "0" in the surface evaluation. Also, there was no fungal growth in the interior of the material.

Conclusion: **The material is resistant against blue-stain fungi also after 4 weeks artificial weathering.**

Dresden, 09.04.2019

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Dipl.-Ing. Kordula Jacobs
Person in charge