Entwicklungs- und Prueflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden · Germany

Schott AG
Dr. Yakup Gönüllü
Otto-Schott-Straße 2
55127 Mainz-Marienborn

Dresden, 14/11/2022
KPLA

Test Report
Order no. 2222058

Client:	Schott AG Otto-Schott-Straße 2 55127 Mainz-Marienborn
Order:	Determination of the mould resistance of a glass coating
Order date:	30/09/2022
Contractor:	Entwicklungs- und Prueflabor Holztechnologie GmbH Laboratory Unit Biological Testing Zellescher Weg 24 01217 Dresden
Engineer in charge:	Dipl.-Biol. Katharina Plaschkies

Dr. Wolfram Scheiding
Head of Laboratory Unit Biological Testing

The test report contains 4 pages. Any duplication of extracts requires the written permission of EPH. The test results refer exclusively to the material tested.

1 Task

The accredited Entwicklungs- und Prueflabor Holztechnologie GmbH was instructed by Schott AG to determine the mould resistance of a glass coating.

NOTE: All numerical values within this document are given with a comma as decimal.

2 Sample material

Test material:	1) coated glass
	2) uncoated glass
Reference material:	Pine sapwood (*Pinus sylvestris*) from the EPH-stock
Sample receipt:	04/10/2022

The client supplied 5 specimens each with the dimensions 100 mm × 75 mm. For the coated glass, the coated side was clearly marked as the test surface.

3 Test performance

Test standard:	ASTM D 3273:2021, Determination of resistance of interior coatings to mould growth; method in climatic chamber.
	Deviations from the standard:
	▪ use of the strain *Penicillium citrinum* ATCC 8506 instead of ATCC 9849 ▪ test temperature: (25 ± 1) °C instead of (32.5 ± 1) °C
Test principle:	Test specimens hang in chambers with high humidity above a soil substrate inoculated with mould spores. The spores are distributed in the chamber, can settle on the test specimens depending on the material properties and lead to an infestation. The degree of infestation is assessed visually according to a defined scheme.
Test chambers:	35-litre plastic boxes
	The test specimens were distributed at 5 boxes in such a way that one box contained 1 test specimen of the test material and 1 reference specimen.
Test fungi:	*Aureobasidium pullulans* DSM 2404 (= ATCC 9348) *Aspergillus niger* DSM 1957 (= ATCC 6275) *Penicillium citrinum* DSM 1179 (= ATCC 8506)
Test climate:	temperature: (25 ± 1) °C; relative humidity in the chamber (95 ± 4) %
Specimens:	dimensions: 100 mm × 75 mm × 10 mm; 5 replicates
Duration of the test:	4 weeks (06/10/2022 – 03/11/2022
Visual assessment:	1× weekly, naked eyes
	A reflected light microscope with up to 50x magnification was used for confirmation of moulds. For better recognition, the surface was stained with methylene blue solution.

4 Validity

Requirement for a proper operation of the chamber: The reference specimens should be achieved a rating of 6 in maximum within 3 weeks.
The test was valid because all reference specimens made of pine sapwood met the requirement (table 1).

Table 1: Rating of the reference specimens after 21 days (rating scheme s. table 2)

no. of specimen	K1	K2	K3	K4	K5
	3	2	2	4	5

5 Result

The ratings of the test specimens are to be seen in table 2.

The coated glass surface was not or very slightly grown at the edge area, respectively (fig. 1).

In contrast, the uncoated glass showed clear growth on up to 30 % of the surface (figs. 2 to 4).

Table 2: Rating of the test specimens after 28 days (The edge area of 10 mm was not included in the rating).

No. of specimen	I	II	III	IV	V
1) Coated glass	10	10	10	10	9
2) Uncoated glass	7	7	8	8	7

Rating	Overgrown area percentage	Rating	Overgrown area percentage
10	no growth	4	51 % until 60 %
9	1 % until 10 %	3	61 % until 70 %
8	11 % until 20 %	2	71 % until 80 %
7	21% until 30 %	1	81 % until 90 %
6	31 % until 40 %	0	100 %
5	41 % until 50 %		

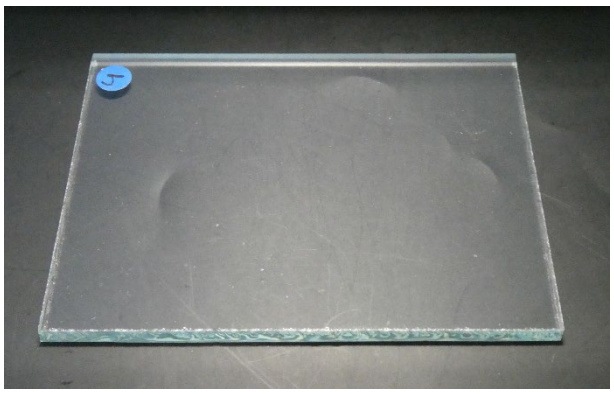

Figure. 1: coated glass after the test: no growth is visible

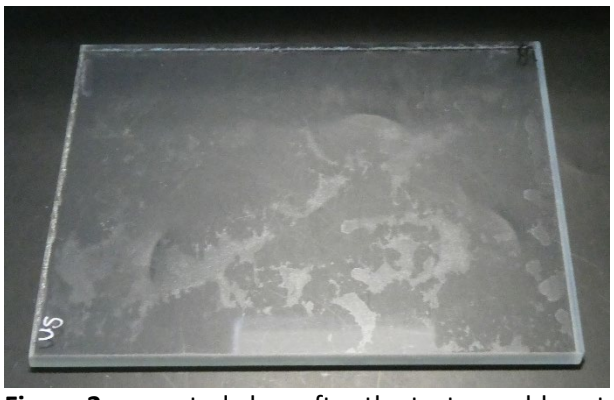

Figure 2: uncoated glass after the test: mould spots are clear visible

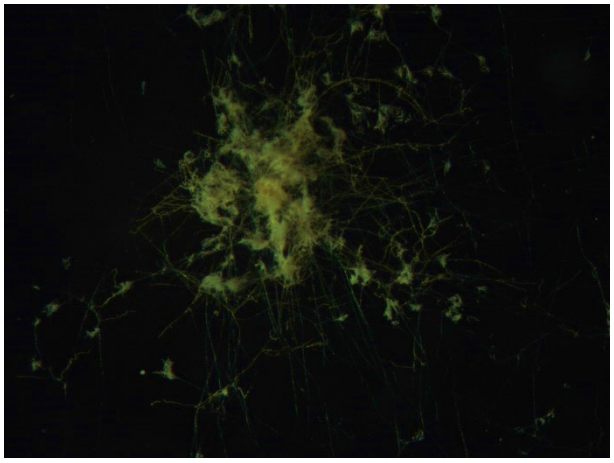

Figure3: microphoto of uncoated glass after the test: yellow fungus mycelium clear visible (reflected light, 30fold magnification)

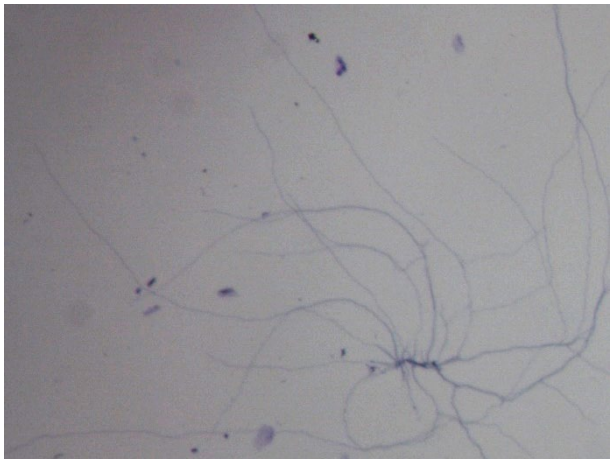

Figure 4: microphoto of uncoated glass after the test and after staining with methylene blue: fungus mycelium clear visible (reflected light, 50fold magnification)

6 Evaluation/Interpretation

The glass coating showed a clear anti-mould effect in the test according to ASTM D 3273.

K. Plaschkies

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Engineer in charge