

REPORT

Contract no.: 1445/2015/1 – HO 29.06.2016
ILA/RAA

Customer: Lengheim
Consulting und Entwicklung GmbH
Bahnstraße 16
2213 Bockfließ

Subject: Artificial weathering of a coating system in a QUV-weathering
tester according to ÖNORM EN 927-6

Date of contract: 12.06.2015

Date of sample delivery: 02.12.2015

Date/Period of service: 02.12.2015 – 08.06.2016

Period of validity: --

Pages: 6

Enclosures: 1 (2 Pages)

1. Order

On 12.06.2015, Lengheim Consulting und Entwicklung GmbH, 2213 Bockfließ, ordered to apply wet samples of coating material, let them dry and condition and to carry out an artificial weathering test according to ÖNORM EN 927-6.

2. Test Material

The test material below was delivered by Mr. Hubert Lengheim to Holzforschung Austria and was placed for disposal for the test:

Wet samples (transparent coating material) under the designation „KaWaTech HMS9“.

3. Test Procedure

The wet samples were applied immediately after delivery on the substrate. The application of coating material on three samples of pine sapwood was carried out by brushing in two layers with intermediate drying, where the application rate of 200 g/m² each was checked by weighing. The remaining coating material was taken back by the customer.

After drying of the coating the samples were conditioned according to the requirements of ÖNORM EN 927-6 and the tests were executed subsequently. The samples were subjected to artificial weathering according to ÖNORM EN 927-6 for 2016 hours in a QUV-weathering tester.

The following examinations were carried out after the exposure for 2016 hours:

- Colour measurements with the parameters d/8 according to the CIE L*a*b*-System at D65/10°
- Gloss measurements at 60°
- Adhesion tests with the cross cut method according to ÖNORM EN ISO 2409
- Flaking
- Cracking
- Chalking
- Blistering
- General appearance

The visual assessments were done according to ÖNORM EN ISO 4628. As described in ÖNORM EN ISO 4628-1, coating defects are rated as follows (Table 1 to Table 3):

Table 1: Values to assess the quantity of defects

Value	Quantity of defects
0	none, i.e. no visible defects
1	very few, i.e. small, barely significant number of defects
2	few, i.e. small but significant number of defects
3	moderate number of defects
4	considerable number of defects
5	dense pattern of defects

Table 2: Values to assess the size of defects

Value	Size of defects
0	not visible under x10 magnification
1	only visible under magnification up to x10
2	just visible with normal corrected vision (up to 0.2 mm)
3	clearly visible with normal corrected vision (larger than 0.2 mm up to 0.5 mm)
4	larger than 0.5 mm up to 5 mm
5	larger than 5 mm

Table 3: Values to assess the intensity of changes

Value	Intensity of change
0	unchanged, i.e. no perceptible change
1	very slight, i.e. just perceptible change
2	slight, i.e. clearly perceptible change
3	moderate, i.e. very clearly perceptible change
4	considerable, i.e. pronounced change
5	very marked change

4. Results

The images in the annex show the initial state of the samples, the state of the samples after 1008 hours (6 weeks) and after 2016 hours (12 weeks) artificial weathering.

In Table 4 the colour differences of the samples caused by artificial weathering are listed. The average colour change ΔE^* caused by artificial weathering resulted in 24.7.

Table 4: Colour change caused by artificial weathering

Sample	Colour change after 2016 hours			
	ΔL^*	Δa^*	Δb^*	ΔE^*
1	-18.2	10.2	9.6	23.0
2	-19.6	11.1	10.6	24.9
3	-21.7	11.6	8.7	26.1
Mean				24.7

In Table 5 the gloss change of the samples caused by artificial weathering can be seen.

Table 5: Gloss change caused by artificial weathering

Sample	Gloss	
	before weathering	after weathering
1	47	42
2	45	53
3	46	46
Mean	46	47

The result of adhesion tests after 2016 hours (12 weeks) artificial weathering is the cross cut value 0. The cutting edges were completely smooth and none of the squares of the grid was flaked off.

In Table 6 the results of visual assessment are listed.

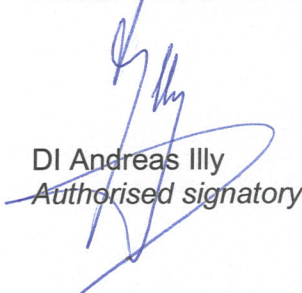
Table 6: Results of visual assessment

Sample	Flaking	Cracking	Chalking	Blistering	Gen. Appearance
1	1	1	0	0	2
2	0	0	0	0	2
3	1	0	0	0	2
Average	0.7	0.3	0	0	2

5. Summary

The tests were carried out with the transparent coating system KaWaTech HMS9 with low diffusion resistance on samples of pine wood with 2016 hours artificial weathering according to ÖNORM EN 927-6. The system showed a few deficiencies according to Table 6. The results of adhesion tests (cross cut method) after artificial weathering showed a very good adhesion of the system.

HOLZFORSCHUNG AUSTRIA




DI Andreas Illy
Authorised signatory



Ing. Thomas Pastler
Technical consultant

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accreditation mark	type of accreditation	procedure/s
	Testing	<ul style="list-style-type: none"> • ÖNORM EN 927-6

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