

REPORT

Contract no.: 360/2014 – HO 20.08.2014
ILA/WEC

Customer: Lengheim
Consulting und Entwicklung GmbH
Bahnstraße 16
2213 Bockfließ

Subject: Determination of
water-vapour transmission according to ÖNORM C 2350,
liquid water permeability according to ÖNORM EN 927-5 and
UV transmission according to ÖNORM C 2350
of coating system KaWaTech

Date of contract: 28.02.2014

Date of sample delivery: 04.04.2014 und 26.02.2014

Date/Period of service: 04.04. – 04.08.2014

Period of validity: 31.08.2017

Pages: 6

Enclosures: ---

1. Order

On 28.02.2014, Lengheim Consulting und Entwicklung GmbH, 2213 Bockfließ, ordered to apply wet samples of coating material and to determine water-vapour transmission according to ÖNORM C 2350, liquid water permeability according to ÖNORM EN 927-5 and UV transmission according to ÖNORM C 2350 on dried and conditioned surface samples of coating system KaWaTech.

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 „KHB9“ and „KHB1“

3. Test Procedure

The wet samples were applied immediately after delivery on the substrate. The application of coating material on wooden samples was carried out by brushing, where the application rate was checked by weighing. The extant/remaining coating material was taken back by the customer.

After drying of the coating the samples were conditioned according to the requirements and the tests were executed subsequently. The tests were proceeded with coatings System “KHB9”. The determination of UV transmission was executed on coating System “KHB9” and “KHB1” by comparison.

3.1. Determination of water-vapour transmission

The determination of water-vapour transmission was carried out according to ÖNORM C 2350, by producing 1.7 mm thick discs from the coated surface of coated panels of spruce wood. These discs were fixed on cups, which were filled with water, using sealing rings. By measuring the mass loss of the cups during storage in a climate room at 20°C and 65 % relative humidity the water-vapour transmission was determined.

3.2. Determination of liquid water permeability

The determination of liquid water permeability was carried out according to ÖNORM EN 927-5 on six coated panels of spruce wood for each coating system with sealed edges and back.

3.3. Determination of UV transmission

To determine the UV transmission free coating films were produced. The coating systems were applied with an applicator blade on glass plates with wet film thicknesses of

200 μm and 250 μm , the film was removed from the glass plates in a water bath. The free coating films were dried in climate room at 20°C and 65 % relative humidity. The determination of UV transmission was carried out on free coating films with a UV-spectrometer according to ÖNORM C 2350. The coating systems “KHB1” and “KHB9” were measured by comparison.

4. Results

Table 1 shows the results of dry film thickness measured with a microscope as mean and standard deviation of 30 single values.

Table 1: Results of dry film thickness measured with microscope

Sample	Dry film thickness [μm]	
	Mean	Standard deviation
KHB9	134	27

4.1. Determination of water-vapour transmission

Table 2 shows the results of the determination of water-vapour transmission as mean and standard deviation of values from five single samples.

Table 1: Results of determination of water-vapour transmission

Sample	Water-vapour transmission [$\cdot 10^{-5}\text{g/cm}^2\text{h}$]	
	Mean	Standard deviation
KHB9	31,6	0,8

4.2. Determination of liquid water permeability

Table 3 shows the results of the determination of liquid water permeability as mean and standard deviation of values from six samples.

Table 2: Results of determination of liquid water permeability

Sample	Liquid water permeability [$\text{g/m}^2\text{72h}$]		Coefficient of variation [%]
	Mean	Standard deviation	
KHB9	160	8	5

4.3. Determination of UV transmission

Figure 1 shows the transmission spectra of the tested coating systems.

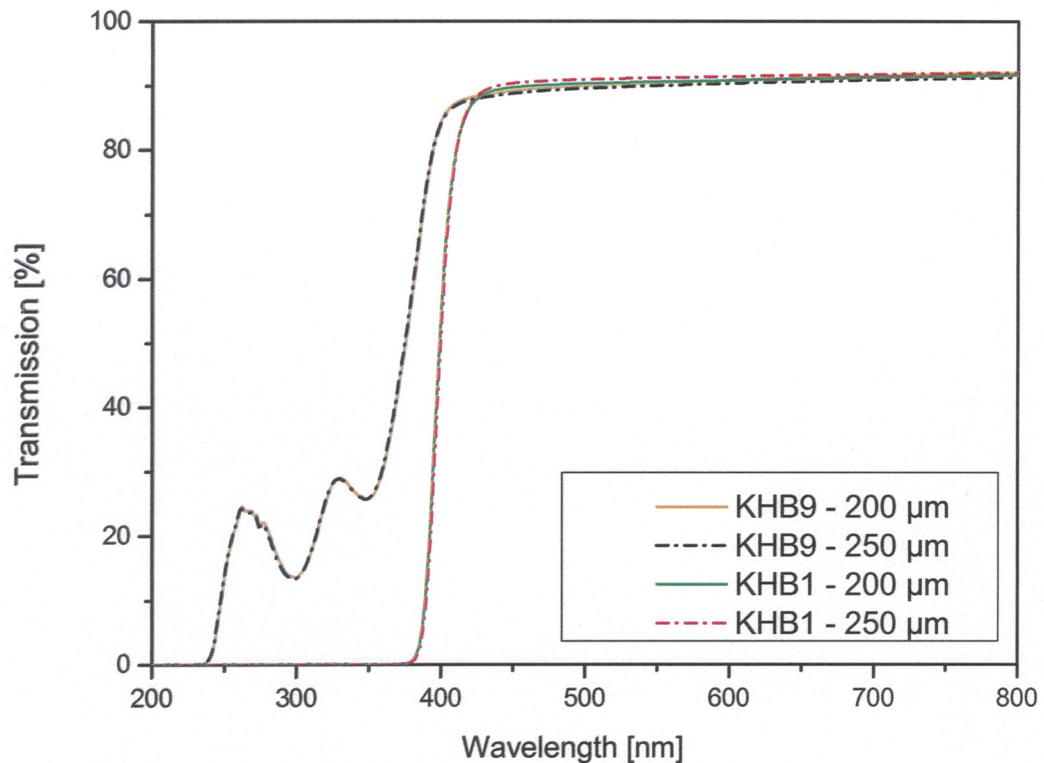


Figure 1: Transmission spectra of coating systems

Table 4 shows the results of UV transmission measurements of free coating films at dry film thickness of 83 µm and 94 µm.

Table 3: Results of determination of UV transmission

Sample	Wet film thickness [µm]	Dry film thickness [µm]	UV transmission [%]
KHB9	200	83	18,82
KHB9	250	94	18,69
KHB1	200	83	0,02
KHB1	250	94	0,02

5. Interpretation

The tested coating system KaWaTech KHB9 showed at the water-vapour transmission test a medium water-vapour transmission. The coating system showed a lower value than the one given in ÖNORM C 2350 (2006), where to the water-vapour transmission of a coating system for stable wooden construction parts for exterior use must not exceed $45 \cdot 10^{-5} \text{g/cm}^2\text{h}$.

Concerning the liquid water permeability, the coating system KaWaTech KHB9 showed a very good moisture protection and fulfilled the requirements of liquid water permeability (liquid water uptake) according to ÖNORM C 2350 (2006), where the liquid water permeability of a coating systems for stable wooden construction parts for exterior use must not exceed 175g/m^2 .

The coating System KaWaTech KHB1 fulfilled the requirements of UV transmission according to ÖNORM C 2350 (2006) of $< 1 \%$ for coating systems for stable wooden construction parts for exterior use.

HOLZFORSCHUNG AUSTRIA





Dr. Gerhard Grull
Authorised signatory and technical consultant



DI Andreas Illy

Accreditation is given for the following procedures.
 It is not allowed to use included accreditation marks for own purposes.

accreditation mark	type of accreditation	procedure/s
	Inspection	<ul style="list-style-type: none"> • ÖNORM C 2350
	Testing	<ul style="list-style-type: none"> • ÖNORM C 2350 • ÖNORM EN 927-5

The results and statements given in this document relate only to the tested materials, the present information and the state of the art at the time of investigation.

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