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Moisture Vapour Transmission Rate

A Report to: Nawkaw Corporation
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4 Pages

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1.0 INTRODUCTION

One sample of film (five specimens) was submitted for determination of moisture vapour transmission rate. The sample was received, logged in and assigned the following Sample Number:

<u>Client Identification</u>	<u>Our Sample Number</u>
Test films prepared with Nawkaw coloured masonry stains	07-04-A0016-1 to -5

2.0 PROCEDURE

All raw data are referenced in Lab Book No. 10873.

The samples were tested in accordance with ASTM E 96-05, "Standard Test Methods for Water Vapor Transmission of Materials", Procedure A, Desiccant Method at 23°C and 50% R.H.

The test specimens were attached to clean glass dishes having an opening of 0.0044 m². Each dish contained approximately 50 grams of dried desiccant. The test specimens were attached to the dishes using a molten wax mixture of microcrystalline wax (60% by weight) and paraffin wax (40% by weight). Four test dishes (containing desiccant) and one 'dummy' test dish (sample attached to dish with no desiccant) were prepared. The 'dummy' was prepared to determine if the sample changed weight during the test period. The prepared dishes were placed in a conditioned room at 23 ± 2°C and 50 ± 5% R.H. (MII #A11354, calibration valid until 2007-09-28). The test dishes were placed in an area covered with a metal hood and a fan was used to produce airflow over the test surface. The dishes were allowed to come to condition overnight before being weighed for the first time. All weights were measured using a four-place balance (MII #B06538,

calibration valid until 2007-03-20). The samples were weighed daily for a period of 220.6 hours, giving a total of nine (9) data points.

The weight change was averaged over the period of the test for each specimen and the water vapour transmission rate was calculated. As the 'dummy' specimen had shown a continuous loss in weight throughout the test, the values were corrected to compensate for this change in the sample. The permeance was calculated using the corrected value.

Water vapor transmission was determined using the following formula:

$$WVT = (G/t)/A$$

G = weight change, grams

t = time, hours, 122.5 hours

G/t = slope of the straight line, g/h

A = test area (cup mouth area), m², 4.4 x 10⁻³ or 1.5 x 10⁻³

WVT = rate of water vapor transmission, g/h m²

The permeance, in g/Pa s m², was calculated as follows:

$$\text{Permeance} = WVT/S(R_1 - R_2)$$

S = saturation vapor pressure at test temperature, Pa, 2.879 x 10³ Pa (from standard reference tables)

R₁ = relative humidity at the source (test chamber for desiccant method), 50%

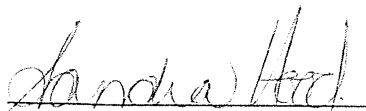
R₂ = relative humidity at the vapor sink, 0%

3.0 RESULTS

TABLE I
Water Vapor Transmission Rate Test Results

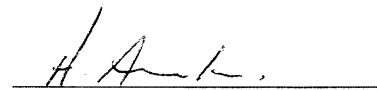
Specimen	Water Vapor Transmission, g/hr m ²	Corrected Water Vapor Transmission, g/hr m ²	Permeance, g/Pa s m ²
1 (blue)	0.338	0.3429	6.7 x 10 ⁻⁰⁸
2 (black)	0.341	0.3457	6.7 x 10 ⁻⁰⁸
3 (yellow)	0.342	0.3467	6.7 x 10 ⁻⁰⁸
4 (red)	0.308	0.3128	6.1 x 10 ⁻⁰⁸
Dummy (white)	-0.004		
Average (excluding dummy)	0.333	0.337	6.6 x 10⁻⁰⁸

Reported by:



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