

Certificate of Test

Title:

JOTUN UAE LIMITED

**Determination of Moisture Vapour
Transmission Rate of
Jotashield Tex Ultra After 2500
Hours Accelerated Weathering**

Certificate of Test No: **7890**

Client's Name & Address:

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United Arab Emirates**

Our Ref: **N950/1.164.8**
Job No: **3DX2**
Your Ref: **-**
Date: **12 April 2004**
Date Sample(s) Received: **16 January 2002**
Sample(s) Received From: **Jotun UAE Ltd**

Sample No(s): **129543**

Tested By:  **K Lucas**

Authorised By:  **A T Blake**

Job Title: **Manager, Materials Test Laboratories**

For
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1. SAMPLE DESCRIPTION AND ANALYSIS REQUESTED

One litre of Jotun Siloxane Acrylic primer and one litre of Jotashield Tex Ultra were received in the Laboratories. When received, the samples were designated with unique sample reference numbers, which were used for our own identification purposes. No certificates of sampling were received.

The moisture vapour transmission rate of the coating system after 2500 hours QUV accelerated weathering was to be determined.

2. METHOD

2.1 Preparation

The coating system was brush applied to previously characterised cartridge paper using a weighing procedure to achieve the coverage rate required. A flood coat of Jotun Siloxane Acrylic Primer was applied and allowed to dry for a minimum period of 6 hours. Two coats of Jotashield Tex Ultra were then applied at a rate of 300g/m²/coat with a minimum drying period of 24 hours between coats. The second coat was applied at 90° to the first. The sample was allowed to dry in the laboratory for three days and was then conditioned for a minimum of 28 days at 23±2°C and 60±5% relative humidity.

2.2 Accelerated Weathering – 2500 hours

The sample was then placed in a QUV accelerated weathering device under an exposure regime (QUV-A) designed to simulate UK conditions, 4 hours UV at 50°C followed by 4 hours condensation at 40°C. The sample was allowed to dry in the laboratory for three days and was then conditioned for a minimum of 28 days at 23±2°C and 60±5% relative humidity.

2.2 Determination of Moisture Vapour Transmission

The test was carried out at 23±2°C for the coated specimen after accelerated weathering. A disc was sealed in a Payne permeability cup such that both faces were exposed. The coated face was exposed to a dry atmosphere (0% RH) and the other face to water vapour (100% RH).

The test cup was weighed periodically over the test interval. Equilibrium conditions were achieved after approximately 4 days and the subsequent steady state flow of water vapour was calculated from the rate of weight loss.

The diffusion coefficient with respect to water vapour for the coating (D_{H_2O}) was calculated from the measured flux for the coated tile (g/m².24hr) using Fick's law of diffusion and Crank's equation.

3. RESULTS**MOISTURE VAPOUR TRANSMISSION RATE**

COATING SYSTEM	Tex Ultra QUV Weathered for 2500 hours
Specimen No.	129543A
Flux (g/m ² .24hr)	35.02
D _{H₂O} (cm ² s ⁻¹)	3.61E-05
μ-value	7.04E+03
SD (m)	1.3
Mean DFT (μm)	189

Date tested: 09/10/03 – 20/11/03

Notes

- (i) The SD-value (equivalent air layer thickness) is dependent on film thickness and is calculated above for the mean of the measured dry film thickness obtained from a spare sample.
- (ii) D_{H₂O} for the Cartridge Paper (thickness = 192μm) is 0.00043 (Units of D are cm²s⁻¹)
- (iii) The criteria for an acceptable anti-carbonation coating is for SD to be equal to, or less than, 4m.

END OF CERTIFICATE
