

PERMEABILITY LABORATORY TEST REPORT

Laboratory Report Number: LR2370B
Customer Reference Number: Hydroprufe 6000
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Prepared For: FIS Products
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Sample Identification

Samples of black membrane labeled Hydroprufe 6000 Batch SHB21024 plain and jointed with HCR Butyl Tape and HCR Foil Girth sampled 23.8.21 were received for testing. Due to limitations of equipment, this joint had been prepared with an overlap of 40mm and overall joint width of 60mm.

Equipment used

Versaperm Dynamic WVTR Meter MK V

Versaperm Permeability Meter MK IV, configured to run ISO15105-1 differential pressure method

Test Conditions

Sample Conditioning: Samples were stored for 2 days in a desiccator at 23°C.

Temperature: 23°C

Humidity for WVTR 100%RH.

Test Gases: 100% Methane N2.5, 100% CO2 N4.5 grade.

Atmospheric Pressure: Tested over several days pressure ranged 999-1030 mbar.

Test Date: Completed 20/09/2021

Sample Dimensions

Trade Name/ Identification	Minimum Thickness / mm	Maximum Thickness / mm	Mean Thickness / mm
Hydroprufe 6000 Batch SHB21024	565	565	565
Jointed with HCR Butyl Tape and HCR Foil Girth	2950	3150	3050

Test Methods

Water Vapour Transmission Rate.

This test was carried out using the method ISO 15106 *Plastics -- Film and sheeting -- Determination of water vapour transmission rate -- Part 3: Electrolytic detection sensor method*. After 48 hours, the sample was placed in the film-measuring chamber and controlled temperature environment, with distilled water on one side of the sample and dry nitrogen on the other side of the sample. Water vapour passing through the sample was swept to the electrolytic water vapour sensor downstream and the permeation rate calculated. The test was continued until a stable reading was achieved. The samples were measured in triplicate and averaged. The measuring chamber area was 50cm² (diameter 80mm).

Gas Transmission Rate.

This test was carried out using the method ISO 15105-1 *Plastics - Film and sheeting - Determination of gas-transmission rate - Part 1: Differential-pressure methods*. After conditioning, each sample was placed in the standard film measuring chamber and controlled temperature environment, evacuating the gas from both sides of the sample, then supplying the test gas upstream of the sample at 1 bar differential pressure. The pressure downstream was monitored as the rate of change is proportional to the permeation rate. The samples were measured in triplicate and averaged. For all samples the measuring chamber area was 50cm² (diameter 80mm).

Test Results

Trade Name/ Identification	Water Vapour Transmission Rate (WVTR)/ g/m ² .day	Carbon Dioxide Transmission Rate (OTR)/ ml/m ² .day.atm	Methane Transmission Rate (OTR)/ ml/m ² .day.atm
	23°C / 100%RH		
Hydroprufe 6000 Batch SHB21024	0.214	30.7	19.9
Jointed with HCR Butyl Tape and HCR Foil Girth	0.148	25.6	16.7

Conclusions

The film and joints demonstrate a low permeation rate under the test conditions.

