Tyvek & Other Vapour Open Technologies

THE DUPONT™ TYVEK®
BUILDING KNOWLEDGE CENTRE

www.construction.tyvek.co.uk

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Tyvek.

Water Resistance

What: *A breather membranes primary function to act as a secondary water shedding layer behind the cladding*

Why: *Some constructions have potentially perishable frames that need protection from any moisture that exists in the cavity behind the cladding*

How: *Breather membranes should show excellent water resistance, but with significant vapour permeability to guard against increasing the risk of condensation*

Air Leakage Barriers

Some Breather Membranes can also be used as either the primary or secondary airtightness line

Advantage: Distance from the internal lining protects the airtightness line from occupants and maintenance.

Requirement: The membrane must have a low permeability to the passage of air. (Expressed as m3/m2/hr @ 50Pa.) Also must be installed with sealed laps, perimeters and fixing penetrations.

Lifetime UV Resistance

Why: Many cladding systems may have open joints between panels. This allows transmission of UV radiation to the layers behind including the breather membrane.

Functional Requirements: The breather membrane should have enhanced UV and Water resistance to enable it to cope with greater exposure and associated loads

Products – Tyvek® UV Façade ™

Improved Fire Performance

Why: In buildings there is a need to consider reaction to fire. Dependant on location the breather membrane may be at risk of ignition and therefore improved fire performance is beneficial or required.

Limitations: Breather membranes are not fire barriers

Product – Tyvek ® Firecurb Housewrap ™

Radiant Barriers & Reflective Members

Why: Timber/Metal frame buildings have low inertia. Low emissivity Breather membranes can be used to keep the building warmer in winter and cooler during the summer.

Calculable Benefits: Reflective membranes where used correctly can directly impact U-values and subsequently whole building calculations

Products – Tyvek® Reflex ™
- Tyvek ® e-Guard W1™

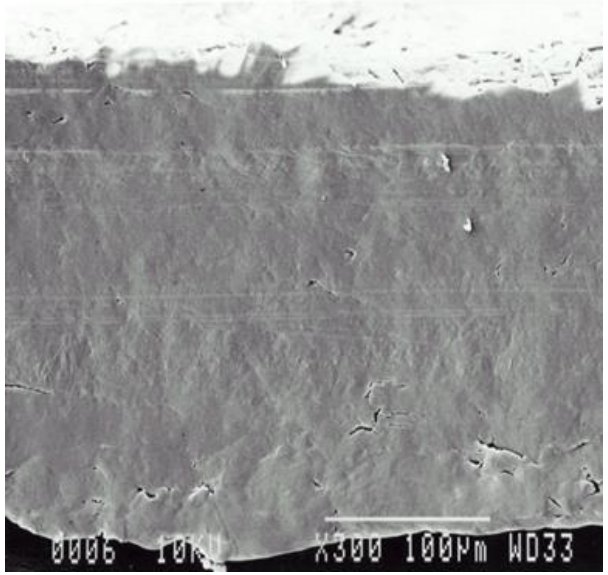
1. Different technologies for diffusion open underlays

- *Today we know 6 different technologies to produce diffusion open membranes:*
- **1. Tyvek®, micro-porous nonwoven (flash-spun-bond technology)**
- **2. Microporous film, reinforced with nonwoven (3- or 4-layer)**
- 3. Coating with nonwoven support
- - Acrylic coating
- - TPU coating
- 4. Monolithic film, reinforced with nonwoven (3-layer)
- 5. Microperforated film (reinforced)
- 6. SMS technology (nonwoven, melt-blown-nonwoven, nonwoven)

2. Tyvek® vs. 3-layer microporous (product thickness)

3-layer microporous product

Tyvek®, microporous nonwoven
(flash-spun-bond technology)

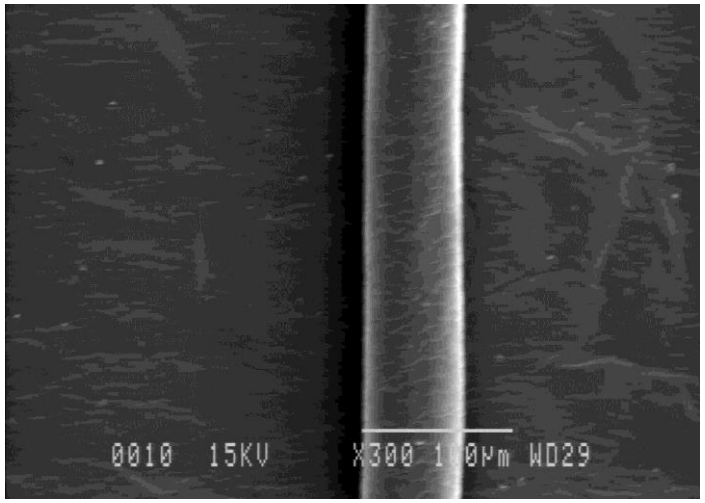


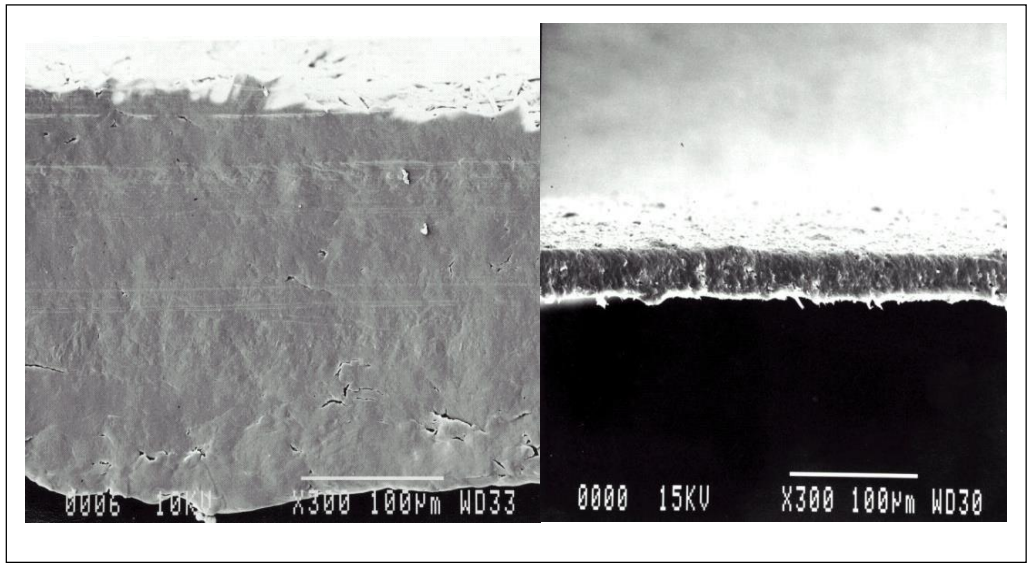
3. Tyvek® vs. 3-layer microporous (functional layer)

Functional layer thickness of different underlays:

microporous films:	*11-70 µm (most 25-30)*
Tyvek® Solid:	*220 µm*
Tyvek® Soft/Housewrap:	*175 µm*
Tyvek® Supro:	*220 µm*

Human hair:	*50-100 µm*
Hair Carlo Weber:	*70 µm*





Advantages of Tyvek®

product thickness = functional layer thickness*

→ excellent robustness
→ Low sensibility to degradation

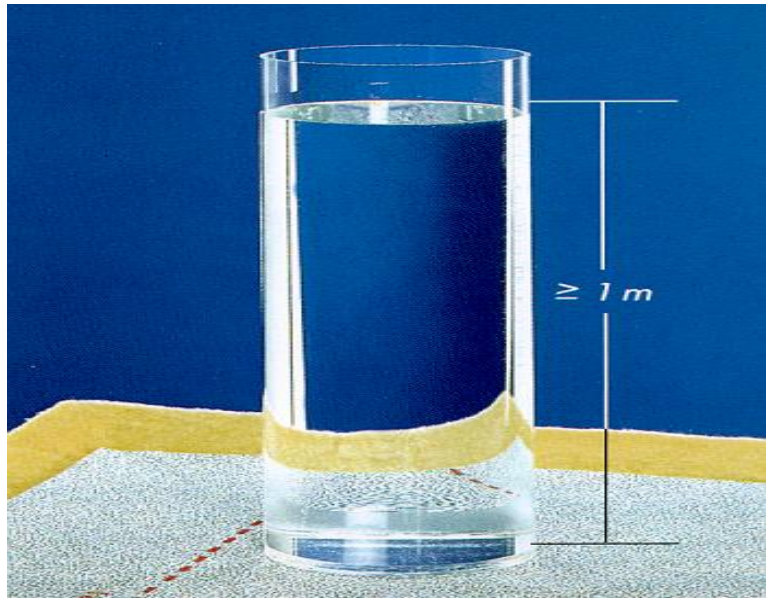
* except for Tyvek ® laminates

4. Most important functionality property for an underlay

Definition of an underlay:

underlay = second water shedding over the roof lifetime

→ That means the underlay needs to protect the building from water infiltrations when the first water shedding level is failing (cracks in tiles, wind driven small amount of rain infiltration, ….).



→ Watertightness over time is the crucial property for underlays

5. Lack of transparency of 3-layer underlays

- **Technical sales is mainly driven by mechanical properties and unit weight**
- **Often it is also the product thickness used for quality assessment**
- **But**
- **it is the functional layer thickness being relevant for the product quality**
- **lack of information on the functional layer (thickness, nature of polymer, microporous/monolithic/melt-blown, UV & Heat stabilised, ….)**

Tyvek® is different

→ example of common used description: **Polyolefin composite**

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Detailed results of 36 tested roof underlays

AFTER > 20 YEARS: TYVEK® ≥ 94% WATERTIGHT

AFTER < 10 YEARS: CHEAP PRODUCTS ONLY 21% WATERTIGHT

Age (years)	Product description	Weight gr/m²	Watertight* yes/ no
5	Coated material	120	×
5	Coated material	120	×
7	Coated material	190	✓
8	Coated material	160	✓
8	Coated material	200	✓
8	Multi-layer (microporous film)	145	×
9	Multi-layer (microporous film)	150	×
9	Multi-layer (microporous film)	125	×
9	Multi-layer (microporous film)	145	×
9	Coated material	140	×
9	Coated material	140	✓
9	Multi-layer (microporous film)	145	×
9	Multi-layer (microporous film)	125	×
8	Multi-layer (microporous film)	135	×
8	Multi-layer (microporous film)	135	×
6	Multi-layer (monolithic film)	150	×
8	Multi-layer (microporous film)	125	×
8	Multi-layer (microporous film)	112	×
8	Multi-layer (microporous film)	120	×
21	Tyvek®	60	✓
21	Tyvek®	137	×
21	Tyvek®	137	✓
21	Tyvek®	137	✓
21	Tyvek®	137	✓
22	Tyvek®	137	✓
22	Tyvek®	137	✓
22	Tyvek®	60	✓
22	Tyvek®	137	✓
23	Tyvek®	60	✓
23	Tyvek®	137	✓
23	Tyvek®	137	✓
23	Tyvek®	60	✓
23	Tyvek®	60	✓
23	Tyvek®	137	✓
23	Tyvek®	137	✓
24	Tyvek®	137	✓

THINK TWICE,
BUILD ONCE,
TRUST TYVEK®

* Functional as second water shedding

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LCA, EPD and Responsible Sourcing

EPD – Environmental Product Declaration

Responsible Sourcing

- Waste Packaging Reporting
- Environmental/Quality management Systems
- Environmental, Social, Ethics, Product Stewardship, Health & safety.

We generate documents to report to customers and will try to fulfil any extra requirements you may have.

Global Megatrends

60% Solid Landfill is from construction waste.

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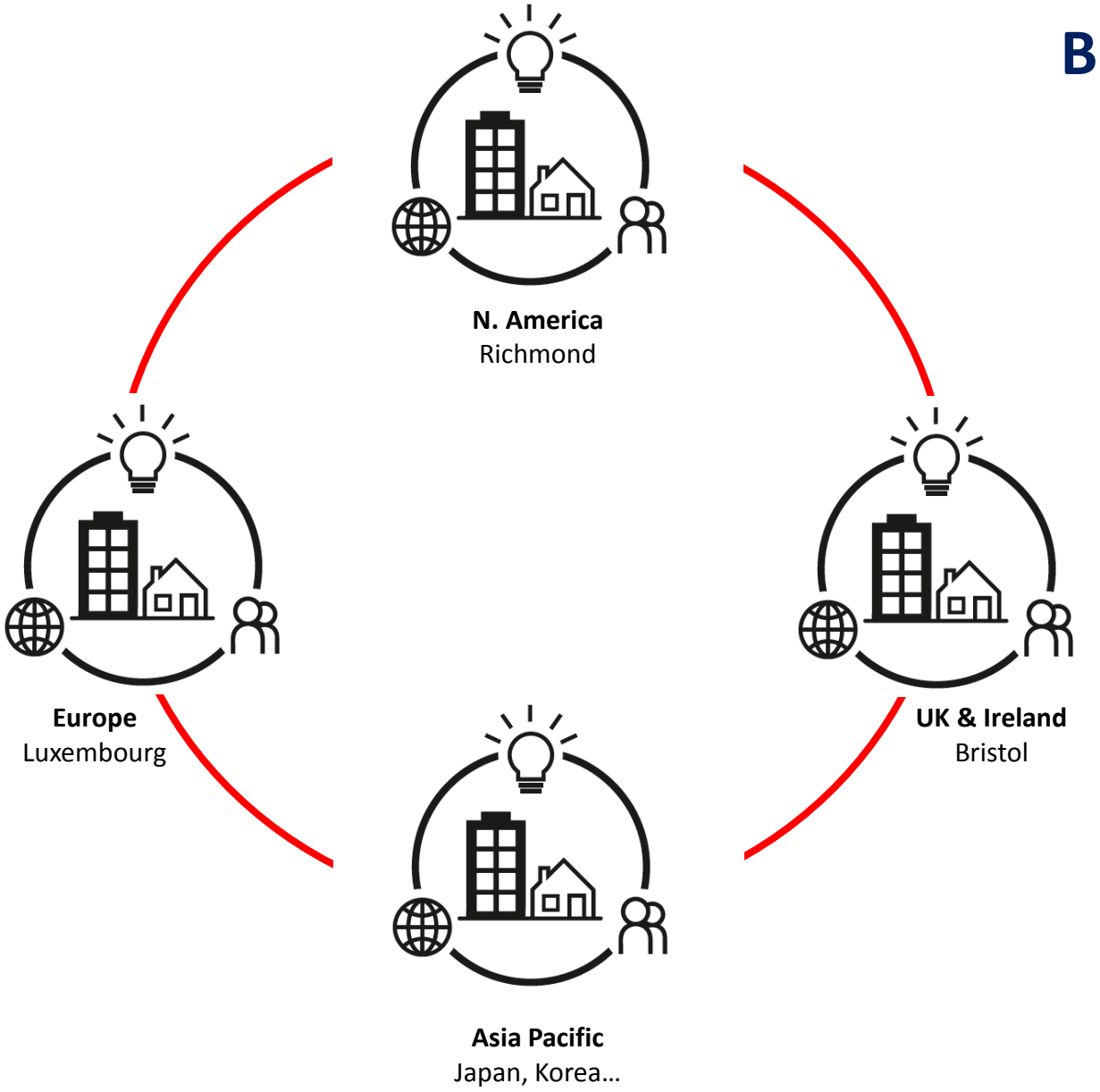
BUILDING KNOWLEDGE CENTRES

A Knowledge Sharing Network



- **Technical Expertise**
- **Project Support**
- **Innovations and Product Development**
- **Product and Application Advice**
- **Specification Guidance**
- **On-site collaboration**
- **Problem solving**
- **Training**

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Q&A

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