The simple and cost effective way to reduce air leakage, maximise thermal performance and prevent harmful condensation.

High performance VCL’s designed for use within insulated metal sheeted and single ply membrane roofs.
Monarflex
Vapour Control Layers

Why a Vapour Control Layer?

The problem

Many roofs are at risk of failure due to condensation forming within the roof structure.

Condensation occurs when the air temperature falls to the dewpoint and the air becomes saturated.

Sources of condensation include

■ Water enclosed in the building during construction
■ Internal air
■ External air entering between the roof cladding and the lining

Whatever its source, condensation can lead to serious damage.

The Building Regulations require provision to prevent excessive condensation in roofs and roof voids (Regulation F, 1995).

Advice on meeting the Regulations is contained in the associated Approved Documents. Guidance is also contained in BS 5250:1989: ‘Code of practice for the control of condensation in buildings’ and in the BRE report ‘Thermal insulation: avoiding risks’.

The risk of condensation can be reduced or avoided by

■ Removal or reduction of water vapour produced in the building
■ Maintaining the construction above the dewpoint temperature
■ Preventing water vapour reaching cold layers of the construction

The solution

The most effective way to avoid condensation in roofs is to prevent as much of the water vapour as possible reaching the cold side of the thermal insulation.

This can be achieved by providing a Monarflex vapour control layer on the warm side of the thermal insulation while ensuring the vapour resistance of the construction reduces progressively from inside to outside. In some cases a breather membrane such as Monarflex SP400 may be required on the cold side of the insulation.
Why a Monarflex Vapour Control Layer?

Proven Performance
Icopal is one of Europe’s leading manufacturers of reinforced polythene based membranes for the construction industry with over 30 years experience in the design, development and manufacture of industry leading solutions that include products now universally accepted as the industry standard, proven over and over again in use.

Quality Assurance
All Monarflex products are manufactured under strict quality guidelines. As part of our commitment to the highest standard of quality and service, Icopal is registered to BS EN ISO.

Technical Support
To assist specifiers and contractors, Icopal offers FREE technical support and advice on all aspects of waterproofing and membrane specification and installation. Our service includes the provision of detailed CAD drawings, complete system specifications and a telephone advice line.

For further information call 0161 865 4444 or visit www.icopal.co.uk

Features and Benefits of Monarflex VCL’s

- Monarflex multi-layer VCL’s are manufactured from virgin polyethylene with built-in reinforcement grids of HDPE. Some also have a layer of aluminium foil for higher water vapour resistance performance.
- The reinforcement grids give great strength and tear resistance, producing membranes which are stable when laying and during the sheet or spacer fastening process.
- Monarflex VCL’s are thermally stable from -40ºC to +75ºC. This ensures the membranes retain their integrity when being installed or used in extreme temperatures.
- Monarflex VCL’s are suitable for most roof types and building uses from Monofilaments for buildings with low to medium humidity to Reflex 275 for buildings with high humidity such as textile plants, swimming pools, leisure centres and sports halls.
Monarflex Vapour Control Layers

Product Range

**Reflex 275**
A five layer exceptionally high performance polyester reinforced polyethylene membrane with aluminium foil for use in buildings with high humidity including sports halls, swimming pools and leisure centres.

**Product Data**

<table>
<thead>
<tr>
<th>Colour</th>
<th>Blue top surface, grey underside</th>
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<tbody>
<tr>
<td>Roll size / weight</td>
<td>2m x 25m / 17kg</td>
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<tr>
<td>Thickness</td>
<td>0.35mm</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>8.0kN/m</td>
</tr>
<tr>
<td>Moisture vapour</td>
<td>0.005gm² 2-24hr</td>
</tr>
<tr>
<td>Water vapour</td>
<td>43,000 MNsq⁻¹</td>
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</tbody>
</table>

**Monofilament 250**
A three layer high performance polyethylene reinforced membrane for use in buildings with low to medium humidity.

**Product Data**

<table>
<thead>
<tr>
<th>Colour</th>
<th>Clear, black reinforcing grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll size / weight</td>
<td>2m x 50m / 25.1kg, 4m x 50m / 50.5kg</td>
</tr>
<tr>
<td>Thickness</td>
<td>0.25mm</td>
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<tr>
<td>Tensile strength</td>
<td>5.9kN/m</td>
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<tr>
<td>Moisture vapour</td>
<td>0.4gm² 2-24hr</td>
</tr>
<tr>
<td>Water vapour</td>
<td>530 MNsq⁻¹</td>
</tr>
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</table>

**Monarflex Netofol**
A three layer polyethylene reinforced membrane for use in buildings with low to medium humidity.

**Product Data**

<table>
<thead>
<tr>
<th>Colour</th>
<th>Transparant blue, black reinforcing grid</th>
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</thead>
<tbody>
<tr>
<td>Roll size / weight</td>
<td>2m x 50m / 20kg</td>
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<tr>
<td>Thickness</td>
<td>0.2mm</td>
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<tr>
<td>Tensile strength</td>
<td>3.5kN/m</td>
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<tr>
<td>Moisture vapour</td>
<td>0.6gm² 2-24hr</td>
</tr>
<tr>
<td>Water vapour</td>
<td>350 MNsq⁻¹</td>
</tr>
</tbody>
</table>
Accessories

Monobond Tape
A high performance double sided tape for effective jointing of Vapour Control Layers.

Features and benefits
- Specially formulated for applications at temperatures down to -12°C
- Makes impermeable waterproof seals at laps to ensure overall vapour resistance of the membrane
- Remains permanently flexible
- Quick and easy joining of side and end laps
- Adheres to most construction materials including concrete, steel and timber

Product Data

<table>
<thead>
<tr>
<th>Colour</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>2mm</td>
</tr>
<tr>
<td>Roll length/width</td>
<td>15mm x 24mm</td>
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<tr>
<td></td>
<td>30mm x 24mm</td>
</tr>
<tr>
<td></td>
<td>70mm x 15mm</td>
</tr>
</tbody>
</table>

Installation and Sealing

Monarflex vapour control layers must be laid with minimum 150mm laps and sealed with Monoband Tape. All penetrations, such as pipes and vents, must also be sealed with an appropriate sealant tape.

Refer to the separate Monobond Tape leaflet for preparation and installation details to other materials and structures.

All Monarflex vapour control layers have 150mm overlap guidelines printed on both edges throughout the rolls.

Monarflex vapour control layers are resistant to tears and punctures. Any mechanical damage which does occur during installation should be repaired with a patch of the membrane fixed in place by a suitable sealing tape.

Once the roof is finished there is not usually any need for maintenance of the VCLs.

Site Work

Monarflex vapour control layers are delivered to site in individually shrink-wrapped packages, each clearly labelled with the company name, the product name and size of roll.

Packages should be stored on their sides on a clean, dry surface.

Monarflex vapour control layers contain no toxic additives, are non-hazardous to health and can be handled without protective clothing. Coshh data sheets are available.

NBS SPECIFICATION CLAUSES

Reflex 275
K31 Metal Profiled/Flat Sheet Cladding/Covering
261A Vapour Control Membrane
- Manufacturer: Icopal Limited.
- Product reference: Monarflex Reflex 275.
- Vapour resistance (minimum): 43000 MNs/g.
- Continuity: No breaks, and with the minimum of joints.
- Penetrations and abutments: Seal to vapour control membrane with tape. Achieve full bond.
- Laps: Not less than 150 mm, seal with tape. Achieve full bond.
- Tape: Double sided sealant with vapour resistivity not less than the vapour control membrane.
- Size: 15mm x 2m Monobond LT double sided tape for all joints and penetrations.
- Repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges.

Monofilament 250
K31 Metal Profiled/ Flat Sheet Cladding/Covering
261A Vapour Control Membrane
- Manufacturer: Icopal Limited.
- Product reference: Monofilament 250.
- Vapour resistance (minimum): 530 MNs/g.
- Continuity: No breaks, and with the minimum of joints.
- Penetrations and abutments: Seal to vapour control membrane with tape. Achieve full bond.
- Laps: Not less than 150 mm, seal with tape. Achieve full bond.
- Tape: Double sided sealant with vapour resistivity not less than the vapour control membrane.
- Size: 15mm x 2m Monobond LT double sided tape for all joints and penetrations.
- Repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges.

Monarflex Netofol
K31 Metal Profiled/ Flat Sheet Cladding/Covering
261A Vapour Control Membrane
- Manufacturer: Icopal Limited.
- Product reference: Monarflex Netofol.
- Vapour resistance (minimum): 350 MNs/g.
- Continuity: No breaks, and with the minimum of joints.
- Penetrations and abutments: Seal to vapour control membrane with tape. Achieve full bond.
- Laps: Not less than 150 mm, seal with tape. Achieve full bond.
- Tape: Double sided sealant with vapour resistivity not less than the vapour control membrane.
- Size: 15mm x 2m Monobond LT double sided tape for all joints and penetrations.
- Repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges.
Monarflex Vapour Control Layers

Design and Installation

Monarflex vapour control layers should be fully supported by the metal lining on the warm side of the thermal insulation.

It is essential to form a vapour tight seal wherever the vapour control layer is penetrated, for example by pipes or ducts. This can be achieved by cutting a neat circular hole slightly smaller than the penetration, stretching the material over to produce a tight fit and sealing around the penetration with a suitable sealing tape.

All joints in the vapour control layer must be lapped (minimum 150 mm) and sealed with Monobond Tape. A tight seal can be achieved by compressing the lap with a wallpaper roller. All Monarflex vapour control layers have 150mm overlap guidelines printed on both edges throughout the rolls.

At perimeters, the vapour control layer should be dressed up abutments, parapets, upstands, etc. and, ideally, be sealed to the vertical structure with an appropriate sealant tape such as Monobond Tape.
Single Ply Membrane Roofs

Monarflex vapour control layers should be fully supported by the deck on the warm side of the thermal insulation.

It is essential to form a vapour tight seal wherever the vapour control layer is penetrated, for example by pipes or ducts.

All joints in the vapour control layer must be lapped and sealed with Monobond Tape.

At perimeters, abutments, parapets and upstands the vapour control layer should ideally be sealed to the vertical structure and turned back onto the upper surface of the insulation board, where it will be lapped by the water proofing membrane.
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Total building protection from a single source
When you deal with Icopal you’ll enjoy all the advantages of sourcing a full range of top brand products from one supplier

Protection for flat roofs
- Built up roof systems
- Single ply roof systems
- Green roof systems
- Liquid waterproofing systems
- Fire protection roofing systems
- Roofgard accessories

Protection for pitched roofs
- Warm & cold pitched roof systems
- Breather membranes
- Vapour control layers
- Non-permeable underlays

Sound protection
- Acoustic systems

Structural protection
- Damp proof membranes
- Damp proof courses and cloaks
- Containment membranes
- Gas control systems
- Tanking/below ground waterproofing

Protection for people and the worksite
- Standard and fire retardant scaffold sheeting
- Fall protection safety systems
- Edge protection safety systems

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