

HOUSEPLANSDIRECT TECHNICAL GUIDES

VAPOUR CONTROL LAYERS EXPLAINED

A complete guide to vapour resistance, airtightness and moisture-safe envelope design



A continuous vapour control layer limits moisture movement and is sealed at every junction and penetration.

NINE-PART PUBLICATION EDITION

Principles · Materials · Moisture · Position · Design · Installation · Compliance · Defects · Inspection

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About this guide

This guide explains vapour control layers (VCLs) in domestic walls, roofs and floors in England. It covers vapour diffusion, air leakage, material properties, layer position, junctions, services, variable-resistance membranes, moisture assessment, installation and inspection. A VCL is part of a complete envelope: the project moisture design, BS 5250 assessment, product compatibility and Building Control requirements always take precedence.

SCOPE VCL material, vapour resistance, position, junctions and accessories are project-specific. Use the complete moisture assessment and compatible system information. Figures are explanatory and must not be scaled.

Part 1 – What Is a Vapour Control Layer?

A defined layer that limits water-vapour movement through construction

A VCL is installed on or near the warm side of insulation to reduce vapour diffusion into colder layers. Many membrane VCLs are also detailed as the air barrier, but vapour control and airtightness are different functions. The required resistance and position depend on the whole build-up, indoor moisture, climate and drying potential; more vapour resistance is not automatically safer.



Figure 1 — Continuous vapour and air-control layer through wall, roof, floor and openings.

1.1 Principal components

Component	Primary role
VCL membrane	Limits vapour diffusion through the insulated assembly.
Tapes / sealants	Join laps and connect the layer to stable substrates.
Collars / grommets	Seal pipes, ducts and cables through the membrane.
Service void	Reduces penetrations and protects the completed layer.
External drying layer	Supports the moisture strategy beyond the insulation.

1.2 Benefits and limitations

- Can reduce interstitial condensation risk when specified for the complete construction.
- A sealed membrane can also provide a clear, testable airtightness layer.
- Does not replace ventilation, rain control, dry materials or correct external layers.
- Incorrect position, incompatible tapes or unsealed penetrations can concentrate moisture.

KEY PRINCIPLE Design one continuous vapour-control layer for the complete envelope, then support and seal every lap, edge, opening and penetration with compatible components.