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CI/SfB (27.9) Ln6 (K2)	

Specification for design & installation

www.powerlon.com

Powerlon® VCL

Revision 1.0 August 2004

Vapour Control Layers

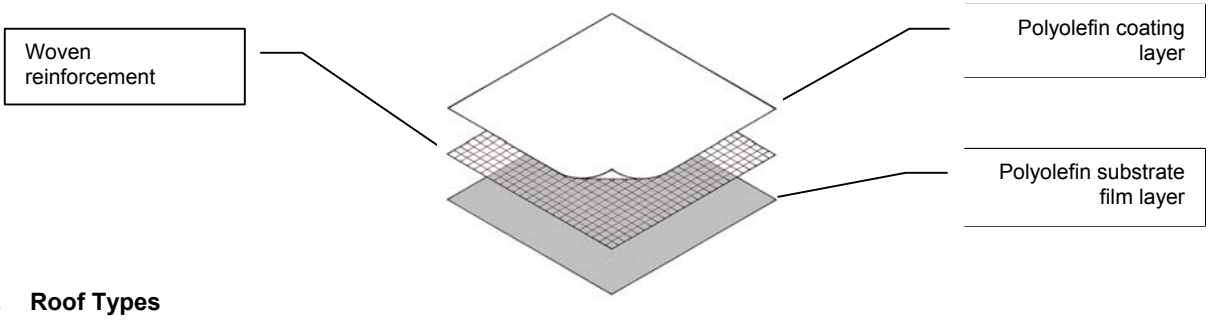
Powerlon VCLs are flexible polyolefin Vapour Control Layers incorporating a woven reinforcement to provide dimensional stability. They are normally supplied in rolls that are joined on-site using Powerbond double-sided adhesive tapes. Powerlon VCLs are also suitable for Damp Proof Membranes.

Introduction

Powerlon Vapour Control Layers are installed on the warm side of the insulation. Where applicable, the thermally reflective foil side should face to the warm side, away from the insulation. Compatibility of Powerlon VCLs with insulation and roofing materials is good due to its inert chemical composition. VCLs made of PVC for example, incorporate plasticisers that migrate out when they come into contact with bituminous felts. This leads to premature hardening of the membrane.

Design details

1. **Continuity** - Powerlon VCLs barriers should be continuous over the whole plan area of the structure. All laps should be sealed with an extruded Powerbond butyl sealing tape. It is essential that all surfaces are clean and dry. The number of joints should be kept to a minimum by using the full width of the membrane. A double row of 15mm Powerbond butyl sealing tape spaced 75mm apart is recommended for overlap sealing.



2. **Roof Types**

   a. Cold Roofs

   Cold roofs with the VCL draped between purlins with the insulation above are harder to seal at the laps. Consideration should be given to supporting the laps. In high-risk areas a rigid lining sheet is recommended throughout to support the VCL.

   b. Warm Roofs

   Sealing the VCL in warm roofs is much easier as it is supported by the structural deck directly beneath. The butyl sealing tape allows for any slight expansion or contraction movements in the decking.

   c. High Risk Roofs

   The NFRC Profiled Sheet Metal Roofing & Cladding - A Guide to Good Practice suggests that the Water Vapour Resistance of a VCL within high-risk roofs should be at least 500 MNs/g.

3. **Service penetrations** - Service penetrations should be kept to a minimum. Airtight seals are required around each point of entry. Particular attention is required to sealing all penetrations such as soil pipes, vent pipes and roof lights as well as the roof perimeter.

4. **Timber frame designs** – Timber frame fixings should not puncture the barrier.

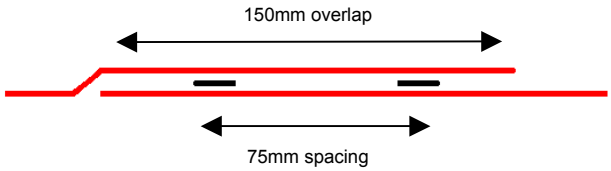
5. **Method** – Powerlon VCL installation requires attention to detail and workmanship in order to provide an effective airtight system.

6. **Composition** – Powerlon VCLs are chemically inert and are unaffected by mild acids and alkalis found in soils. It does not rot or support mildew or other organic growth.

7. **References**

BS 4016 : 1997	Specificationn for building papers.
BS 5250 : 1989	Code of Practice for control of condensation in buildings.
BS 5427 : 1996	The use of profiled sheet for roof and wall claddings on buildings.
BS 5534 : 1997	Slating and tiling - design.
BS 6229 : 1982	Flat roofs with continuously supported coverings.
BRE Digest 262	Thermal insulation: Avoiding risks, 1994
BRE Digest 270	Condensation in insulated domestic roofs.
BRE Digest 336	Swimming Pool Roofs, minimising the risk of condensation, September 1998.
BRE Paper 13/87	Ventilating Cold Deck Flat Roofs, February 1983.
BRE Paper : 2000	Insulated profiled metal roofs.
Building Regulations	Approved Document F2 Condensation in roofs.
FRCAB	Roofing Handbook Information Sheet No 6 Condensation and VCLS.
FRCAB	Roofing Handbook Information Sheet No 7 Thermal performance & control of moisture.
NBS	National Building Specification Sections H30, H31, H60, H61, H65.
NBS Research Paper	No 23 Condensation in Sheeted Roofs.
NHBC Standards	Chapters 7.1 and 7.2.
NFRC	Profiled Sheet Metal Roofing and Cladding - A Guide to good practice, 1991.

8. **Typical arrangements**



Overlap join detail

A double row of 15mm x 1.5mm Powerbond butyl sealing tape spaced 75mm apart.

Installation

Installation should be performed in conjunction with the design details.

1. **Quality control** - Adequate quality control is very important when laying a barrier to ensure that no damage occurs.
2. **Storage and handling** – Powerlon VCLs should be stored inside in cool and dry conditions, away from direct sunlight. They should be handled with care to avoid any scuffing or puncturing. When installed, the VCL should not be exposed to sunlight or weathering for prolonged periods. In colder periods the barrier becomes less supple and installations should be avoided whenever site temperatures fall below 5° C.
3. **Weather conditions** - Installation in windy conditions is not recommended since the VCL becomes difficult to handle and is liable to flap in the wind.
4. **Protection** - Barriers should be protected from overlying trades by the use of protection boards or sheeting.
5. **Continuity** - Continuity of VCLs can be achieved by joining separate rolls by welding or taping. Taping is the most common method of joining. Particular care is necessary when sealing penetrations and around the perimeter of the VCL, usually where the walls meet the roof.
6. **Joining of rolls and panels**

   The VCL is laid loose, flat and without wrinkles. Joins should only be made where the barrier is supported (i.e. not where the join bridges unsupported areas). Rolls or panels may be joined by taping as follows:

   - The surfaces should be clean and dry, free of any dirt, condensation, grease etc., firmly fixed and smooth.
   - A minimum overlap of 150mm is necessary.

- A continuous double row of 15mm x 1.5mm Powerbond butyl sealing tape spaced 75mm apart is recommended for overlap sealing. It is essential that all surfaces are clean and dry. The number of joints should be kept to a minimum by using the full width of the membrane.
- All joins should be firmly pressed together using a hand-held pressure roller to ensure that the double-sided tape has adhered properly to the barrier.

7. **Covering** - When covering the barrier, care should be taken to ensure that the barrier is not displaced, damaged or stretched.
8. **Sealing**

   To maintain the integrity of the system, sealing should be performed as follows:

   - **Service penetrations** - Where services and pipework need to penetrate the barrier, airtight seals are required around each point of entry.
   - **Corners** – To avoid cutting the barrier, it is important that the barrier is folded into the corner and then reinforced by an additional protective layer of barrier.
   - **Concrete columns** - Concrete columns and masonry surfaces must be primed with quick drying bituthene primer at least one hour before sealing with a bituthene hot seal barrier.
9. **Elongation** - Whilst elongation of any VCL should be avoided, Powerlon VCLs incorporate a reinforced grid to reduce the ability of it to elongate. VCLs are normally laid loosely on the site in order to allow for any movement. They should not be pulled taught.
10. **Inspection** - Prior to covering, the VCL should be thoroughly inspected to verify the integrity of the joining and sealing and ensure that no damage has occurred to the VCL during installation. Any damage should be repaired to ensure an airtight seal. A competent installation contractor should carry out inspection and repair of the VCL.
11. **Repairs** – Damaged areas must be repaired using patches of Powerlon VCL. The area must be clean, dry and free of dust and grease. The patch must not extend beyond 150mm of the damaged area. The barrier patch is fixed by using a continuous double row of Powerbond double sided sealing tape, spaced 75mm apart.
12. **Maintenance** - There are no maintenance requirements
13. **Technical** – Test data, technical advice and samples may be obtained by contacting ITP's Technical Support Service or from our website www.powerlon.com.
14. **Packaging** - Powerlon is supplied in individually wrapped and labelled rolls
15. **Advice** - The above advice is based upon currently available good practice and information and only offered as a general guide.

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