

## PURAFLEX VOC MEMBRANE



### Product Identification:

- All rolls of Puraflex VOC Membrane are clearly labelled, confirming the product type, dimensions and weight.

### Product Selection & Suitability:

- The suitability of Puraflex VOC Membrane for the application it is intended should be based upon the recommendations and specification of the Project Design Team and in accordance with the following:
  - > NHBC Guidance (where applicable)
  - > Relevant British Standards, Industry Guidance & Good Practice
  - > Cordek Puraflex VOC Membrane Data Sheet

### Storage & Handling

- All products are delivered in a polythene wrapping and are clearly labelled. Individual rolls of membrane can be manually handled and offloaded upon delivery, taking into account any site specific manual handling regulations.
- Care should be taken when moving, transporting or handling membrane rolls to avoid physical damage, puncturing or any tainting which may interfere with seam welding.
- The rolls of membrane should be stored so as to be protected from puncture, dirt, grease, moisture, sunlight and excessive heat. Storage between 5 to 30 °C at 40 to 65% humidity under non-condensing conditions is recommended.
- The membrane rolls should be stored on a prepared smooth dry surface (or fully boarded wooden pallets; note that slatted pallets with sharp corners will damage the rolls) and stacked no more than two pallets high. The bottom rolls on the pallet need to be chocked to prevent rolling.

## INSTALLATION

### General:

- Prior to installation, all surfaces to be covered should be smooth and free of foreign and organic material, sharp objects or debris of any kind.
- To minimise the risk of puncturing, the membrane should be installed upon a suitably prepared level surface consisting of either Cordek's ventilation product Ventform, a well compacted sand layer or concrete blinding of a minimum 50mm depth. Surfaces should be swept clean and free from any sharp edges or protrusions.
- So that damage to the membrane is avoided, the essential requirement for the installation of the membrane is a smooth, dry and clean working surface.
- No standing water or excess moisture should be present during installation. If the water table is identified as being higher than the base of the excavation, adequate drainage should be installed to allow installation to be completed in dry conditions and prevent water pressure build up below the membrane.
- When installed within the foundations of a building, the Puraflex VOC range of products should be deployed as indicated below, overlapped and jointed as necessary to form a complete protection layer across the entire footprint of the building:

**Puraflex VOC Membrane** – For horizontal use only e.g. beneath a reinforced concrete floor slab

**Puraflex Tank VOC Membrane** – For both horizontal and vertical use, bonded to a suitable substrate prepared with Puraflex primer

**Puraflex VOC DPC** – For use beneath / within masonry wall constructions

*(Further guidance regarding detailing and material selection can be provided by the Cordek Technical Team.)*

### Preparation:

- After unrolling the membrane, its position should be adjusted so the minimum 150mm wide overlap is achieved for the welding process. Before welding, the membrane shall be checked for any damage and to ensure that it is clean, dry and free of any dust or dirt particles.
- Where the edge of a panel of membrane has been laying on a wet sub-grade, it may be necessary to remove any debris from the underside prior to welding. Any surface water in the location of the seam must be removed.
- Membrane deployment or welding should only proceed between ambient temperatures of 4°C and 30°C. Placement can proceed below 4°C only after it

has been confirmed by the Validator that the material can be welded according to the specification.

- No deployment of membranes or welding should take place during any precipitation or in the presence of excess moisture (fog, dew, rain), blowing dust or winds over 10 km/hr.
- No placement or welding of membranes should take place in areas of standing water.

## Procedure:

### Seam Welding

- The membrane incorporates an inner chemical resistant core with a protective thermally weldable modified polyolefin coating on both sides which is compatible with conventional hot air wedge welding equipment.
- The approved seam welding process is hot air wedge welding. A Leister Twinny-S Hot Air Wedge Welder is recommended for optimum results using a 25mm knurled roller for a single seam overlap-weld.
- The free edges of each membrane panel shall be adequately weighed down with sand bags, tyres or by other means in readiness for seam welding.
- Roll batch/serial numbers should be recorded on the Panel Layout Plan to record the coverage and location of each roll.
- On-site progress of the work, as well as the climatic and working conditions should be recorded and on completion, a layout plan prepared to record the location and sizes of each panel of membrane.

### Pre-fabricated Panels

- Pre-fabricated panels have the advantage of being installed relatively quickly and cleanly. They should be considered where site conditions make in-situ welding difficult or inappropriate. Panels minimise weather-induced delays and reduce on-site welding requirements. They can be fabricated to the necessary detail, shape and size prior to delivery to site, following which they can be unfolded and positioned.

### Proposed Joining Techniques

- The Installer should submit method statements prior to commencing installation, detailing the following as a minimum:
  - > Proposed welding technique, machinery type, temperature ranges for welding and acceptable maximum welding speed.
  - > Membrane overlap preparation and minimum dimension (150mm).
  - > Proposed non-destructive testing method(s).

### Defects and Repair Procedure

- All welds and non-weld areas of the membrane should be inspected by the Validator for defects, holes, blisters, un-dispersed raw materials and any sign of contamination by foreign matter.
- The surface of the membrane should be clean at the time of inspection.
- Any section of membrane showing damage due to scuffing, penetration by foreign objects or distress from poorly prepared subgrade, shall be replaced or covered and sealed with an additional layer of membrane of the appropriate size, in accordance with the repair procedure.

### Evaluation

- Each suspect location in weld and non-weld areas shall be non-destructively tested as appropriate, in the presence of the Validator. Each location that fails the non-destructive testing shall be marked by the Validator and repaired accordingly.

### Repair Procedures

- Defective welds should be patch repaired or replaced.
- Small holes and tears should also be repaired by patching.
- If the damaged section of membrane is positioned on a slope or in a location susceptible to stress, care should be taken to remove any sharp edges associated with the damaged section, prior to patching.
- The patch should be round or oval in shape, made of the same membrane and should extend at least 150mm outside the damaged area in order to ensure that it is covered completely. The patch should be prepared and welded using a hot air gun with a fishtail nozzle. The two surfaces to be welded should be heated with the hot air gun until melting occurs on both surfaces. Pressure is then applied to the patch by means of a hand roller until the weld cools.

### Verification of Repairs

- Each repair should be non-destructively tested. Repairs that pass the non-destructive test should be taken as an indication of an adequate repair. Failed tests indicate that the repair should be repeated and retested until passing test results are achieved.
- The Validator should keep documentation of all non-destructive and destructive testing. This documentation should identify all welds that initially failed the test and include evidence that these welds were repaired and successfully retested.

### Welding Equipment

- Welding trials were carried out using a Leister Twinny-S Hot Air Wedge Welding Machine with a maximum welding pressure of 500N at the nip, a

speed of 4m/min and a power rating of 1900W.

### **Welding equipment recommendations:**

**Type:** Hot air wedge welder, Leister Twinny-S or similar

**Roller:** Single seam with 25mm knurled roller

**Initial Settings:** Hot air temperature 450-500 °C, approx. 4m/min at 400N

The initial settings are recommended as a starting point when welding on site. Mechanical testing of 'start-up' trial welds should be carried out at the start of each day so that, depending upon site conditions, the appropriate machine adjustments can be made to ensure that a robust weld is achieved.

### **Fill Placement:**

- If, after inspection of the material that is to be placed on top of the membrane, it is deemed to be unsuitable, a needle-punched non-woven geotextile may be recommended as a protective layer.
- Installation of a protective layer should be carried out after acceptance of the tested membrane.
- The protective cover shall be placed in a manner to ensure that the membrane follows the contours of the ground and no bridging or stretching of the membrane occurs.

### **Concrete Placement:**

- The membrane can be laid both beneath and over raft formations, suspended concrete floors and ground bearing slabs.
- When placed over concrete, the concrete should be dense, smooth and free from any projections which may damage the membrane. The membrane should then be covered with an insulation, screed or other suitable protective layer as soon as possible after installation.
- When placed beneath concrete, both sides of the membrane should be adequately protected with a sand or concrete blinding layer to a minimum thickness of 50mm or a suitable needle-punch geotextile. The underside of the membrane should not be laid directly onto a granular fill. When reinforced concrete is to be laid over the membrane, wire reinforcements or spacers must not directly contact the membrane.
- The membrane should be sufficiently loosely laid against upstands to ensure that the membrane is not stretched or displaced when applying the covering screed or concrete.
- Service penetrations should enter the building above the sealed floor slab. Where this is not possible, penetrations should be kept to a minimum. Where services need to penetrate the membrane, Top Hat gas tight seals are required around each point of entry.

For further guidance on product selection and suitability, please consult the Technical Team on 01403 799600, [techsupport@cordek.com](mailto:techsupport@cordek.com) or visit our website at [www.cordek.com](http://www.cordek.com).

DISCLAIMER: Information contained within this 'Installation Guide' is for guidance only, and it is intended for experienced construction industry workers. It contains summaries of aspects of the subject matter and does not provide comprehensive statements of construction industry practice. As conditions of usage and installation are beyond our control we do not warrant performance obtained. Please contact us if you have any doubt as to the suitability of application. The information provided within this document is based on data and knowledge correct at the time of printing.