HIGH PERFORMANCE BARRIER MEMBRANES

Powerbase® is a range of geosynthetic barrier membranes for protection against naturally occurring hazardous gases and soils contaminated with hydrocarbons or toxic industrial pollutants. They are also used for groundwater and environmental protection installations.

Gas barriers are necessary wherever there is a risk of naturally occurring radon or methane gas. Radon is commonly found over granite formations, whereas methane and CO₂ is produced as a result of the decomposition of organic matter such as made ground or natural deposits of coal, peat or silt.

Developments on brownfield sites require effective gas barriers to prevent harmful gases, hydrocarbons and volatile organic compounds (VOCs) from permeating into buildings.

Typically, an impermeable barrier is designed in the foundations of the building over a ventilation layer. Hazardous gases and VOCs migrate up through the soil and collect under the membrane in a sump from where they are vented and safely dispersed into the atmosphere. The principal function of the gas barrier membrane is to prevent harmful gases from entering the building through cracks, construction joints and service openings in the floor slab. The membrane should cover the whole plan area of the structure to all external faces in order to seal both the ground slab as well as any cavity walls and voids in hollow concrete block work.

Special consideration should be given to sites contaminated by hydrocarbons or VOCs. These are very mobile compounds and will migrate relatively easily through unsuitable membrane materials. Aluminium laminates are superb gas barriers but these materials will delaminate when exposed to hydrocarbon vapour/VOCs; further, the aluminium layer is susceptible to oxidation due to moisture penetrating into exposed edges.

A comprehensive range of task-specific engineered barriers and accompanying accessories provide consultants and design engineers effective barrier solutions and for the contractor a rapid, simple and cost-effective installation.

Comprehensive CAD drawings, product data sheets, technical briefing documents, case studies and MSDS/COSH safety information are available on our website (for registered users) or by contacting our Technical Department.

PRODUCT SELECTOR

<table>
<thead>
<tr>
<th>YOUR SOLUTION</th>
<th>DPM</th>
<th>RADON</th>
<th>METHANE</th>
<th>CO₂</th>
<th>HYDROCARBONS</th>
<th>VOCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWERBASE VOC</td>
<td>✔️</td>
<td>✦</td>
<td>✦</td>
<td></td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>MULTIGAS 300</td>
<td>✔️</td>
<td>✦</td>
<td>✦</td>
<td></td>
<td>✦</td>
<td>✦</td>
</tr>
<tr>
<td>LOW PERM</td>
<td>✔️</td>
<td>✦</td>
<td></td>
<td></td>
<td>✦</td>
<td></td>
</tr>
<tr>
<td>RADON</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE:

Aluminium laminate gas barrier membranes are unsuitable in soils contaminated by hydrocarbons or VOCs due to a risk of delamination.
High performance barrier membranes

PERFORMANCE DATA

Fitness for Purpose

Hydrocarbon Resistant and VOC Barrier Membranes must be Fit-for-Purpose evidenced by permeation test data from accredited test laboratories.

True barriers will have permeation rates of < 5,000 mg/m²/day tested to DIN 15105-2 for each challenge chemical.

Permeation is the proper measure of performance; it measures the rate at which a chemical moves through a membrane at molecular level.

There is a common misconception that HDPE and PVC membranes are hydrocarbon resistant. Resilient they may be to some hydrocarbons, but hydrocarbons and VOCs permeate readily through homogeneous membranes, since their narrow spectrum of chemical resistance is defined by their polymer structure.

Only by evaluating permeation data the most appropriate material can be selected for the installation.

Further information is available on our website www.itpltd.com. Please register to download Installation Instructions and Product Data Sheets.

Technical documentation is also available by contacting us by email or telephone.

E: powerbase@itpltd.com
T: +44 (0)1347 825200

POWERBASE® VOC

Powerbase VOC is a specially engineered multilayer composite barrier membrane with exceptional resistance to hydrocarbons and VOCs. The membrane is supported by a smartphone app that provides performance data for a wide range of harmful chemicals. Compliant to BS8485.

**NHBC Gas Protection Measures**

<table>
<thead>
<tr>
<th></th>
<th>NHBC</th>
<th>NHBC</th>
<th>NHBC</th>
<th>NHBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Green</td>
<td>Amber 1</td>
<td>Amber 2</td>
<td>Red</td>
</tr>
</tbody>
</table>

**Size:** 3.0 x 50m  
**Thickness:** 500 microns  
**Colour:** Blue/Green  
**Permeation Performance data:**  
- Benzene: 4000 mg/m²/day  
- Toluene: 4000 mg/m²/day  
- Ethyl Benzene: 500 mg/m²/day  
- Xylene: 800 mg/m²/day  
- Methane: 0.14 ml/m²/day  
- Radon: 1 x 10⁻¹⁴/m²/s

**POWERBASE® MULTIGAS 300**

An aluminium laminate incorporating a foil between two layers of LDPE and a reinforcing scrim. A self-adhesive tanking version is also available. Compliant to BS8485.

**NHBC Gas Protection Measures**

<table>
<thead>
<tr>
<th></th>
<th>NHBC</th>
<th>NHBC</th>
<th>NHBC</th>
<th>NHBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Green</td>
<td>Amber 1</td>
<td>Amber 2</td>
<td>Amber 2</td>
</tr>
</tbody>
</table>

**Size:** 2.0 x 50m  
**Weight:** 270 gsm  
**Colour:** Green/Silver  
**Permeation Performance data:**  
- Methane: 0.07 ml/m²/day

**POWERBASE® LOW PERM**

BBA certified membrane for radon protection and for low levels of methane and CO₂ where basic protection measures are required.

**NHBC Gas Protection Measures**

<table>
<thead>
<tr>
<th></th>
<th>NHBC</th>
<th>NHBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Amber 1</td>
<td>Amber 2</td>
</tr>
</tbody>
</table>

**Size:** 4 x 12.5m  
**Thickness:** 500 microns  
**Colour:** Yellow  
**Permeation Performance data:**  
- Methane: 216 ml/m²/day  
- CO₂: 952 ml/m²/day  
- Radon: 7.2 x 10⁻¹⁴/m²/s

**POWERBASE® RADON**

BBA certified membrane for radon protection.

**NHBC Gas Protection Measures**

<table>
<thead>
<tr>
<th></th>
<th>NHBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td></td>
</tr>
</tbody>
</table>

**Size:** 4.0 x 25m  
**Thickness:** 300 microns  
**Colour:** Red  
**Permeation Performance data:**  
- Radon: 7.2 x 10⁻¹⁴/m²/s

**ACCESSORIES**

Prefabricated corner pieces and top hats can be supplied to suit service penetrations and unusual shapes. Self-adhesive joint tapes include Butyl and MultiGas types.

**POWERBASE VOC APP**

The Powerbase VOC software application is a unique, simple-to-use web-based app which provides performance data for a wide range of harmful chemicals. The app is free for use by design and environmental engineers as part of the site risk assessment.

www.powerbasevoc.com

- Register to access
- Free to use
- High performance data output

**FURTHER INFORMATION**

Further information is available on our website www.itpltd.com.

Please register to download Installation Instructions and Product Data Sheets.

Technical documentation is also available by contacting us by email or telephone.

E: powerbase@itpltd.com
T: +44 (0)1347 825200