# Specialist Geomembranes

## Technical Data Sheet

# Landflex Titanflex™ Hydrocarbon Barrier



A multi layer polyethylene Gas and Hydrocarbon membrane. Landflex™ Titanflex is specifically designed and manufactured to perform as a Methane, Carbon Dioxide, Radon, Ground Gas, VOC, Air, Moisture and Hydrocarbon protection system.

Complies with the latest codes of practise as published by BRE, CIRIA (C748) and BSI (BS 8485:2015). Suitable for use as Ground Gas / Hydrocarbon protection for NHBC Green, Amber 1, Amber 2 and Red site characterisations.




Site preparation underway in advance of Landflex™ Titanflex installation



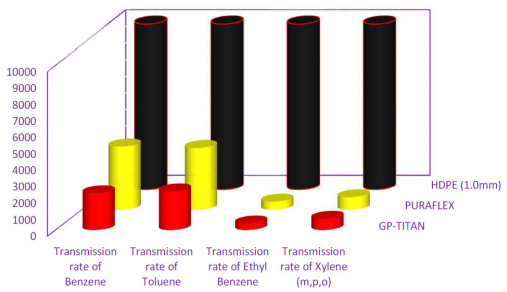

Landflex™ Titanflex in position

Landflex™ Titanflex Hydrocarbon Barrier is a multi-layer flexible membrane, with a unique core compound which is designed and manufactured to provide a barrier to the most aggressive chemicals and to comply with current guidance on Hydrocarbons. Manufactured using the latest extrusion technology and drawing on our extensive knowledge and expertise in gas protection, the new membrane is suitable in all applications that are affected by Hydrocarbons.

Landflex™ Titanflex offers a safe solution for the protection of buildings and occupiers against all levels of hydrocarbons, methane, carbon dioxide and radon ingress. Typically these sites have been previously used as petrol stations, coalfields, landfill sites or industrial areas and fracking sites.

Landflex™ Titanflex is designed to withstand the most aggressive environments.

**ISO 15105-2 Permeation Rates**
(mg/m²/day)




HDPE (1.00MM)

PURAFLEX

TANFLEX

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| Feature | Characteristics | Test Method | LandFlex® TITANFLEX® |
|---|---|---|---|
| **Physical Properties** | Thickness | EN 1849-2 | 0.5 mm |
| | Width | EN 1849-2 | 2 m |
| | Length | EN 1849-2 | 50 m |
| | Weight | EN 1849-2 | 500 g/m$^2$ |
| **Hydraulic Press** | Water Vapour Transmission Rate | EN 1931 | 0.11 - 0.18 g/m$^2$/day |
| | Water Tightness (60 kPa) | EN 1928 | Pass |
| | Water Tightness (196 kPa - 20 m Water Head) (Basement Application) | EN 1928 | Pass |
| **Mechanical Properties** | Resistance to Static Load | EN 12730-B | ≥ 20 kg |
| | Puncture Resistance | EN 12236 | ≥ 2.0 kN |
| | Tensile Strength (MD) | EN 12311-1 | > 550 N/50m |
| | Tensile Strength (CMD) | EN 12311-1 | > 400 N/50m |
| | Tensile Elongation (MD/CMD) | EN 12310-1 | > 550 |
| | Tear Resistance (MD/CMD) | EN 12310-1 | > 300 N |
| | Resistance to Impact | EN 12691-B | 650 mm |
| | Reaction to Fire | EN 13501-1 | E Class |
| | Resistance to Arti icial Ageing | EN 1296/EN 1928 | Pass |
| | Resistance to Chemicals | EN 1296/EN 1928 | Pass |
| **Compliance and Certi** | CE Mark - EN13967:2012 | | |
| | NHBC Standards Compliant | | |
| | CIRIA C748 Compliant | | |
| | BS 8485:2015 Compliant | | |
| **Vapour Permeability 100% Concentration** | Transmission Rate of Benzene | EN ISO 15105-2 | < 3.6 mg/m$^2$/day |
| | Transmission Rate of Toluene | EN ISO 15105-2 | < 13.8 mg/m$^2$/day |
| | Transmission Rate of Ethyl Benzene | EN ISO 15105-2 | < 2.7 mg/m$^2$/day |
| | Transmission Rate of Xylenes (M,P,O) | EN ISO 15105-2 | < 7.7 mg/m$^2$/day |
| | Transmission Rate of Hexane | EN ISO 15105-2 | < 0.6 mg/m$^2$/day |
| | Transmission Rate of Vinyl Chloride | EN ISO 15105-2 | < 0.05 mg/m$^2$/day |
| | Transmission Rate of Trichloroethene (TCE) | EN ISO 15105-2 | < 54.7 mg/m$^2$/day |
| | Transmission Rate of Tetrachloroethene (PCE) | EN ISO 15105-2 | < 26.2 mg/m$^2$/day |
| | Transmission Rate of Naphthalene | EN ISO 15105-2 | < 0.0006 mg/m$^2$/day |
| | Transmission Rate of CIS-1,2-Dichloroethylene | EN ISO 15105-2 | < 1.1 mg/m$^2$/day |
| **Gas Permeability** | Methane Permeability | EN ISO 15105-1 | 0.13 ml/m$^2$/day/atm |
| | Methane Permeability (Jointed) | EN ISO 15105-1 | 1.00 ml/m$^2$/day/atm |
| | Carbon Dioxide Permeability | EN ISO 15105-1 | 3.01 ml/m$^2$/day/atm |
| | Vinyl Chloride Gas Permeability | EN ISO 15105-1 | 0.04 ml/m$^2$/day/atm |
| | Radon Permeability | K124/02/95 | 1.0 x 10$^{-12}$ m$^2$/S |
| | Hydrogen Sulphide Permeability | EN ISO 15105-1 | < 0.16 ml/m$^2$/day/atm |



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| Feature | Characteristics | Test Method | LandFlex® TITANFLEX® |
|---|---|---|---|
| Durability and Chemical Resistance | Chemical Resistance - Sulfuric ACID (10% Solution of Sulfuric Acid ($H_2SO_4$)) 50° For 56 Days | EN 14414-A | TENSILE STRENGTH RETAINED 100% |
| | | | RESULT - PASS |
| | Chemical Resistance - BASIC (Calcium Hydroxide Saturated Suspension) 50° For 56 Days | EN 14414-B | TENSILE STRENGTH RETAINED 100% |
| | | | RESULT - PASS |
| | Chemical Resistance - SOLVENTS (35% Diesel, 35% Paraffin, 30% Oil Hd3O (Vol)) 50° For 56 Days | EN 14414-C | TENSILE STRENGTH RETAINED >80% |
| | | | RESULT - PASS |
| | Chemical Resistance - SYNTHETIC LEACHATE (Mixture of 14 Acids, Chlorides, Sulphates & Phosphates) 50° For 56 Days | EN 14414-D | TENSILE STRENGTH RETAINED 100% |
| | | | RESULT - PASS |
| | Resistance to Leaching - HOT WATER (Deionised Water) 50° For 56 Days | EN 14415-A | TENSILE STRENGTH RETAINED 100% |
| | | | RESULT - PASS |
| | Resistance to leaching - AQUEOUS ALKALINE (Saturated Calcium Hydroxide) 50° For 56 Days | EN 14415-B | TENSILE STRENGTH RETAINED 100% |
| | | | RESULT - PASS |
| | Resistance to Leaching - ORGANIC ALCO-HOL (30% Methanol, 30% Isopropanol, 40% Glycol) 50° For 56 Days | EN 14415-C | TENSILE STRENGTH RETAINED 100% |
| | | | RESULT - PASS |
| | Chemical Resistance - BENZENE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 95% (MD), 102% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - TOLUENE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 94% (MD), 91% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - ETHYL BENZENE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 99% (MD), 97% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - XYLENES - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 91% (MD), 106% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - TCE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 99% (MD), 93% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - PCE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 93% (MD), 93% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - NAPTHALENE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 101% (MD), 93% (CMD) |
| | | | RESULT - PASS |
| | Chemical Resistance - HEXANE - 100% Saturated Concentration | EN 14414-D (MOD) | TENSILE STRENGTH RETAINED 99% (MD), 104% (CMD) |
| | | | RESULT - PASS |


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