DELTA MEMBRANE SYSTEMS LTD.

DELTA®-PT DELTA®-LATH

The 'Original' Waterproof Membrane System

Insulates and isolates damp and contaminated walls, vaults, and basements.
The Guaranteed Solution.

Uniclass L6813	
CI/SfB	Ln6 (L34)

October 2012

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 00/3742

nbsPlus

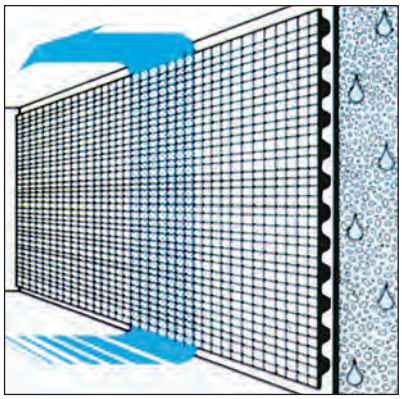
RIBA CPD PROVIDERS NETWORK

DELTA DÖRKEN

DELTA®-PT has been specially designed with damp control in mind. Dampness, which is found in many older properties, can be easily controlled using DELTA®-PT or DELTA®-LATH.

The Material

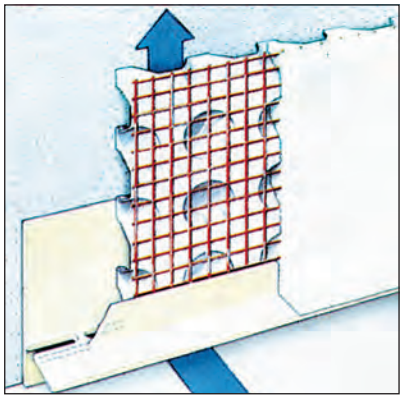
DELTA®-PT is a special high performance polyethylene membrane which is extruded into a series of studs.
The purpose of the studs is to create a continuous air gap behind the waterproof membrane. On the face of the membrane a welded mesh allows plasters and renders to bond efficiently to achieve dry and durable finishes.
DELTA®-PT is watertight, resistant to high and low temperature extremes, chemically resistant to acids, alkalis, oil and solvents and is approved for use in drinking water applications.



Constant Ventilation for Permanent Dry Finishes

The 8 mm stud design of **DELTA®-PT** provides a continuous air gap which serves two purposes. Firstly to isolate the damp wall from the new plaster and decorative finishes and secondly to allow ventilation of the wall for permanent dampness control.

Ventilation can be achieved by using the **DELTA®-PT** profile or the 'air gap' can be vented externally via passive air vents.



Ventilation gaps located at both top and bottom of the system allow circulation for this purpose.

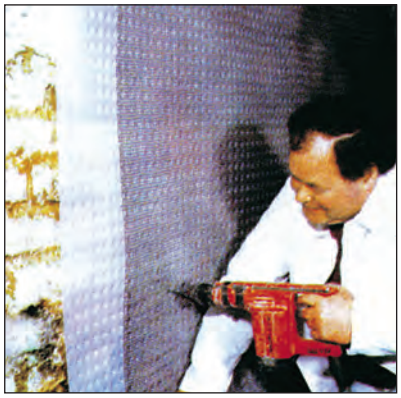
The DELTA®-PT PROFILE

The **DELTA®-PT** PROFILE can be used at both the upper and lower edges of the membrane. The profile has ventilation slots incorporated to ensure that optimum ventilation is achieved. The profile section also acts as a guide for plaster or render coats.

DELTA®-PT can also be used as a drained cavity in conjunction with the sealed system 500. See separate brochure.

Installation of DELTA®-PT

DELTA®-PT sheets are installed vertically. Overlapped joints are facilitated with a non-meshed section, which is available along one edge of each sheet. The sheet is secured to the substrate with **DELTA®-PT** FIXING PLUGS at 250 mm vertical and horizontal centres.



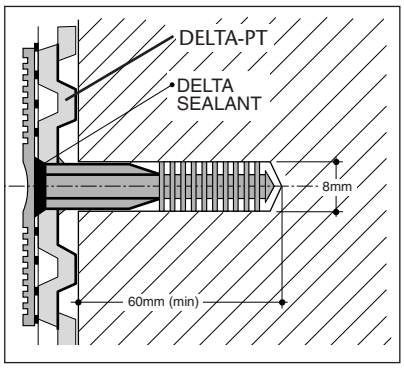
The transparent sheet allows easy location of fixings so that the brick or stone can be identified from the mortar joints. Ventilation gaps can be used at floor and ceiling level to ensure the optimum air circulation.

DELTA®-PT

provides a full range of options for internal finishes which include Carlite Bonding, Tilcon Whitewall, 1.1.6 cement lime sand render or dab fixed plaster board or Roundtower Natural Hydraullic Lime Plaster. (**Contact our Technical Dept. for separate advice**)

Plasters and renders should be trowel applied in two coats. The first coat is pushed into the dimples, and giving cover over the mesh of 6mm. This is lightly scratched and allowed to dry before the second coat of 9mm is applied. Skim finish plaster can be used in the normal way.

When dab fixing plasterboard the adhesive dabs are applied directly over the fixing heads. The adhesive dabs should cover 50% of the area. The boards are then wedged at the bottom and offered up to the dabs.



DELTA DÖRKEN

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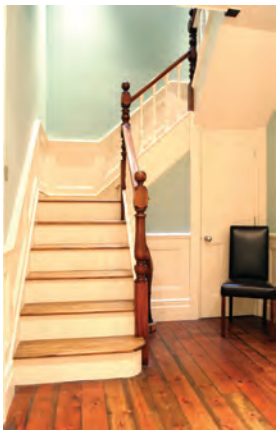
DELTA®-LATH - Technical DATA

Compressive strength	70 KN/m2 (10 PSI)
Tensile strength	400 N/3 cm (76lb/in)
Ventilation Space	5,51 m2
Weight	530 g/m2
Stud height	8 mm / 4 mm
Overlap detail	100 mm
Roll sizes	1.5 x 10 m, 1m x 15m
Colour	Clear or Brown

For further advice or information contact our technical department, telephone 01992 523811.

DELTA®-PT LATH is now available in three roll sizes and two stud heights. The 2m x 20m, and 1.5m x 10m have an 8mm profile. They are now joined by the *'Slimline'* PT which has a 4mm profile and a roll size of 1m x 15m, making it ideal for damp-proofing, window reveals or space sensitive areas.

Certificate EN ISO 9001



DELTA®-PT insulates damp structural surfaces and also provides a bonding base for gypsum plaster, lime plaster render and reinforced shotcrete wall finishes.

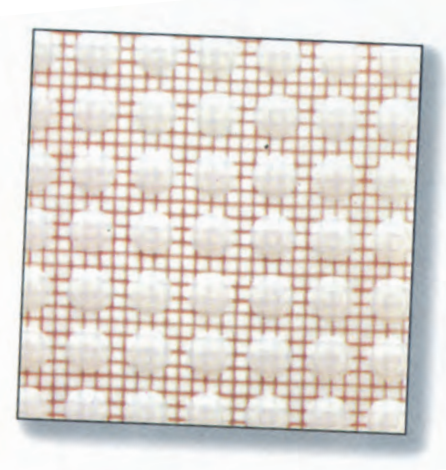
The Problem

Old buildings often have dampness in walls and other inside surfaces due to inadequate or defective waterproofing. Rewaterproofing of an existing foundation wall is usually expensive - or impossible when outside access is limited by neighbouring structures. The damage must therefore be repaired from the inside: by installing a new masonry shell covering the damp inner surface. However, this is not a cure-all as the new shell too will soon become humid by continuing dampness migration from the structure - and takes up considerable space within the structure.

The Solution

DELTA®-PT – the watertight dimpled sheet with an integrated mesh bedding for the inside surface finish. Its 8 mm stud structure on one side provides an air gap which ensures continuous ventilation and full-surface drainage to remove incoming moisture.

The rugged HDPE mesh on the other side provides secure bonding with a variety of surface finishes including gypsum plasters, lime cement renders and (using steel mesh reinforcement) reinforced shotcrete.



DELTA®-PT in Underground Structures

> Tunnels

The unsecure inside surfaces of the tunnel is first removed and levelled. The tunnel is then lined with **DELTA®-PT** (installed with the studded side against the structure).

The stud design provides full surface drainage capacity. Incoming water is redirected to take-off pipes below. A steel reinforcing cage installed on the mesh side of the **DELTA®-PT** sheet provides the base for the shotcrete finishing layer.

Examples of the many tunnels successfully renovated with **DELTA®-PT** include the Vienne, Clelles and Sorbières railroad in **France**, the Wipking tunnel and the Filisur pressure shaft in **Switzerland** and the Rehberg, Büdenholz and Brachbach tunnels in **Germany**.

In the Brachbach tunnel project, **DELTA®-PT** was installed over a quick-drying shotcrete levelling layer to provide full-surface drainage.

The inward-facing mesh provided a secure bed for application of the inner shotcrete shell.

> Public transport Systems

DELTA®-PT's combination of drainage capacity and mesh bedding is also ideally suited for applications in underground railway construction.

Some examples of **DELTA®-PT** underground station renovation projects: In **Great Britain**, the Oval, Clapham, Tooting Broadway and Tooting Bec underground stations in London: In **Spain**, the El Clot L1 Pca. Espanya, El Clot L2, Tres Torres metro stations and Sabadell main station in Barcelona.

> Underground parking Garages

An example from **Taiwan** - the Far Eastern Plaza parking garage facility in the city of Taipeh.

In this application **DELTA®-PT**'s drainage capacity eliminated the need for costly large-scale waterproofing measures.

DELTA®-PT: – Technical Data

Dimpled sheeting with plastic mesh welded on, suitable as a damp-proof base for plaster or shotcrete, e.g., as a seepage layer in tunnel construction, or for repairing basements internally

Material:	**high density polyethylene**
Thickness:	**approx. 0.5 mm**
Stud height:	**approx. 8 mm / 8mm / 4mm**
Roll size:	**2.0 x 20 m / 1.5 x 10 m / 1.0 x 15m**
Compressive strength:	**approx. 70 kN/m2**
Drainage capacity:	**approx. 5 l/s · m** **approx. 300 l/min · m** **approx. 18 100 l/h · m**
Void between studs:	**approx. 5.5 l/m2**
Temperature resistance:	**– 30°C to + 80°C**
Chemical properties:	**resistant to chemicals, resistant to root penetration, rotproof, neutral towards drinking water**
Behaviour in fire:	**Class E**

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Delta Membrane Systems Ltd.
Delta House, Merlin Way, North Weald, Epping, Essex CM16 6HR
Telephone: 01992 523 523 Fax: 01992 523 250
e-mail: info@deltamembranes.com www.deltamembranes.com

DELTA DÖRKEN

01/08/11

DESIGN DATA

GENERAL – VENTILATED SYSTEM

Delta-PT is satisfactory for use as a support for a dry lining fixed by plaster dabs, or for replastering/rendering, over internal walls of all types of construction, in the following situations:

(a) Existing damp walls not under hydrostatic pressure

(b) In conjunction with a remedial dpc system where the walls have a high salt content and/or it is necessary to complete the installation immediately without allowing a period for initial drying in accordance with BS.6576 : 2005

(c) Over a wall which has a friable or painted surface, is contaminated with oil or mould, or has a high salt content

(d) Delta-PT is also satisfactory for use as a waterproof support for render on walls in exposed external situations, and/or where the brickwork has deteriorated

(e) When DELTA-PT is used as a substitute for DELTA-MS 500 and/or installed as a 'Sealed System' in accordance with BBA certificate No. 00/3742, it may be deemed to be suitable for walls, vaulted ceilings or archways or cellars in the following additional situations:

- Damp walls in underground situations subject to high ground water levels, and perennial moisture
- On vaulted ceilings of archways or cellars subject to dripping water
- As a waterproofing or 'tanking' in areas subject to vibration
- The system is satisfactory for use as Type C (drained protection) in accordance with BS.8102 : 2009.

FINISHING WORKS

When the membrane is installed, the walls can be replastered as recommended in the current Delta technical literature.

Where Delta-PT is installed internally and plastered, permanent decoration, such as vinyl papers or oil paint, may be applied. Temporary permeable decoration (necessary when a remedial dpc installation is replastered conventionally) is not necessary when Delta-PT is used.

RESISTANCE TO WATER AND WATER VAPOUR

The membrane is water resistant and has a high resistance to the transmission of water vapour. Consequently, when used internally where the surface is damp, there must be a flow of air across it.

RESISTANCE TO SALT TRANSFER

The system provides an effective barrier to the transmission of salts or other contaminants from the substrate.

IMPACT RESISTANCE

Delta-PT, plastered, rendered or dry-lined, has a satisfactory resistance to soft and hard body impacts.

WALL-MOUNTED FITTINGS

Wall-mounted fittings (apart from lightweight items such as framed pictures) should be fixed (using recommended proprietary fixings) through the membrane and lining board, plaster or render, to the loadbearing structure behind. Holes made in the membrane should be filled with a flexible sealant before inserting the fixing.

DURABILITY

Under normal conditions of use, the product will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which it is installed.

FINISHING WORKS

PLASTERING

Delta-PT should be plastered with either:

- 'Whitewall' plaster
- Carlite Bonding.

A 7-8mm scratch coat must be applied and allowed to set before applying the next coat, in accordance with in BS 8481: 2006, BS EN 13914-2 : 2005 (and / or the appropriate Agrément Certificate). The standard of installation should comply with the requirements of BS 8000-10 : 1995.

The plaster should be a minimum total depth of 15 mm.

Where a sand-cement mix is to be used **internally**, two coats are applied and finished with a 3 mm thick gypsum-based skim coat.

A further plaster option is Roundtower Natural Hydraullic Lime Plaster - seek advice from Delta.

RENDERING EXTERNALLY

Where Delta-PT has been used externally it must be rendered with a cement-lime-sand (1:1:6) render applied in three coats to a total thickness of 20 mm using the procedures defined in BS EN 13914-1 : 2005. The standard of installation should comply with the requirements of BS 8000-10 : 1995.

The render should be applied in three coats with seven to ten days being allowed between coats.

Due to the difference in thermal characteristics between Delta-PT and the render, expansion joints through the render to the membrane must be trowelled in along each lap joint to reduce the possibility of cracking. These joints must be filled with a suitable flexible polymer-based sealant.

Alternatively, polymer modified render should be applied in two coats. The render is polymer/fibre modified, and eliminates the need for extensive expansion joints, other than what is required to meet building regulations.

A 5 mm ventilation gap at the top, and at least 10 mm at the bottom should be left to assist the ventilation of the air-gap behind the Delta-PT membrane. Delta-PT profile is secured to the membrane and substrate to maintain these gaps.

DRY LINING

A Bonding plaster to BS EN 14496: 2005, is mixed and applied in vertical strips over the fixing centres and in bands along the top and bottom of the membrane. The plaster dabs are applied to a minimum thickness of 8 mm, and should cover a minimum of 50% of the membrane.

Gypsum plasterboard to BS EN 520: 2004, or similar dry lining boards covered by Agrément Certificate, are pressed onto the plaster dabs and jointed in the usual manner. Temporary spacers approximately 20 mm to 25 mm high are positioned under the dry lining to support it during the curing period.

DECORATION

Once the plastered, dry-lined or rendered surface has dried, the surface can be painted or wallpapered using traditional methods and materials.

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