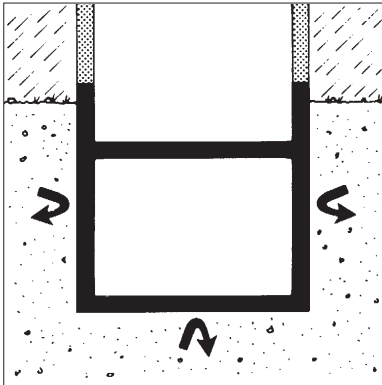


Product



- THIS DETAIL SHEET RELATES TO DELTA-MS500 AND DELTA-MS20, MOULDED HDPE SHEET AND FIXING/SEALING MATERIALS.
- The system is used on walls, floors and ceilings in new construction or in existing buildings over a contaminated or damp background, to support a dry lining or flooring.
- The system should be installed by competent remedial damp-proofing contractors.

This Detail Sheet must be read in conjunction with the Front Sheets, which give the system's position regarding the Building Regulations, general information relating to the product, and the Conditions of Certification, respectively.

Technical Specification

1 Description

1.1 Delta-MS500 and Delta-MS20 are membranes in brown or clear high density polyethylene (HDPE), moulded to form raised domes.

1.2 Characteristics of the membranes are given in Table 1.

Table 1 Nominal characteristics

	Delta-MS500	Delta-MS20
thickness (mm)	0.6	1.0
dome height (mm)	8	20
weight per unit area (kgm ⁻²)	0.5	1.0
roll size (m) ⁽¹⁾	2.0 x 20 2.4 x 20 3.0 x 20	2.0 x 20 — —

(1) Includes a 70 mm dome-free area for overlapping sheets.

1.3 Ancillary items used with the membranes include:

Delta Plug — a glass-filled nylon fixing for use on masonry backgrounds. (See Figure 1)

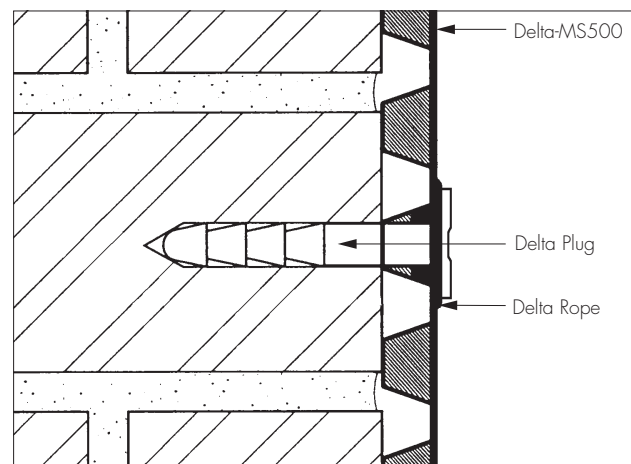
Delta Tape — black butyl rubber tape for sealing joints in the membrane

Delta Rope — black butyl rubber beading for sealing the membrane around pipes and openings, joining floor and wall membranes, and to form a gasket between the plug and membrane

Delta Mastic — an acrylic sealant for sealing the membrane around pipes and openings

Delta Corner Strip — a self-adhesive membrane strip for sealing junctions between walls and floors, and for sealing joints at corners.

Figure 1 Fixing Plug Detail



2 Manufacture and quality control

2.1 The membrane is formed in a continuous process in which HDPE is extruded into sheets and the domes impression formed.

2.2 The final product is visually inspected and tested for:

thickness
weight per unit area
density
melt flow index
compression resistance.

3 Delivery and site handling

3.1 The membrane is delivered to site in rolls secured with outer wrapping and headband bearing the product and manufacturer's name.

3.2 Rolls should be stored on end, under cover and protected from sharp objects, sunlight and high temperatures.

3.3 The packaging details of the ancillary items are shown in Table 2.

Table 2 Packaging details

Product	Dimensions/volume	Packaging
Delta Plug	11 mm diameter 70 mm long	Boxes of 100 or 1000
Delta Tape	22.5 m long 28 mm wide 2 mm thick	1 x roll per box 10 x rolls per outer
Delta Rope	4.75 m long 10 mm diameter	1 x roll per box 10 x rolls per outer
Delta Corner Strip	12 m long 150 mm wide	Single rolls 5 x rolls per box
Delta Mastic	0.4 litre cartridge	Single cartridge 24 per box

Design Data

4 General

4.1 Delta-MS500 is satisfactory as a support for a dry lining, screed or flooring, over internal faces of walls and floors of all types of existing construction, in the following situations:

- damp walls and floors in underground situations subject to high ground water levels, and perennial moisture
- on vaulted ceilings of archways or cellars subject to dripping water
- with a remedial dpc system where the walls and floors have a high salt content, and/or it is necessary to complete the installation immediately without allowing a period for initial drying
- over walls and floors which have a friable or painted surface, are contaminated with oil or mould, or have a high salt content
- as a waterproofing or 'tanking' in areas subject to vibration.

4.2 The system is satisfactory for use in Type C (drained protection) structural concrete constructions in accordance with BS 8102 : 1990, clause 3.2.4.

4.3 Under normal operating conditions the membrane is not affected by underfloor heating.

4.4 Delta-MS20 performs the same function as MS500 but is more suitable in conditions where a higher drainage capacity is required.

5 Finishing works

After the system has been installed and the walls dry-lined, permanent decorations, such as vinyl papers or oil paints, may be applied. Temporary permeable decorations (necessary with traditional, cement-based waterproofers) are not necessary for use with this system.

6 Resistance to water and water vapour



6.1 The membrane is water resistant and has a high resistance to water vapour. Consequently the measures described in the *Installation* part of this Detail Sheet must be followed to ensure that the membrane acts as a drainage layer and that there is no excessive build-up of water behind the system.

6.2 All joints and fixings must be sealed with Delta sealing products, and drainage channels and gullies, or sumps and pumps should be installed as necessary to disperse excess or standing water.

6.3 Floors should have a drainage outlet point. There should be a fall towards the outlet point or a drainage channel made around the circumference of the floor, so water can flow to the outlet.

7 Resistance to salt transfer

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

8 Resistance to puncture, impact and loading

8.1 The membrane has a high resistance to puncture and will not be damaged by normal foot traffic during installation or while laying concrete or screeding to BS 8204-1 : 1999.

8.2 The system can support the long-term imposed loadings defined in BS 6399-1 : 1996, Table 1, categories A, C1 and C2, and situations with similar loadings in category B, without undue deformation.

9 Wall-mounted fittings

Wall-mounted fittings (apart from lightweight items such as framed pictures) should be fixed where possible into battens, whose position and number of support fixings into the loadbearing structure are predetermined. Only in exceptional circumstances should fittings be fixed through the membrane and lining board to the loadbearing structure behind, using proprietary fixings. Holes made in the membrane must be filled with a flexible sealant, such as Delta Mastic.

10 Durability



10.1 Under normal conditions of use the system 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 incorporated.

10.2 Regular maintenance of all gullies, sumps and pumps must be conducted to ensure that a build-up of water does not occur behind the membrane.

11 Survey in damp conditions

11.1 Where conditions are damp, a full survey is necessary by a specialist surveyor to diagnose the cause and to establish if treatment is required.

11.2 If rising damp is found, a remedial treatment is conducted in accordance with the relevant Agrément Certificate, BS 6576 : 1985 and the British Wood Preserving and Damp-proofing Association (BWPDPA) Code of Practice 1997.

11.3 Appropriate remedial measures are taken to rectify major causes of damp conditions or water ingress, and to repair structural defects.

12 Surface preparation

12.1 When used in new constructions the concrete base must be laid in accordance with BS 8204-1 : 1999. If a board covering is to be laid directly on the membrane, the concrete base must have a surface regularity of at least SR 2⁽¹⁾, as specified in BS 7916 : 1998 and described in BS 8204-1 : 1999.

(1) Maximum permissible departure of 5 mm from the underside of a 3 m straight edge, resting in contact with the floor.

12.2 When used in existing buildings any unsound plaster, render or screed is removed to expose the substrate and cleaned with a stiff brush to remove loose material, laitance, salt residue, mould or adhesive. If mould is present the substrate is treated with a fungicidal wash.

12.3 Uneven substrates should be dubbed out with a cement-sand (1:4) render or screed, to the tolerance described in section 12.1. They should be allowed to dry thoroughly before the Delta-MS500 membrane is fixed.

13 Walls and ceilings

General

13.1 The membrane should always be used with the flanged edge positioned in front of and overlapping the previously installed membrane width. Joints with the flanged edge are sealed using Delta Tape, while stud-to-stud joints (without the flanged edge) are sealed by overlapping the membrane by a minimum of three domes and positioning Delta Rope between the last two rows of domes.

13.2 Fixings are made through the domes into 11 mm holes drilled through the membrane. Delta Plugs, to which Delta Rope has been applied round the rim, are inserted into the holes and tapped flush with the membrane. The Delta Rope forms a sealing gasket between the plug and membrane.

13.3 Spacing between fixings will depend on the application and the nature of the substrate, but should be kept to a maximum of 600 mm.

13.4 Preservative treated timber battens of minimum dimensions 25 mm by 38 mm are fixed into the plug's fixing hole using 6 mm diameter bolts or No 12 screws, with a maximum screwing-in depth of 30 mm. If required, Delta Mastic is injected into the fixing holes to reduce the risk of water penetration.

13.5 On difficult substrates the use of the clear membrane will allow the contractor to view the substrate through the membrane and choose the optimum site for each fixing.

Ceiling

13.6 Ceilings to be covered should always have a fall, as per vaulted cellar constructions, so water does not lie against the membrane or a joint. In addition to the requirements given in section 13.9, on ceilings the vertical drop between the ends of the two membrane sheets for horizontal overlaps should be a minimum of 100 mm.

13.7 Any sagging of the membrane between fixing points on ceilings should not be great enough for ponding to occur.

13.8 At the end walls of vaulted constructions the membrane must be turned down onto the end wall by a minimum 200 mm. The membrane is mitred as necessary to fit the curve of the ceiling, and the joint sealed with Delta Tape or Rope. The wall membrane should be cut into the curve of the ceiling, fixed in front of the ceiling membrane, and the gap sealed with Delta Rope.

Walls

13.9 Installation of the membrane is commenced at the top of the construction. The membrane may require initial fixing on a ceiling or along the upper edge of a wall, prior to final fixings along batten runs. For joints where the flanged edge is not used, the two membrane sheets are overlapped by a minimum of 100 mm, and for horizontal joints the lower sheet is always positioned in front of the upper sheet.

13.10 The installation is conducted over windows and later the membrane is cut away to expose them, and the gaps are sealed with Delta Tape or Rope.

13.11 For doors and some obstructions, techniques covered in section 13.10 cannot be used. Instead the membrane is installed up to the perimeter and the gap sealed in the same manner. Power cables, points and light switches preferably should be remounted in front of the membrane.

14 Floors

14.1 The membrane is rolled out 'domes down' over the floor, and consecutive membrane widths

are laid so the flanged edge overlaps the first sheet by three domes. All joints are sealed using Delta Tape. When a stud-to-stud joint occurs it is sealed using Delta Rope. This can then be oversealed using Delta Corner Strip.

14.2 The membrane is cut within 5 mm to 10 mm of any pipes and services in the floor, and the gap filled with Delta Rope. A patch of membrane is overlaid and sealed to the services with Delta Rope, and its circumference sealed with Delta Tape.

14.3 Fixings must not be applied through the floor membrane.

14.4 Where appropriate, at wall/floor junctions and corners of the installation, the membrane should be cut flush and the gap between the wall and floor membranes sealed with Delta Corner Strip. Alternatively, the floor membrane may be turned up by 100 mm at the wall.

14.5 Where internal or external corners occur, these should be oversealed using Delta Corner Strip, in accordance with the manufacturer's installation manual.

15 Dry lining of walls

15.1 Gypsum plasterboard to BS 1230-1 : 1985, or similar dry lining boards covered by a current Agrément Certificate, are fixed to the battens with galvanized screws or nails, positioned a minimum of 12 mm from the edge of the board. Care should be taken to ensure that penetration of the plasterboard screws or nails is less than batten depth to avoid puncturing the membrane.

15.2 When a plaster finish is required, Delta-MS500 membrane on walls may be substituted by Delta-PT (see Detail Sheet 3 of this Certificate).

16 Floor membrane coverings

16.1 If required, expanded polystyrene insulation boards, minimum density 30 kgm^{-3} , are laid over the membrane.

16.2 Suitable tongue-and-groove flooring board panels should be selected in accordance with BS 7916 : 1998, and loose laid over the membrane to within 10 mm of the walls. The panels are staggered and the joints sealed with PVA adhesive to BS 4071 : 1966.

16.3 Alternatively, the membrane is covered by concrete or screed 50 mm thick in accordance with BS 8204-1 : 1999. Care should be taken to ensure the membrane is not displaced when placing the concrete or screed.

Technical Investigations

The following is a summary of the technical investigations carried out on Delta-MS500 and Delta-MS20.

17 Tests

17.1 Tests were carried out to determine:

- thickness
- melt mass-flow rate
- water absorption
- water vapour permeability of membrane incorporating a joint
- resistance to long-term and short-term compression loading
- nail tear resistance
- puncture resistance.

17.2 Independent test reports were examined and assessed, relating to:

- density
- tensile strength and elongation at break.

18 Investigations

18.1 A factory visit was conducted to examine the manufacturing process and obtain details of the raw material specifications and quality control procedures.

18.2 An assessment was made of the scope of use and durability of the system in relation to the generic properties of the membrane.

Bibliography

BS 1230 *Gypsum plasterboard*

BS 1230-1 : 1985(1994) *Specification for plasterboard excluding materials submitted to secondary operations*

BS 4071 : 1966(1988) *Specification for polyvinyl acetate (PVA) emulsion adhesives for wood*

BS 6399 *Loading for buildings*

BS 6399-1 : 1996 *Code of practice for dead and imposed loads*

BS 6576 : 1985 *Code of practice for installation of chemical damp-proof courses*

BS 7916 : 1998 *Code of practice for the selection and application of particleboard, oriented strand board (OSB), cement bonded particleboard and wood fibreboards for specific purposes*

BS 8102 : 1990 *Code of practice for protection of structures against water from the ground*

BS 8204 *Screeds, bases and in-situ floorings*

BS 8204-1 : 1999 *Concrete bases and cement sand levelling screeds to receive floorings. Code of Practice*

British Wood Preserving and Damp-proofing Association Code of Practice *The Installation of Remedial Damp-proof Courses in Masonry Walls* : January 1997



On behalf of the British Board of Agrément

Date of issue: 24th November 2000

A handwritten signature in black ink, appearing to read 'P. C. Hewitt', is written over a light grey background.

Chief Executive

British Board of Agrément

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