DELTA®-THENE laying instructions

Waterproofing system for horizontal and vertical applications.
Laying instructions for DELTA®-THENE

General comments

- DELTA®-THENE may be used indoors and outdoors for waterproofing vertical and horizontal surfaces. Combining a cross-laminated special HDPE sheet with an adhesive sealing layer of bitumen rubber, DELTA®-THENE offers outstanding protection from moisture in a variety of scenarios.
  - Reliable waterproofing of subgrade basement walls and foundation slabs that are impacted by soil moisture and non-accumulating seepage water (as per DIN 18195, part 4).
  - Safe waterproofing of e.g. balconies and wet-room walls and floors moderately exposed to water that is not under hydrostatic pressure (as per DIN 18195, part 5).
  - Permanent protection from capillary rising damp and vapour barrier under the screed.
  - External vapour barrier on waterproof-concrete walls.
  - Waterproofing of construction joints in prefabricated units of waterproof concrete.

DELTA®-THENE is “wallpapered” on quickly and safely straight from the roll. The grid imprinted on it makes exact trimming easier. The sheet requires no time to set: it is immediately water- and rain-proof, so that excavations may be backfilled directly after laying. Approx. 1.5 mm thick and weighing approx. 1.6 kg/m², DELTA®-THENE features a defined layer thickness and is flexible enough to safely bridge any cracks in the substrate.

Surfaces should be treated with DELTA®-THENE-GRUNDANSTRICH or DELTA®-THENE-KÄLTEGRUNDANSTRICH before laying.

Preparations

DELTA®-THENE should be put up only in dry weather and at temperatures of between +5 °C to +30 °C. If DELTA®-THENE-KÄLTEGRUNDANSTRICH is used, temperatures may be as low as -5 °C. When outdoor temperatures are high, DELTA®-THENE should not be stored, cut, or put up in bright sunlight. When temperatures are low, we recommend storing the material in a conditioned warm environment before laying and taking advantage of the warmth of the sun during laying. At very low temperatures, warming up the sheet with a blow-dryer will considerably enhance the adhesive effect.

The substrate (Fig. 1)
Substrates should be smooth, dry, and free from dust. Moreover, always make sure that they are compression-resistant, clean, and free from porosity, such as concrete, lime sandbrick, or aerated concrete. Level any holes or other surface defects with mortar.

Uneven masonry where contact adhesion can be expected to fall short of 80% (e.g. pumice stone or honeycomb bricks) should be levelled with a layer of adhesive mortar.

In basements made of brickwork, the head of the masonry should be protected from percolating water so that the outer wall does not become waterlogged. This is particularly important in double-walled buildings.

When laying out DELTA®-THENE, take care to make sure that the sheets and especially the overlaps are free from dust. Whenever necessary, use a slightly moist cloth to remove the dust from the overlap zone before gluing the sheets together.

Foundation ledges should be smooth and free from dust. Cement slurry should be removed because it might flake off later on, causing the waterproofing to peel off. The junction between the masonry and the foundation should be concave or bottle-shaped.

The base coat (Fig. 1)
Prime all mineral substrates with DELTA®-THENE-GRUNDANSTRICH. The primer produces a slightly sticky surface that is ideal for waterproofing with cold-setting self-adhesive sheets. Substrates should be as dry as possible so that the primer can partially penetrate into them. Wet
Substrates should be sealed with sealing slurry a few days before the primer is applied. Cover the entire surface with primer and allow it to dry. The drying time should be no less than 1.5 hours. The material consumption, which normally ranges between approx. 0.2 and 0.3 kg/m², as well as the drying time depend on the substrate and the temperature. Primed surfaces should be waterproofed within 2 - 6 hours (on the same day) as the primer will otherwise lose its adhesion-friendliness because dirt and dust will settle on it again.

**At ambient and substrate temperatures below + 5 °C, DELTA®-THENE-KÄLTEGRUND-ANSTRICH must be used; otherwise, the sheets will not adhere reliably. If sheets are affixed within no more than 3 hours, they will be safely workable at ambient and substrate temperatures down to -5 °C.**

Before putting up the waterproofing sheets, check whether the primer is thoroughly dry. When the primer no longer stains on contact, it has hardened completely. Next, you should test its adhesion to the substrate by applying a narrow strip of DELTA®-THENE to the primed surface. Wait a little, then tear off the strip. If the primer comes off as you do so, adhesion is still inadequate and the primer has not yet dried sufficiently. In such a case, the primer will be usable used later on, but not immediately. Adhesion is adequate if it takes a great deal of force to tear off the waterproofing strip.

**Cutting sheets to size (Fig. 2)**

Before pulling off the backing paper, use a sharp knife to cut DELTA®-THENE to length and/or width and then roll it up again. For cutting we recommend using a firm wooden base such as a shuttering panel, for example, and avoiding direct irradiation of the material by the sun.
Laying instructions for DELTA®-THENE

**Vertical laying**

**Details (Fig. 3)**
Before applying DELTA®-THENE to the larger surfaces, cover all outside corners, edges, valleys, etc. with cuttings and/or reinforcement strips (DELTA®-THENE-BAND T 300) so that all risky areas are covered by two layers when the laying process is complete. Strips should be approx. 30 cm wide. The backing paper of DELTA®-THENE BAND T 300 is split down the middle. Remove it from one side and glue on the DELTA®-THENE strip. Next, mould the strip more closely to the surface, pull off the other half of the backing paper and seal the sheet.

**Corners**
(Fig. 6). For inside corners, make a square cutting, make a cut in the middle and press it into the corner. For added safety, apply a triangular cutting to the middle.

(Fig. 7). For outside corners, make a square cutting measuring 30 x 30 cm, make a cut in the middle, and glue it to the corner. For added safety, apply a triangular cutting.

**Pipe lead-throughs (Fig. 4 and 5)**
Make two cuttings measuring approx. 30 x 30 cm. Mark the circumference of the pipe at one of the edges of each sheet, criss-cross it with star-shaped cuts, and pull the two cuttings over the pipe from above and below. Make sure that they overlap by at least 10 cm and press down firmly. Next, apply a 10 cm strip of DELTA®-THENE to the transition between the wall and the pipe. As an alternative, you can use DELTA®-FLEXX-BAND to seal the wall/pipe junction.

(Fig. 8). For inside corners forming a valley, apply a triangular cutting to/into the corner. Next, cut a rectangular cutting from one corner to the middle and glue it to the corner.
For outside corners forming a valley, cut a square measuring 30 x 30 cm, make a cutting in the centre, and glue it to the corner. Next, make a central cut into a rectangular cutting and glue it into the valley. For added safety, apply a triangular cutting to the corner.

**Expansion joints (Fig. 10)**

Make a strip approx. 50 cm wide and cut the backing paper lengthwise approx. 20 cm away from both edges. Make a deep valley above the heat insulation. Remove the pre-cut strip of backing paper along one edge of the sheet and fasten it along the joint. Mould the centre part into the joint. Remove the backing paper from the other edge of the sheet and fasten it to the wall. Fix the neighbouring large sheet with an overlap of 20 cm up to the joint.
Laying instructions for DELTA®-THENE

**Vertical laying**

(Fig. 11). If a wall has an inside corner, begin laying there. First cover the inside corner with a strip 30 cm wide. Align the sheet and remove the backing paper approx. 50 cm down from the top of the sheet. Working from the centre of the sheet and from the top down, fasten the sheet to the entire surface and press down well, avoiding air bubbles.

In order to prevent from capillary forces in the area of T-joints, it is strongly recommended to arrange a diagonal cut (10/10 cm) at the end of the undercovering membrane.

(Fig. 12). The blue strip affixed along one edge must be removed to permit bonding to the sealing compound below.

(Fig. 13). Align each subsequent sheet and fix it with an overlap of 10 cm as described above.

(Fig. 14). Outside corners should either be covered by a 30 cm strip. Alternatively, a sheet may be folded around the corner so as to extend approx. 15 cm to the other side.

(Fig. 15). Carefully rework and press down all overlaps, seals, and caps.
**Upper cap**

In cellar walls, especially those exposed to sunlight, residual moisture may cause the waterproofing sheet to form blisters and detach itself locally from the substrate. However, this physical process is not critical.

(Fig. 16). Nevertheless, sheets laid out vertically must have their upper edges secured mechanically. In masonry, for example, clout nails may be used, spaced 50 cm apart and sealed with DELTA®-FLEXX-BAND which can be plastered over.

Sheets applied to concrete substrates do not require mechanical fastening: they merely need pressing down firmly with a roller and sealing with DELTA®-FLEXX-BAND for additional safety. However, we recommend mechanical fixing in the event of adverse weather conditions and/or prolonged holdups.

(Fig. 17). Before using DELTA®-FLEXX-BAND, mineral substrates should be primed with DELTA®-THENE-GRUNDANSTRICH. Alternatively, end profiles may be used which should be attached directly after laying.

**Protection and drainage**

(Fig. 18). To protect the waterproofing from mechanical damage during backfilling, DELTA®-TERRAXX should be installed. The sheet offers reliable protection and safe drainage.

(Fig. 19). Another option is to install additional thermal insulation by gluing perimeter insulation boards to the DELTA®-THENE waterproofing with a solvent-free cold-setting bitumen adhesive or a perimeter adhesive. Then, DELTA®-TERRAXX may be applied on top of the perimeter insulation for protection and drainage, simply by fastening it to the insulation with special screws.

Excavations must be backfilled within 72 hours after the completion of the waterproofing job. Backfilling and compacting must be done in layers 30 cm thick.
Laying instructions for DELTA®-THENE

**Horizontal laying**

**Details**
Apply DELTA®-THENE cuttings and/or reinforcement strips of DELTA®-THENE-BAND T 300 to all edges, corners, valleys, etc. Strips should be 30 cm wide. The backing paper on DELTA®-THENE-BAND T 300 is split down the middle. Pull it off on one side and press down the DELTA®-THENE strip. Mould down the strip more closely, pull off the other half of the backing paper and fix the sheet. In outdoor applications, run the strip at least 15 cm up the wall.

(Fig. 21). Cover the transition from the floor to the masonry with a strip no less than 30 cm wide.

**Inlet collars**
(Fig. 20). First install the inlet. Cover it with a 60cm square cutting of DELTA®-THENE, make criss-cross cuts across the inlet opening, mould the sheet down, and fix it. When laying out large sheets later on, run them across the previously installed inlet, make criss-cross cuts across the opening, mould down, and fix so that the inlet is covered by a double layer of DELTA®-THENE waterproofing.

(Fig. 22). Always start laying from the lowest point, working either with or across the gradient. After the sheets have been rolled out and cut to size (we recommend adding an extra 5 cm), the next step is to align them. Begin by laterally aligning the segments you have trimmed. Next, roll them up again to the middle and cut the backing paper, taking care not to damage the waterproofing layer. Pull of the backing paper slowly and press the sheet down. Next, roll up the other half of the sheet, remove the backing paper, and press the sheet down.
In order to prevent from capillary forces in the area of T-joints, it is strongly recommended to arrange a diagonal cut (10/10 cm) at the end of the undercovering membrane.

The covering strip that runs along the edge of the sheet must be removed to permit the sealing compound below to bond with the overlap of the adjacent sheet. As described above, align the neighbouring sheet and glue the two together with a 10 cm overlap.

To finish, press down all overlaps very carefully with a roller.

The covering strip that runs along the edge of the sheet must be removed to permit the sealing compound below to bond with the overlap of the adjacent sheet. As described above, align the neighbouring sheet and glue the two together with a 10 cm overlap.

Upper end seals outdoors. Wall ends should reach at least 15 cm high, giving consideration to the height of the water-bearing level. Upper edges should be additionally secured with DELTA®-FLEXX-BAND which can be plastered over. Mineral substrates must be primed with DELTA®-THENE-GRUNDANSTRICH before DELTA®-FLEXX-BAND can be applied.
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Damp-proofing floor-length windows and doors

Details
Double-walled masonry is particularly susceptible to moisture problems on the outer side of floor-length windows and doors. Installed as an interior vapour barrier, DELTA®-THENE provides effective and safe damp-proofing. The material keeps warm and humid air from escaping from the interior and condensing on the outside.

(Fig. 27). After cleaning the substrate, begin by carefully applying a primer. Next, glue cuttings of DELTA®-THENE and/or reinforcement strips (DELTA®-THENE BAND T 300) into the corners.

(Fig. 28). The strips are 30 cm wide. The backing paper of DELTA®-THENE BAND T 300 is split down the middle. Pull off one half and glue on the DELTA®-THENE strip. Lastly, mould the strip to fit the surface, pull off the other half of the backing paper, and press the sheet down firmly.
The cases described in these instructions are examples. Other procedures may be followed if they comply with the generally recognised rules of practice. Any deviations that may be necessary may be agreed with Dörken GmbH & Co. KG on a case-by-case basis.

Object-specific conditions as well as the proper use of our products, which is crucial for success, are beyond our influence. In cases of doubt, check the suitability of our products in in-house tests.

An extensive collection of details as well as standard requests for tender are available at www.doerken.com as PDF files for you to print out and save.