# BENTOTELO®

*Bentonite geo-synthetic barrier*

**Bentonite geo-compound, self-attaching and self-sealing, made with micronized sodic bentonite. Also active in the presence of hard water or water with high levels of contamination. The geo-compound is made with self-sealing non-woven fabric, saturated with bentonite and perfectly sewn to the polypropylene fabric. In this way the bentonite is definitively trapped inside micro-cells, removing any possibility of sliding due to cuts, tears, vertical application or simply moving.**

## ADVANTAGES

- **Self-attaching and self-sealing**
- **High tear resistance**
- **Easy application**
- **Quick application**

## USES

In all containment works that require a low hydraulic conductivity, stability over time, durability, easy application, self-sealing overlaps and self repairing.

## YIELD

With 15 cm of overlapping, the yield is 1,15 $m^2/m^2$

## STORAGE

Keep rolls in a clean and dry environment, avoiding direct contact with the ground.
Wooden pallets can be used, taking care to assure a uniform contact between rolls and support.
If there is not a covered space to store the rolls, they must be covered by a polyethylene sheet.

| PACKAGING | Small | Medium | Large* |
|---|---|---|---|
| Thickness of finished product (EN 964-1) | 5 mm | 5 mm | 5 mm |
| Rolls size | 1,20 x 5 m | 3,60 x 20 m | 5,10 x 30 m |
| One roll area | $m^2$ 6 | $m^2$ 72 | $m^2$ 153 |
| One roll weight | about kg 29 | about kg 346 | about kg 735 |

* Bentotelo L is not provided with self-hooking and we recommend it only for horizontal surfaces. If a vertical laying on perimeter walls is needed use Bentotelo M or S, both provided with self-attaching.

| Technical Data | |
|---|---|
| Geo-fabric for covering | Geo-fabric texed in PP |
| Geo-fabric for base | Geo-compound non-woven fabric in PP |
| Unit weight of the waterproofing layer of sodic bentonite | ~ 4.500 $g/m^2$ |
| Unit weight of porous internal geo-fabric | ~ 50 $g/m^2$ |
| Total unit weight (DIN EN 965) | ~ 4.800 $g/m^2$ |
| Thickness when dry (DIN EN ISO 9863-2) | ≥ 6,0 mm |
| Breaking resistance (ISO 10.319) - *longitudinal*<br>*transversal* | ≥ 13 kN/m<br>≥ 22 kN/m |
| Elongation to nominal tension (ISO 10.319) - *longitudinal*<br>*transversal* | ≤ 14%<br>≤ 17% |
| Permeability coefficient ($K_v$) with i = 30 and overloaded of 30 kPa (E DIN 60500 T4) | ≤ $6x10^{-11}$ m/s |



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## SETTING OF THE SURFACE

**Concrete bed of foundation**

For the horizontal laying, it is necessary a layer of concrete (lean concrete as cleaning) to realize a uniform base where create the geo-synthetic bentonite barrier. Thickness must not be lower than 10 cm on the whole surface.

**Walls of foundation**

To waterproof the vertical wall of foundation (post-concrete casting waterproofing), it is necessary to remove all the roughness. Eliminate any hollow by smoothing with fibre-reinforced cement mortar.

**Partition**

To waterproof vertical concrete partition wall (pre-concrete casting waterproofing), it is necessary to realize a uniform base removing roughness. Hollows must be eliminated by smoothing with fibre-reinforced antishrinkage mortar.

## BARRIER LAYING

**Horizontal laying**

In horizontal applications, lay the rolls by spreading the polypropylene geo-fabric (white sheet) downward, so toward the lean concret; polyester geo-fabric (black non-woven) must be upward and so visible. Cloths must be lay, “spreading” them on the lean concrete, avoiding to create traction tension by an extreme speed in laying the mechanical mean used. Likewise, it is necessary to avoid folds caused by a wrong spreading of the barrier. On the joint with the foundation wall, Bentotelo® must be spread till the wall and then covered with a pannel of non-woven fabric 600 gr (as in picture).

**Vertical laying**

On vertical application, post-concrete casting, lay the rolls from up to down, spreading polyester geo-fabric (black non-woven) in contact with the vertical structure to be protected (foundation wall); polypropylene geo-fabric (white fabric) must be turned outward and so visible. During the filling up, the black geo-fabric will be in contact with the ground.

## OVERLAPS SETTING

Apply ***Bentotelo® Large*** in such a way to guarantee the following minimum overlapping between contiguous sheets:

- minimum of 20 cm for longitudinal overlaps
  (overlap realized in the same direction of rolls unrolling).
- minimum of 40 cm for transversal overlaps
  (those top/top between two rolls, or by the short side of the roll).

Apply ***Bentotelo® Medium*** in such a way to guarantee the following minimum values of overlap between contiguous sheets:

- minimum of 15 cm for longitudinal overlaps
  (overlap realized in the same direction of rolls unrolling)
- minimum of 30 cm for transversal overlaps
  (those top/top between two rolls, or by the short side of the roll).

Apply ***Bentotelo® Small*** Small in such a way to guarantee the following minimum values of overlap between contiguous sheets:

- minimum of 10 cm for longitudinal overlaps
  (overlap realized in the same direction of rols unrolling)
- minimum of 20 cm for transversal overlaps
  (those top/top between two rolls, or by the short side of the roll).

Transversal overlaps (small side) should be staggered of, during the horizontal application, not lined with a minimum of 50 cm in the unrolling direction.