



# DAM<sup>®</sup>ROLL HDG

## Natural waterproofing membrane

### CHARACTERISTICS:

**DAM<sup>®</sup>ROLL HDG** is a waterproofing membrane of natural sodium bentonite gel, produced with an innovative system of controlled prehydration and chemical stabilization of the sodium bentonite, followed by a vacuum extrusion to obtain a high density bentonite gel (HDG). This production process confers to **DAM<sup>®</sup>ROLL HDG** exceptional waterproofing characteristics and a high stability of its performances, even if in contact with chemicals usually present in the soil or in the underground water, as calcium and magnesium, which could induce in a normal sodium bentonite the cationic exchange phenomena, with consequent loss of its water tightness.

In the lamination phase the bentonite gel layer is coupled with two geotextiles, which could be of different type and characteristics, depending on the field of application of the membrane. **Dam<sup>®</sup>Roll TP**, specific for building construction, has on one side a non-woven polypropylene fabric, strong enough to resist to a concrete or soil pouring, and in the other one a scrim fabric which allows an intimate contact of the bentonite with the concrete surface, preventing the tracking of the water between the concrete and the membrane; **Dam<sup>®</sup>Roll TK**, specific for geotechnical applications, has on both side a non-woven geotextiles.

### APPLICATION FIELDS

**DAM<sup>®</sup>ROLL HDG** is specific for waterproofing concrete structures as foundations, under ground water table structures, railway and road underground tunnels, etc.; hydraulic constructions as canals, basins, decorative ponds, etc; soil protection as tanks farms, petrol station areas, transformer bunds, etc.

### PACKAGING, DIMENSION AND STORAGE

#### **DAM<sup>®</sup>ROLL HDG TP1 & TK1:**

Dimension: 1x5 m roll; packaging: wrapped with polyethylene film, 25 rolls per pallets = 125 m<sup>2</sup> ; weight: 40 Kg/roll circa, 1.100 Kg/pallet circa

#### **DAM<sup>®</sup>ROLL HDG TP2 & TK2:**

Dimension: 2x30 m roll; packaging: roll wrapped with a polyethylene film, external diameter 60 cm, internal cardboard tube diameter 10 cm, ; secure packaging; weight: 550 Kg circa. For temporary storage at job site, cover up with a tarpaulin. Its storage life is unlimited if the product is kept in its unopened, original packaging.



## **DAM<sup>®</sup>ROLL HDG**

**Natural waterproofing membrane**

### **INSTALLATION**

#### **PRODUCT:**

**DAM<sup>®</sup>ROLL HDG** is flexible and adaptable to any shape. **DAM<sup>®</sup>ROLL HDG** can be cut with a normal cutter without any loss of material.

#### **HORIZONTAL SURFACE PREPARATION:**

The surface must be dry, compacted, regular and without any foreign or sharp materials. In case of building foundation it is advisable to pour a concrete blinding layer.

Any irregular surface, cavity, concrete flash or others, must be filled or taken off to obtain a regular surface to allow a uniform compression of the membrane. Even in presence of pounding water or light rain, **DAM<sup>®</sup>ROLL HDG** can be installed, provided that it will be immediately covered by a 10 cm thick concrete screed of identical quality as the final concrete casting.

#### **VERTICAL SURFACE PREPARATION:**

The surfaces must be regularized by filling the cavity of the spacers with non-shrinking mortar and smoothing the cavities and irregularities of the surface with **DAM<sup>®</sup>SEAL** paste.

#### **HORIZONTAL INSTALLATION:**

Unroll **DAM<sup>®</sup>ROLL HDG** with the high resistance non-woven fabric (white colour) facing up. The membranes must be overlapped sideways for about 10 cm and for 20 – 25 cm in the head lines. The membranes must be staggered to avoid multiple overlapping at the same point.

**NB:** With **TP2** and **TK2** type (dimension 2x30 m) the sideways overlapping must be 10 cm and the head one 40 cm. For handling **TP2** & **TK2** rolls, considering their weight (about 550 Kg), use an adequate lifting device with a thick wall steel tube (to put through the cardboard central tube) and chains connected to a spread beam at the two sides.

#### **VERTICAL INSTALLATION:**

Apply **DAM<sup>®</sup>ROLL HDG** with the scrim fabric (grey colour) facing towards the concrete surface, overlapping the membrane for about 10 cm and fixing the overlaps with the rigid metal bar **FIXOBAR** and steel nails.

#### **PROTECTION AND HORIZONTAL CONFINEMENT:**

**DAM<sup>®</sup>ROLL HDG** must be covered as soon as possible (in any case, within the same day of its installation) by a 10 cm thick concrete screed of identical quality as the final concrete casting.

#### **PROTECTION AND VERTICAL CONFINEMENT:**

Fill up the dig with homogeneous compactable soil, free of sharp material, or (when working against diaphragms) with a concrete casting, in order to compress the membrane evenly. The confinement must be done within the same day of the installation. In case of exposition of the membrane should go over it, it is necessary to protect temporally the membrane with polyethylene foil, well thigh and sealed with a wide sticky tape.

## DAM<sup>®</sup>ROLL HDG

### Natural waterproofing membrane

Please note: For specific installation details consult **DAM<sup>®</sup>ROLL HDG** installation guide or contact the Technical Office of ORSAN s.r.l.

#### TECHNICAL DATA

Bentonite	Sodium bentonite
Specific weight of High Density Bentonite Gel	1.600 Kg / m <sup>3</sup> circa
High Density Bentonite Gel content	8 Kg/ m <sup>2</sup> circa
Dry bentonite content	6 Kg/ m <sup>2</sup> circa
Geotextile	Polypropylene, high resistance non-woven fabric
	Weight 120 g / m <sup>2</sup>
	Tensile strength: 7,7 KN/m longitudinal
	8,7 KN/m transversal
	Elongation at break: 65 % Longitudinal
	65% Transversal
Scrim fabric	Polypropylene spunbonded 15 g/ m <sup>2</sup>
Membrane dimension	TP1 – 1x5 m
	TP2 – 2x30 m
	TK1 – 1x5 m
	TK2 – 2x30 m
Total membrane thickness	6 mm circa
Hydration liquid	water and polymeric stabilizers in solution
Permeability Coefficient K	Tests done with fresh and salty waters at a pressure of 500 KPa show a range from 2x10 <sup>-13</sup> to 6x10 <sup>-13</sup> m/s
Characteristic constancy	After dry/wet and freezing/thaw cycles , the permeability test at 17 KPa pressure shown a Permeability Coefficient of 1,1x10 <sup>-11</sup> m/s
Chemical stability	Tests carried out with a long-time contact with aggressive solutions (marine water, artificial salty water, acid solutions, heavy metal solutions) confirmed the stability of the long term waterproofing performances.

#### WARNINGS

Do not leave **DAM<sup>®</sup>ROLL HDG** exposed without a protection layer (concrete screed or soil). In case of sun exposition (over the day of installation), spray fresh water over the membrane before covering it with polyethylene foil, well thigh and sealed with sticky tape.

**NB:** The exposition of **DAM<sup>®</sup>ROLL HDG** to the sun and wind can cause a slow exsiccation without affecting its chemical and mechanical characteristic. By the humidity of the soil or the water of the ground water table **DAM<sup>®</sup>ROLL HDG** will be quickly re-hydrated, getting back the original consistency and plasticity of the gel..

**NB:** The remaining unused material must be immediately wrapped up with a polyethylene foil and sealed with tacky tape.