DAM®ROLL EKO HDG TK1 TK2

NATURAL
WATERPROOFING
MEMBRANE

CHARACTERISTICS:

DAM®ROLL eko 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®ROLL eko 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®ROLL eko HDG**, specific for geotechnical applications, has on both side a non-woven geotextiles.

APPLICATION FIELDS

DAM®ROLL eko 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®ROLL eko HDG TK1:
Dimension: 1x5 m roll; packaging: wrapped with polyethylene film, 25 rolls per pallets = 125 m²; about 700 Kg / pallet

DAM®ROLL eko HDG TK2:
Dimension: 2x30 m roll; packaging: roll wrapped with a polyethylene film, external diameter 50 cm, internal cardboard tube diameter 10 cm, ; secure packaging; weight: about 350 Kg.

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.

INSTALLATION

Product: DAM®ROLL eko HDG is flexible and adaptable to any shape. **DAM®ROLL eko HDG** can be cut with a normal cutter without any loss of material.

Surface preparation: The surface must be dry, compacted , regular and without any foreign or sharp materials.

Please note: 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®ROLL eko HDG** can be installed, provided that it will be immediately covered.

Overlaps: For the realization of overlaps between adjacent membranes, the lower membrane geotextile must be skinned in correspondence to the overlap band and turned backwards, so to be able to lean the higher membrane directly on the membrane core. The geotextile previously turned backwards then goes back on the overlap, thereby ensuing also an effective protection to the intrusion of the material carryover.
Unroll **DAM®ROLL eko HDG TK1** with the high resistance non-woven fabric (white colour) facing up. The membranes must be overlapped sideway for about 10 cm and for 20 – 25 cm in the head lines, meanwhile

the membrane **DAM®ROLL eko HDG TK2** must be overlapped sideway for about 10 cm and the head one 40 cm. In both cases the membranes must be staggered to avoid multiple overlapping at the same point.

Please note: With **TK2** type. For handling TK2 rolls, considering their weight (about 350 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.

Confinement: Immediately after the pose, on the membrane has to be carryover a soil layer of at least 40 cm homogeneous compactable soil, free of sharp material. The soil has to be laid with mechanical means that should never move directly on the membrane. Mechanical means light wheeled may rise on the inflation layer already laid, to avoid the lifting of the closing overlaps geotextile.

Please note: For specific installation details consult **DAM®ROLL eko 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 / m³ circa
High Density Bentonite Gel content	About from 5 Kg / m² to 10 Kg / m²
Dry bentonite content	About from 3,6 Kg / m² to 8 Kg / m²
Protection Geotextile	Polypropylene, high resistance non-woven fabric Weight 120 g / m² Tensile strength 7,7 KN/m minimum 8,7 KN/m minimum Elongation at break 65 % 65 %
Membrane dimension	TK1 – 1x5 m TK2 – 2x30 m
Total membrane thickness	About minimum 3 cm up to 6 cm
Hydration liquid	water and polymeric stabilizers in solution
Permeability Coefficient K of the bentonite gel HDG	Tests done with fresh and salty waters at a pressure gave value of coefficient K, with pressure of 500 KPa show a range from $1,2x10^{-13}$ to $5,5x10^{-13}$ m/s
Characteristic constancy	After dry/wet and freezing/thaw cycles , the permeability test at 17 KPa pressure shown a Permeability Coefficient of $1,1x10^{-11}$ 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. (K variable from $1,6x10^{-12}$ m/s to $4x10^{-12}$ m/s)

WARNINGS

Do not leave **DAM®ROLL eko 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®ROLL eko 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®ROLL eko 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.