DANOPOL HS 1.2

Danopol HS 1.2 is a synthetic PVC plasticized membrane, reinforced with polyester net carrier. Designed for flat roof waterproofing, U.V. resistant.

CE MARKING

Identification number of the Certification Body: 0099

DERIVADOS ASFALTICOS NORMALIZADOS S.A.
Calle La Granja 3 (28108 - Alcobendas, MADRID)

Year in which the CE marking was affixed: 2008
Certificate number CPF: 0099 / CPD / A85 / 0013
European standard EN 13956

Produced at: Polígono Industrial Sector 9 (19290 - FONTANAR, Guadalajara)

Membrane of 1.78 m x 20 m x 1.2 mm composed of polyester net and reinforced with a polyester net.
Applications: mechanically fixed or gravel finished.

Characteristics	Declared Value	Units	Norm
External fire performance	Broof (t3)-Broof (t1)	-	EN 13501-5
Reaction to fire	E	-	EN 13501-1
Longitudinal & transversal tensile strength	> 1000	N/50mm	EN 12311-2 Método A
Longitudinal tear strength	> 25	%	EN 12311-2 Método A
Transversal tear strength	> 25	%	EN 12311-2 Método A
Longitudinal resistance to tearing (nail shank)	> 200	N	EN 12310-2
Transversal resistance to tearing (nail shank)	> 200	N	EN 12310-2
Overlaps resistance (Peeling of overlap)	> 250	N/50mm	EN 12316-2
Overlaps resistance (Shear of overlaps)	> 800	N/50mm	EN 12317-2
Resistance to impact	> 500	mm	EN 12691
Resistance to static loading	> 50	Kg	EN 12730 Método B
Flexibility at low temperature	< -30	ºC	EN 495-5
Resistance to root penetration	Pasa	Pasa/No Pasa	EN 13948
Humidity resistance factor	20.000 ± 30%	(m².s.Pa)/Kg	EN 1931

Pasa = Positive or correct No pasa = Negative PND = No performance determined - = Not necessary

ADDTITIONAL TECHNICAL DATA

ADDITIONAL DATA	Declared Value	Units	Norm
Straightness	< 50	mm	EN 1848-2
Flatness	< 10	mm	EN 1848-2
Visible defects	Pasa	Pasa/No Pasa	EN 1850-2
Length	20	m	EN 1848-2
Width	178	cm	EN 1848-2
Nominal minimum thickness	1.2 (-5%; +10%)	mm	EN 1849-2
Mass	1.6 (-5%; +10%)	kg/m2	EN 1849-2
Longitudinal & transversal dimensional stability	< 0.3	%	EN 1107-2
Loss of plasticizers (mass change at 30 days)	< 4.5	%	EN ISO 177
Tear strength (UV 5000 h)	< 10	%	EN 1297, EN 12311-2

DECLARATION OF CONFORMITY

DERIVADOS ASFÁLTICOS NORMALIZADOS S.A.
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José Antonio Manzarbeitia Valle
Manager Control and R&D Manager.
Guadalajara, July 15st 2008

STANDARDS & CERTIFICATION

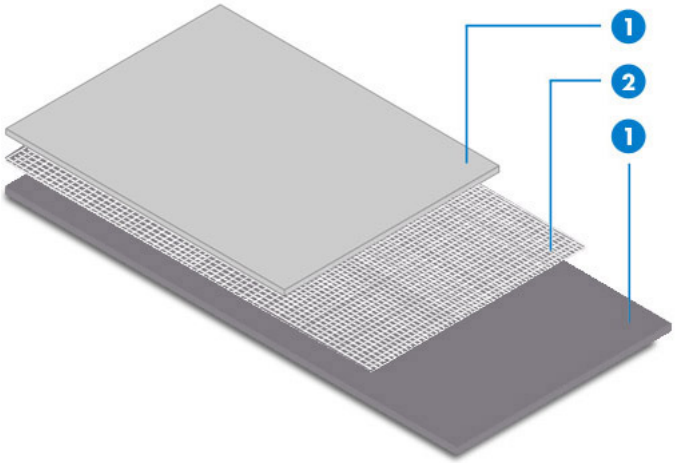
Membrane Danopol HS 1.2, complies with UNE-EN 13 956.
Membrane Danopol HS 1.2, meets CE requirements.
Membrane Danopol HS 1.2, complies with UNE-EN 104 416.
Membrane Danopol HS 1.2, meets the requirements of the Technical Building Code (CTE).
Membrane Danopol HS 1.2, available for mechanical fixing DANOPOL HS FM Nº 10/0054.

SCOPE

Mechanically fixed flat roof waterproofing systems for both new and existing buildings.
Commercial or industrial projects.

PRESENTATION

PRESENTATION	VALUE	UNIT
Reinforcement type	Polyester net	-
Thickness	1.2	mm
Width	1.78	m
Length	20	m
Roll surface	35.6	m^2
Color	Light grey	-
Product Code	210032	-



1. Plasticized PVC
2. polyester net

ADVANTAGES AND BENEFITS

ADVANTAGES:
- Excellent resistance to tearing.
- High tensile strength.
- High puncture resistance.
- High dimensional stability.
- Very good resistance to: microorganisms; putrefaction; root penetration, natural aging, weathering, UV radiation and swollen.
- Excellent flexibility.

BENEFITS:
- Improves performance in mechanically fastened sheets, assuming a high value of resistance to wind suction, optimizing the density offixations.
- Absorbs While structural movements to resist the stresses resulting from large spans and high expansion of the covered deck.
- Presents a good protection against mechanical damage, resulting from occasional pedestrian on flat roofs.
- Limit strains and tensions in the waterproofing membrane due to the high temperatures and temperature changes to that are going toflat roofs subject.
- Very high durability with respect to possible degradation caused due to chemical type.
- High adaptability to the different forms of support.

INSTRUCTION FOR USE

Substrate preparation:
- The base support surface must be durable, uniform, smooth, be clean, dry and free from foreign bodies. In case of thermal insulation, plates were placed at matajuntas and without gaps between plates 1 mm.
- As a separating layer or protective use polypropylene geotextiles, Danofelt PP125 type or higher.
- Before issuing the membrane, mechanically fixing colamine profiles at both the horizontal and vertical face. In the event that the blade experiences a variation of 0.09% dimensional stability anchor the horizontal plane would not be necessary.
- The profile of the horizontal plane will be installed as close as possible to the corner and will never be at a distance larger than 20 cm from the confluence or meeting. On the vertical profile is set so that the membrane lift a minimum of 20 cm above the pavement surface. The membrane is welded to the profile of the horizontal plane. Subsequently, a band of foil welded to the profile of vertical face, and overlaps and welds on the membrane of horizontal. The print on the back vertical face should be, in this solution, the same characteristics as the horizontal plane.
- The joint between the profile fixed to the wall and the upstream work, always sealed with an elastic filler and rot.

Singular Points:
- In find housing with vertical faces and elements that span the membrane, it must climb at least 20 inches above the finished deck level or higher altitudes, if necessary, so that the upper edge of the membrane is always above the maximum water level expected in the deck. To improve the aesthetics of the finish on these points, you can use an adhesive, GLUE-DAN PVC , to attach the blade to the vertical wall.
- When the height of plate not exceeding 20 cm, or wahoo there is no perimeter, delivering songs such breastplates or forging can be performed by a profile sheet at an angle colaminated, Profile colamine C (with drip edge angle shot) to pick up on the outside of the facing as a drip edge. This profile is set to the wall by horizontal wing, which has a width greater than 6 cm, with anchor located at distances of less than 25 cm. The membrane is welded to the profile sheet colaminated, so that the head of the screws are hidden.

Placement waterproofing layer:
- The membrane is placed at right angles to the line of maximum slope of the roof. The anchorage to the structural support should be achieved by mechanical fixing. The junction between plates are made by welding thermoplastic with hot air welder. The overlaps are at least 10 cm. to cover the mechanical fastening and welding of the bottom sheet with the top must be at least 4 cm. Immediately after welding the joint will be pressed with a roller, ensuring a homogeneous union. To verify the unions will be a physical check using a blunt metal needle (with a rounded tip with a radius between 1 mm to 3 mm), passing it along the edge of the union.
- The rolls are arranged on the bracket loose proofing (old insulation or waterproofing, if rehabilitation), starting from the lowest point of the hip of the roof and perpendicular to the line of greatest slope of the roof, forming a row of plate.
- Is mechanically fixed in the longitudinal overlapping area will be covered later with the next row of sheet (top deck). The distance from the edge of the washer setting on the edge of the blade will be greater than 1 cm.
- Have the roll of the next row, the overlap welding where bindings are located. The placement of the plates must be such that no transverse overlap each row be aligned with any of those in adjacent rows.
- The roll is mechanically fixed in the following row at the other edge, with the same assumptions described above. No anchor line should be located more than two meters of its contiguous.
- The mechanical fixing, together with the waterproofing membrane are fixed, individually or simultaneously, the lower layers, such as vapor barrier, insulation, etc.
- Attachments of the blades on the perimeter of the roof should line up parallel to it.
- Do not be joining more than three blades on a single point.
- In the tees (three blades intersect at a point) is chamfering the bottom sheet to prevent capillary leakage or review with the hot air welder.
- The apex of the angle between the transverse and longitudinal edges of the top piece is cut in a curve.

INDICATIONS AND IMPORTANT RECOMMENDATIONS

- They must take appropriate security measures and that during the welding work is produced vapors that can become irritating.
- A range of ancillary products for use with the membrane (PU sealant Elastydan PU 40 Grayadhesive GLUE-DAN PVC colamine profiles, corners, corners, cups , pasatubos, etc)
- Where there are planned expansions that could affect the sheet, use an DANOFELT PP geotextile separation layer 125 or higher, between it and the extruded polystyrene insulation panels, so that each product dilate of independently.
- Avoid projecting polyurethane foam directly over the waterproofing without the use of a suitable separating layer (geotextiles, layers of mortar, polyethylene film, etc ...).
- Where rehabilitation will take into account the chemical incompatibilities with old films consisting waterproofing mastic asphalt and modified bitumen base and may require the total elimination or using suitable separating layers (geotextiles, layers of mortar, film polyethylene, etc ...). Make sure the chemical compatibility of Danopol HS 1.2 with other materials.
- Weldability and weld quality depends on atmospheric conditions (temperature, humidity), welding conditions (temperature, velocity, pressure, cleanliness) and by the state of the membrane surface (cleanliness, humidity). Therefore must meet the hot air machine for the correct assembling
- should be made a strict control of the welds, once the surface has cooled by a punch. In the case of any irregularity in a hot air welding shall review with the same procedure described above.
- The fastener must be sensitive to material that is made the support. It will check the tensile strength of the fastener to the support resistant to ensure a proper mechanical fixing. The fasteners should bear anchor allowable tensile load greater than 400 N. As the membrane is the outermost element of the waterproofing system should be calculated its stability against wind dynamic pressure based on the shape of the building, its height above ground, its topographical situation, and the specific area of cover.

- The anchoring of the plates or profiles on the skirt will be made by tacos lag, when the support base is of stone materials, or by screws, brackets in the case of wood or metal. In the latter case can also be used rivets. Studs, screws or rivets to set these profiles, will never be a distance apart greater than 20 cm and will have to endure the anchor point, an allowable shear load 480N. If it is not possible to fix the plates in a medium soft (insulation panels, aerated concrete, etc..) May be the anchor perimeter by means of contours at an angle, fixed to the wall. In this case the bindings will have to be at distances of less than 10 cm, to make the effort to become tensile shear rather
- When delivery is made by colamine profiles fixed on the top edge of the band that goes by the facing should be fitted with a flange, at least in its upper part that forms the basis of a string or elastic and rot-proof seal with Elastydan PU 40 Grey , which covers the slot between the profile and the wall. If the tab has no bottom, the edge must be perfectly round, so that it will damage the blade.
- Anchorage wahoo: in the membranes fixed with strapping or profiles, they must be installed leaving the junction points in a clearance for the blade to absorb the movements caused by thermal effects. These clearances will be covered by a strip of the waterproofing layer, must be released over the slot.
- Anchorage on the encounter between two planes: the anchor is made linearly. Fixed line will be installed as close as possible to the corner and never will be located at a distance greater than 20 cm from the confluence or meeting.
- Weatherproof sheets are sheets of finish seen, so we must strive in the placement.
- This product is part of a waterproofing system, so you should take into account all the documents referenced by Danosa Solutions Manual and all rules and mandatory law in this regard.
- Special attention should be paid to the implementation of the singular points, such as wahoo (meetings with vertical elements and emerging), drains, expansion joints, etc ...

HANDLING, STORAGE AND CONSERVATION

- Danopol HS 1.2 is not toxic or flammable.
- Danopol HS 1.2 will be stored in a dry place protected from rain, sun, heat and low temperatures. Be kept in its original packaging, horizontal and parallel all the film (never crossed) on a support level and smooth.
- Danopol HS 1.2 will be used first come to work.
- Danopol HS 1.2 is easy to cut to adapt the size to work.
- No waterproofing works should be performed when weather conditions may be harmful, particularly when it is snowing or there is snow or ice on the deck when the cover is rain or wet surface moisture> 8% as QAT NTE or strong wind.
- No waterproofing works should be performed when the ambient temperature is less than -5 º C for hot air welding.
- In all cases, be taken into account Health and Safety standards at work, and the rules of good construction practice.
- Danosa should consult the MSDS of this product is available www.danosa.com permanently or can be obtained by writing to our Technical Department.
- For any further clarification, please contact our Technical Department .

WARNING

The information that appears in the following document makes reference to the uses and utilities of danosa's products and systems, and it is based on the knowledge that have been learnt until present, by Danosa. This is only possible if products have been stored and used in an appropriate way.
Nevertheless, Danosa is not responsible for unsuitable uses of the products neither any other facts, such as meteorological facts. So Danosa is just responsible for the quality related to the provided products.
Danosa reserves the right to carry out modifications without previous notice.

The values that appear in the technical sheet are the results of the tests that have been performed in our laboratory. July 2008.

Web site: www.danosa.com E-mail: export@danosa.com Phone number: +34 949 888 210