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since 1962

WATERPROOFING MEMBRANES SPECIALTY BITUMINOUS MEMBRANES

ESHA ANTI-NOx

Innovative, ecological waterproofing bituminous membrane



GENERAL DESCRIPTION

Esha Anti-NOx is an innovative, ecological bituminous roofing membrane that combine multiple technologies for both waterproofing and atmospheric improvement, resulting in immediate and positive environmental impacts.

The surface finish of the **Esha Anti-NOx** membrane is a special mineral aggregate with added titanium, which, in addition to protecting the membrane, also acts as a catalyst for neutralizing harmful nitrogen oxides, which are primarily responsible for acid rain, photochemical smog, and the reduction of tropospheric ozone in both urban and industrial environments.

Esha Anti-NOx is part of the **EshaDien** series of bituminous waterproofing membranes, which are produced from special bitumen modified with thermoplastic elastomers (SBS). This modification gives the product exceptional elasticity, even at very low temperatures (-20°C), improved rheological characteristics and properties that are ideal for the production of high-quality bituminous waterproofing membranes.

The selection of the appropriate combination of reinforcement, surface finishing and weight/thickness of the membrane offers a variety of applications and high quality solutions in every problem of waterproofing and, also, improves the environmental conditions.

Indicative typical applications of the membrane **Esha Anti-NOx** are:

- Waterproofing of flat and inclined roofs
- Waterproofing of metal decks
- Re-roofing, refurbishment

REINFORCEMENT

High stability composite polyester fabric with embedded glass yarns, which offers high resistance to mechanical stress and great dimensional stability during application with torch.

CHARACTERISTICS/ADVANTAGES

As a result of their high quality **Esha Anti-NOx** membranes offer the following advantages:

- ▶ Neutralization of harmful nitrogen oxides.
- ▶ Great elasticity (ability to stretch and recoil to its initial dimensions). Elastic recovery value for the membrane's modified compound exceeds 90%.
- ▶ High flexibility at very low temperatures (-20°C) compared with other types of bituminous membranes
- ▶ Consistent waterproofing properties on a long term basis.
- ▶ Wide temperature application window & operating range.
- ▶ High resistance to cracking, owing to its elastic properties.
- ▶ High puncture resistance and resistance to mechanical deformations.
- ▶ Advanced weldability to any substrate.
- ▶ Increased resistance to ageing.

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STORAGE

Membrane rolls should be stored in their original package, in vertical position, protected from direct sunlight, rain, snow and ice. In cold weather it is recommended that the rolls should be kept at temperature >5°C for at least 10 hours before installation.

Avoid strong and sudden roll impact, as well as fast unrolling during installation, transportation and storage, at low temperature conditions.

APPLICATION PROCEDURE

Surface preparation

- Before application of the membrane it is necessary to prepare properly the substrate surface. The substrate surface must be thoroughly cleaned, remove all dust, loose matter and remaining oils in order to be smooth and dry.
- Recommended surface slope: 1.5% minimum.
- Recommended substrate relative moisture $\leq 6\%$.
- The surface must be primed with eco friendly (VOCs free), elastomeric, waterproofing, bituminous primer with new generation technology **EshaToprimer** at a consumption $\sim 0.3 \text{ Lt/m}^2$.
- Alternatively the surface can be primed with **EshaLac 50-S** at a consumption $\sim 0.3 \text{ Lt/m}^2$.
- As soon as the surface is tack-free, the bituminous membrane can be torch applied.

Application of the bituminous membrane

- To avoid water vapor condensation and localized stresses that can lead to local surface cracking, it is recommended to apply a separating/ventilating layer by installing a special **EshaPerfo** or **EshaVent** or by another similar method of separating the waterproofing membrane **Esha Anti-NOx**.
- Membrane application starts from the lowest point of slopes in order to secure unobstructed water flow, when membranes are torched one in parallel to the other.
- The membrane is then rolled and positioned parallel to its adjacent one. It is then rerolled half-way without shifting.
- The bottom surface of the re-rolled part is heated with a propane torch until bitumen becomes fluid and the membrane is unrolled again to apply evenly on the substrate.
- Longitudinal overlaps must be at least 8 cm while transversal ones must be kept to a minimum of 12 cm.
- The overlaps of the membranes during welding are heated and pressed lightly until the molten bitumen appears at the joint, indicating that the membranes are welded tightly.
- Overlapping joints are treated with a metallic lapjoint cylinder in order to apply the optimal pressure in these demanding areas.
- In multiple layer waterproofing, application of the successive layers follows the same procedure and is done in the same direction as the previous ones. Care is taken so that overlaps do not coincide with those of the previous layer.
- In a ballasted roofing, a well calculated ballast should be placed on an adequate membrane protection layer to avoid damage.

CERTIFICATION

Esha Bituminous membranes comply with **EN 13707**, **EN 13969** and are certified with **CE No.1020-CPR-010021423**.

Application to roofs according to **EN 13707** and underground structures according to **EN 13969**.

For all available certificates and certifications please contact Esha Sales Department.

Photocatalysis certificate from the Fundación CARTIF Laboratorio de Análisis y Ensayos.



EPD certification is an independent assessment of a product's environmental impact throughout its entire life cycle, from initial production to disposal or recycling at the end of its life cycle. It contributes points to some of the leading green building programs, such as LEED certified building projects.



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Application notes

- Application temperature should be higher than 5°C.
- Waterproofing should be carried out by technicians, properly trained and certified in the bituminous membranes application.

For a more detailed description of bituminous waterproofing membranes' application please contact Esha Sales Department.

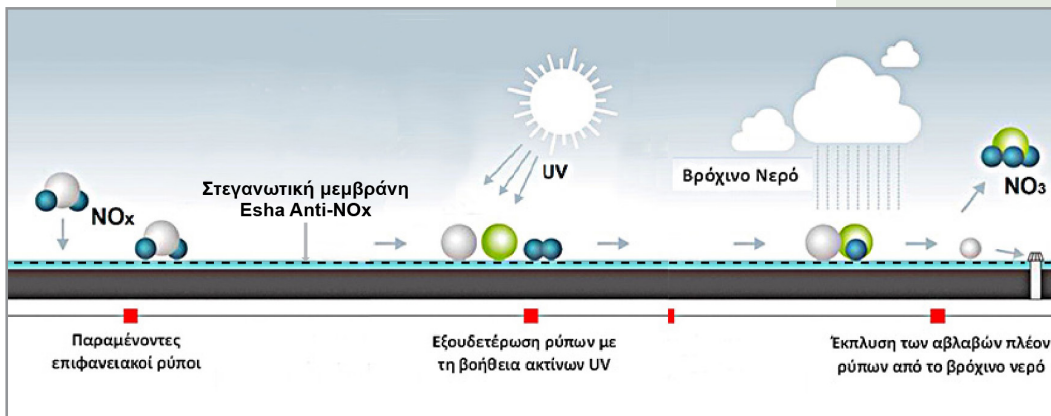


Figure 1: Schematic diagram of the operation of the *Esha Anti-NOx* asphalt membrane.

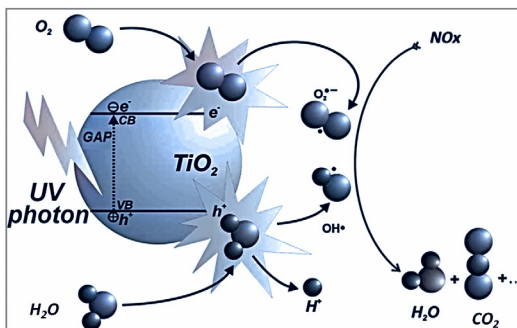
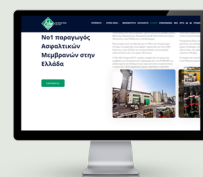


Figure 2: Schematic diagram of the action of particles.

Today, Esha is the No. 1 producer of bituminous waterproofing membranes in Greece, while also offering more than 500 specialized products (emulsions and solutions for surface protection and waterproofing, joint sealing materials, acrylics, epoxies, polyurethanes, polysulfides, modified road asphalt (elastomers, plastomers, recycled tires), asphalt road emulsions, asphalt bridge waterproofing materials, polyurethane thermal insulation boards, etc.).



See the products
and their applications
on our new website
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TECHNICAL CHARACTERISTICS

Characteristics	Standards	T	Nominal Values	Units
Reinforcement	---	---	Non woven polyester with glass yarns	---
Visible defects	EN 1850 - 1	---	No defects	---
Length	EN 1848-1	±0,2%	8	m
Width	EN 1848-1	---	1	m
Straightness	EN 1848-1	---	Fulfills requirements	---
Upper surface covering	---	---	Special mineral granules for NOx neutralization	---
Bottom surface covering	---	---	PE film	---
Weight	EN 1849-1	±10%	6	kg/m ²
Type of bituminous binder	---	---	Elastomeric (SBS)	---
NOx neutralization capacity	UNE 127197-1	---	> 7 % (Class 2)	%
Softening Point	EN 1427	± 10	130	°C
Penetration at 25°C	EN 1426	± 5	35	dmm
Elastic recovery of the bituminous binder of the membrane	EN 13398	≥	90	%
Elastic recovery after the oxidative aging, EN 12607-1	EN 13398	≥	90	%
Tensile strength L/T	EN 12311-1	± 20%	560/420	N/50mm
Elongation L/T	EN 12311-1	± 15%	45/55	%
Tear resistance L/T	ASTM D4073-94	± 15%	250/400	N
Static puncture resistance (concrete)	EN 12730/UEAtc MOAT27	---	L3 (15-25)	kg
Dynamic puncture resistance (concrete)	EN 12691/UEAtc MOAT27	---	I3 (Φ8)	mm
Flexibility to low temperatures	EN 1109	± 5	-20	°C
Water tightness (72 h, 2 bar)	UEAtc/EN 1928	---	Successfully passed (≥2)	---
Vapor permeability coefficient	EN 1931	≥	20000	---
Heat resistance	EN 1110	≤	110	°C
Reaction to fire	EN 13501-1	≥	F	---
Dangerous substances	EN 13707 §5.3	---	Contanes no asbestos and coal tar	---
Dimensional stability L/T	EN 1107-1	≤	-0.15/+0.1	%
Thermal conductivity	---	---	0.2	W/mK

Fluctuations in nominal values are in accordance with the relevant standards. The manufacturer reserves the right to modify the properties of its products. Esha provides information and, in particular, recommendations regarding the application and end use of its products based on its current knowledge and experience, when the products are stored, used, and applied under normal conditions. In practice, there are variations in substrates and local application conditions, so Esha cannot guarantee the success of the application of any material. It is recommended that the user test the application of the material under the local application conditions.