



# ESHADIEN GEO

## ELASTOMERIC BITUMINOUS WATERPROOFING MEMBRANES

### GENERAL DESCRIPTION

Elastomeric waterproofing membranes **ESHADIEN GEO** are produced from special bitumen, modified with thermoplastic elastomeric materials (SBS). This modification of the bitumen results in a binding material with enhanced elasticity, even at extremely low temperatures (-20°C), and improved viscoelastic properties which are ideal for the production of superb quality bituminous waterproofing products.

**ESHADIEN GEO** membranes offer excellent protection in variety of applications and high quality solutions in every problem of waterproofing, like:

- Waterproofing of flat and inclined roofs
- Waterproofing of metal decks
- Waterproofing of underground works /Foundations
- Waterproofing of bridge-decks & parking decks
- Waterproofing of reservoirs (tanks) and canals
- Absolute vapor barrier.
- Combined vapor control & waterproofing function in one layer

### CHARACTERISTICS/ADVANTAGES

As a result of their high quality **ESHADIEN GEO** membranes offer the following advantages:

- Great elasticity (ability to stretch and recoil to its initial dimensions). **Elastic recovery value of for the membrane's modified compound is  $\geq 90\%$ .**
- High flexibility at very low temperatures (-20° C) compared with other types of bituminous membranes.
- Consistent waterproofing properties on a longterm basis.
- Wide temperature application window.
- 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 aging.

### REINFORCEMENT

**ESHADIEN GEO** reinforcement is:

Polyester combined with glass yarns in combination with 190 gr/m<sup>2</sup> polyester felt as upper cover surface material.



### SURFACE FINISH

**ESHADIEN GEO** possible bottom finishes are:

- Torchable PE film
- Quartz sand
- **Whereas the top finish with the 190 gr/m<sup>2</sup> polyester geotextile makes ESHADIEN GEO ideal for all underground waterproofing constructions.**

### NORMS/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.*

### 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 a minimum temperature > 5°C for at least 10 hours before installation.



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#### APPLICATION PROCEDURE

#### Bituminous Membrane Application

##### A. HORIZONTAL SURFACES

a) **ESHADIEN GEO** is applied with its quartz sand or PE film, covered surface facing the soil or existing concrete substrate surfaces (e.g. in basement waterproofing). In this way the geotextile upper surface effectively protects the membrane from the subsequent constructional stages such as back-filling or during pouring of the protection concrete layer.

On horizontal surfaces of concrete elements (e.g. concrete decks, roof gardens, sport grounds):

b1. **ESHADIEN GEO** is applied on primed smooth concrete surfaces (priming with **ESHALAC 50-S**, bituminous varnish or **ESHACOAT No 1** bituminous emulsion) with its geotextile surface facing the concrete surface, partially bonded with **oxidized bitumen R 85/25** (ASTM D-312 Type III), 30-40% of its entire surface.

The method of partial or spot bonding ensures a better stress distribution while an effective vapor circulation throughout the entire area is achieved, thus avoiding blistering on direct sun light exposure.

Geotextile finish function in this application is:

- To allow a means of control of the torch effected spot bonding since only torch heated concrete surfaces treated with oxidized bitumen adhere on the membrane. Rest of the concrete surface does not adhere on the geotextile even with mounting pressure.
- Allows through its capillary voids vapor circulation, avoiding vapor pressure built up that causes blistering.

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- Protects the membrane from the irregularities of the concrete surface that might cause mechanical damage of the waterproofing membrane.

In the case that a drainage layer is required in contact with the waterproofing layer before back filling, the drainage system **NOPHADRAIN 4+1** or **NOPHADRAIN 5+1** is recommended.

b2. **ESHADIEN GEO** is applied on smooth primed reinforced concrete surfaces (priming as b1) with its quartz sand or PE film surface facing the concrete surface, fully bonded with hot oxidized bitumen or cold applied **ESHAROOFCOAT No 10** super elastomeric coating. In the latter case the membrane is torch bonded to the substrate after the evaporation of the solvent content of **ESHAROOFCOAT No 10** is entirely ventilated. Function of the geotextile on the upper surface of the waterproofing membrane is to protect the membrane from the subsequent constructional stages providing at the same time a thin drainage layer.

##### B. VERTICAL CONCRETE SURFACES

The substrate must be firm and even and its surface free from voids, gaping cracks and ridges. Expansion joints are sealed with polysulphide mastic joint sealant **ESHATHIOSEAL (A+B)**.

The prepared substrate is primed with bituminous primer **ESHALAC 50-S**. Oxidized bitumen is hot applied on the primed surface with a consumption of 1,5kg/m<sup>2</sup>. **ESHADIEN GEO** is torch applied with its quartz sand or PE film surface facing the substrate.





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Alternatively, instead of oxidized bitumen, **ESHA-ROOFCOAT No 10** can be used as a bonding agent if sufficient ventilation is present. In both cases torches are activated only after the evaporation of the solvent content of **ESHAROOFCOAT No 10**. A metal bar is used, mechanically fastened onto the concrete surface, to support the upper edge of the bituminous membrane.

#### 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.

The geotextile on the external surface of **ESHADIEN GEO** provides a means of protection of the waterproofing membrane during back-filling, as well as, a thin vertical drainage layer.

*For a more detailed description of bituminous waterproofing membranes' application please contact the EshaSales Department.*

### TECHNICAL CHARACTERISTICS

Characteristics	Standards	T	Nominal Values	Unit
Reinforcement	-	--	Polyester	---
Weight	EN 1849-1	± 0.2	4,5	kg/m <sup>2</sup>
Length	EN 1849-1	--	10	m
Width	EN 1849-1	--	1	m
Upper surface covering	-	--	Polyester non woven geotextile of 190 gr/m <sup>2</sup>	---
Bottom surface covering	-	--	PE Film / quartz sand	---
Type	-	--	Elastomeric (SBS)	---
Softening Point	EN 1427	± 10	130	°C
Penetration at 25 °C	EN 1426	± 5	35	dmm
Antiroot Agent	-	--	-	---
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%	700/500	N/50mm
Elongation L/T	EN 12311-1	± 15%	45/55	%
Tear Resistance L/T	ASTM D4073-94	± 15%	300/450	N
Static puncture resistance (concrete)	EN 12730/UEAtc MOAT27	--	L3 (15-25)	kg
Dynamic puncture resistance (concrete)	EN 12691/UEAtc MOAT27	--	I3	---
Flexibility at low temperatures	EN 1109	± 3	-20	°C
Water tightness (72ώρες)	UEAtc/EN 1928	--	passed	---
Vapor Permeability Coefficient	EN 1931	≥	20.000	---
Heat Resistant	EN 1110	<	110	°C
Dimensional Stability L/T	EN 1107-1	≤	-0.15/+0.15	%
Thermal Conductivity	-	--	0.2	W/mK

*Tolerances in the nominal values are in accordance with respective standards. Producer reserves the right to modify the properties of his products.*

*The information contained in this leaflet is, to the best of our knowledge, true and reliable and is supported by the present state of our knowledge. According to the care taken and the method of application, upon which we have no influence, the values are subject to divergence. Therefore for best results, prior to use, an application test should be made by the user under his own processing conditions.*

Alfa-Alfa Energy S.A.

ATHENS/CENTRAL OFFICES-FACORY: Aspropyrgos Beach, 193 00 Aspropyrgos, Attica  
 T +30 2105518700, F +30 2105572974 | THESSALONIKI/OFFICES-WAREHOUSE: 18 Epirou  
 Street, 570 09 Kalochori, T +30 2310783725, F +30 2310783326 |  
[www.esha.gr](http://www.esha.gr) • [sales@esha.gr](mailto:sales@esha.gr)

