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since 1962

WATERPROOFING MEMBRANES
SPECIATY PLASTOMERIC BITUMINOUS MEMBRANES (APP)

ESHAGUM SP-FR

Fire Resistant TPO Modified
Waterproofing Membranes (-12°C)

Bituminous membrane with high fire resistance

GENERAL DESCRIPTION

ESHAGUM SP-FR is produced from special bitumen modified with Thermoplastic PolyOlefin polymers (TPO), selected Thermoplastic elastomers and a «halogen free» fire retardant additive. The modification of the bitumen combined with the specially designed bi-component reinforcement consisting of non wooven polyester and glass fleece stabilizing yarns, results in a binding material with enhanced durability and fire resistance.

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, like:

- Waterproofing of flat and inclined roofs
- Waterproofing of metal decks
- Re-roofing, refurbishment
- Waterproofing of underground works / Foundations
- Waterproofing of bridge-decks & parking decks
- Waterproofing of industrial facilities
- Waterproofing of public buildings

SURFACE FINISH

ESHAGUM SP-FR possible finishes include:

- Mineral chipping in various colors (green-gray, white, red- brown), when exposed to sunlight.
- A thin film of polyethylene for cases where the waterproofing layer is protected by other materials (tiles, concrete, etc.).

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.

CHARACTERISTICS/ADVANTAGES

ESHAGUM SP-FR unique quality depends on its special characteristics:

- Special bitumen modification and the «halogen free» fire retardant product ensures durability and minimizes the risk of fire spread and the emission of fumes, selectively promoting a heat consuming char effect.
- Non wooven polyester gives the membrane high mechanical properties (high tensile strength and high tear resistance) both horizontally and vertically.
- High quality glass yarns which gives the membrane dimensional stability promoting furthermore the fire resistance properties.
- Its special composition allows **ESHAGUM SP-FR** to withstand extremely high temperatures, have extra resistance to aging from solar radiation and extreme weather conditions, while maintaining all its characteristic properties at very low temperatures, which in flexibility tests according to **EN 1109** reach up to -12°C.

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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 ≤ 6%.
- The surface must be primed with eco friendly (VOCs free), elastomeric, waterproofing, bituminous primer with new generation technology **ESHATOPRIMER** at a consumption ~ 0.3 Lt/m^2.
- Alternatively the surface can be primed with **ESHALAC 50-S** at a consumption ~ 0.3 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 **ESHAGUM SP-FR**
- 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 the case of loose-laid waterproofing (not bonded to the substrate), a protective layer of sufficient weight should be provided to eliminate the risk of the waterproofing membrane being lifted by high wind speeds.

CERTIFICATION

Esha Bituminous membranes comply with **EN 13707, EN 13969** and are certified with **CE No.1020-CPR-010021423**.
Application to roofs/decks according to **EN 13707** and underground structures according to **EN 13969.** For Bridge Decks according to **EN 14695.**

Fire Resistance test **ENV1187-1, ISO 5660-1, ISO 5660-2.**

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

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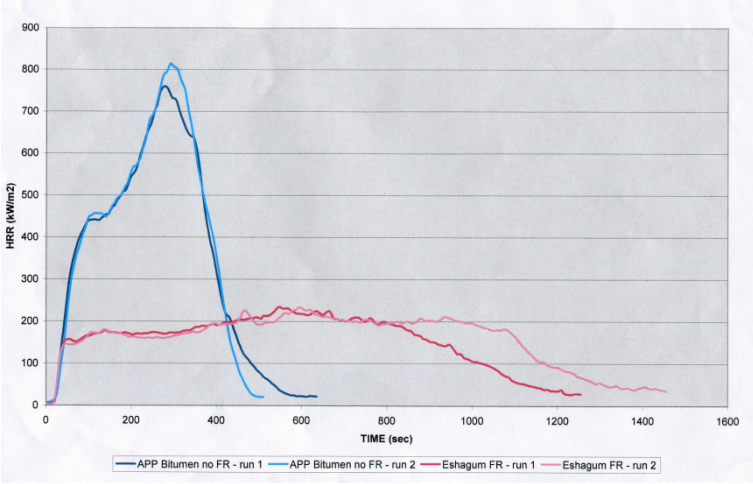
Application notes

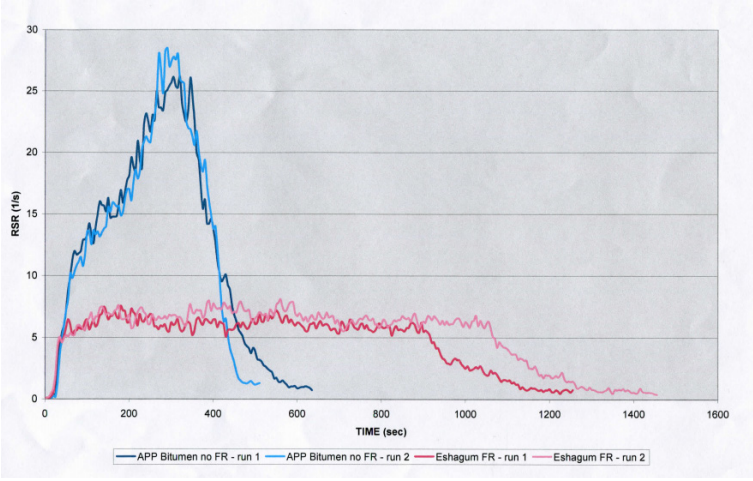
- Application temperature should be higher than 5°C.
- Waterproofing should be carried out by technicians, properly trained and certified in the bituminous membranes application.

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

TESTS



Test Results according ISO 5660-1: Heat Release Rate of samples ESHAGUM SP-FR (red lines) and ESHAGUM (blue,lines)



Test Results according ISO 5660-1: Rate of smoke Release of samples ESHAGUM SP-FR (red lines) and ESHAGUM (blue lines)

During combustion, ESHAGUM – FR exhibits a significantly lower heat release rate (-70%) and smoke release rate (-65%) compared to conventional APP bituminous membranes.

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 CHAACTERISTICS

Characteristics	Standards	T	Nominal Values		Units
Upper surface covering	---	---	PE film	Mineral Granules	---
Type of bituminous binder	---	---	Thermoplastic PolyOlefin polymers (TPO)/ Thermoplastic elastomers		---
Reinfiorcment	---	---	Spun Bond polyester (SP)		---
Bottom surface covering	---	---	Film PE		---
Length	EN 1848-1	± 0,02	8 or 10		m
Width	EN 1848-1	-	1.0		m
Thickness	EN 1849-1	± 0,02	4		mm
Softening Point	EN 1427	≥	145		℃
Penetration at 25℃	EN 1426	± 5	28		dmm
Penetration at 60℃	EN 1426	<	100		dmm
Tensile strength L/T	EN 12311-1	≥	900/650		N/50mm
Elongation L/T	EN 12311-1	≥	50/50		%
Tear resistance L/T	ASTM D4073-94	± 15%	350/600		N
Joint cut Resistance	EN 12316-1	± 20%	750/550		N/50mm
Static puncture resistance (concrete)	EN 12730/UEAtc MOAT27	---	L4 (>25)		kg
Dynamic puncture resistance (concrete)	EN 12691/UEAtc MOAT27	---	≥ 1000 mm / I3 (Φ 8mm)		--
Flexibility to low temperatures	EN 1109	≤	-12		℃
Water tightness (60 KPa, 24 h)	UEAtc/EN 1928 method - 1	---	Passed		
Flow Resistance at Elevated Temperature	EN 1110	≥	120		℃
Reaction to fire	EN 13501-1	---	E		--
Fire Resistance	ENV 1187-1	---	Passed		---
Heat Release Rate	ISO 5660-1	≤	250		KW/m^2
Rate of smoke release per sec	ISO 5660-2	≤	7		1/s
Vapor permeability coefficient	EN 1931	≥	20000		---
UV weathering exposure	EN 1297	---	Passed		---
Dimensional stability	EN 1107-1	≤	-0.4/+0.3 L/T		%

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.