



## ESHA-ISOTEX

### BRIDGE INSULATION SYSTEM

#### GENERAL DESCRIPTION

**Esha-Isotex** is a special bitumen compound modified with polymer and filler, which is used to protect steel bridge decks against corrosion. It adheres perfectly to the cleaned and primed surface. It does not flow at high temperatures (for example 80°C) in the summer time, and neither does it become brittle at a temperature of as low as -25°C.

The advantages of the **Esha-Isotex** system are:

- \* Asphalt layers and steel are securely bonded;
- \* Thermal stresses resulting from differences in coefficients of thermal expansion are neutralised in the Isotex zone
- \* Cracks in the asphalt do not affect the integrity of the Isotex layer. Thus the corrosion of the steel decks is permanently prevented.

Both hot-rolled and hot-poured asphalt concrete can be applied on the top of it. Preferably a two-course system is used.

The construction of the **Esha-Isotex** system is as follows: Steel + Esha Lac 50-S + Isotex (plus Chippings)+ Rolled asphalt/ Pouring asphalt (see **Appendix C**).

#### PROCEDURE OF CONSTRUCTION

##### \*Preparation of the bridge deck:

De-rusting by sand- or grit-blasting or by reducing gas flames is practised. In case of blasting a "metallic-clean" surface must be obtained. When oxygen-acetylene burners are used, a ferrous-oxide surface must result. Rotary steel brushing is required in order to remove semi-loose residues.

##### \*Application of primer (Esha Lac 50-S)

Immediately after this preparation and removal of all loose material, 200-250 g/m<sup>2</sup> Esha Lac 50-S is evenly applied, after re-homogenation by stirring. After application a drying time of at least 24 hours (under adverse weather conditions up to 48 hours) is required.

##### \*Application of Isotex compound

a. Melting of the Isotex compound has to be carried



out by indirect heating at such low rate that no thermal decomposition occurs. As soon as the compound is sufficiently fluid it has to be stirred continuously.

- b. The material has to be applied at a temperature of 200-230°C rubber squeegees in a quantity of 4-5kg/m<sup>2</sup> (3-4 mm).
- c. Before cooling of the compound a sprinkling of pre-coated chippings (2-5 mm) has to be rolled on with a light hand-roller.
- d. The vertical faces of kerbs and other similar constructions are to be cleaned, primed and isolated as well.

**Notice:**The maximum temperature indicated above is permitted only during normal uninterrupted progress of the work. During the interruption of more than one or two hours the temperature must be lowered to 170-180°C. At the end of a day the cattle must be emptied as completely as possible.

##### \*Spreading of bitumen-coated chippings

Spread 3-5 kg/m<sup>2</sup> of the chippings (2-5 mm) into the hot-poured Isoton-insulation-compound, so that the chippings are well attached. The percentage of bitumen (0,5-0,7 %) in the chippings should not be exceeded to prevent from sticking

##### \*Joint sealing

There are two different joint sealing products, which are:

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- Eshalas – Joint sealing tape based on special modified bitumen Delivered dimensions: Thickness/width/length = 6mm/35mm/10m
- Esha-Sealer 164 – Joint sealing can be done by hot pouring (180-190°C, temperature over 190°C must be prohibited) on the primer treated base .

**\* Application of the protective layer and the top layer (See Section 2.1)**

Before cooling of the protective layer, spread chippings (2-5 mm) and roll with a light hand-roller in order to ensure the fraction between protective layer and top layer. The same has to be done on the top layer to provide sufficient skid resistance.

#### Section 2.1

**\* Application of protective layer (or/and top layer)**

- Remove loose chippings

- Application of an adhesive layer, evenly distributed, about 0.3-0.4 kg/m<sup>2</sup> tack coat bitumen emulsion (KE-1).
- 4 cm thick protective layer from dense asphaltic concrete of high stability (minimum application temperature of the asphalt 165 °C)
- Compacted with tyre rollers. Before rolling, spread about 3 kg/m<sup>2</sup> sand (1-3 mm) to the surface.

#### 1.2 Environmental condition of construction

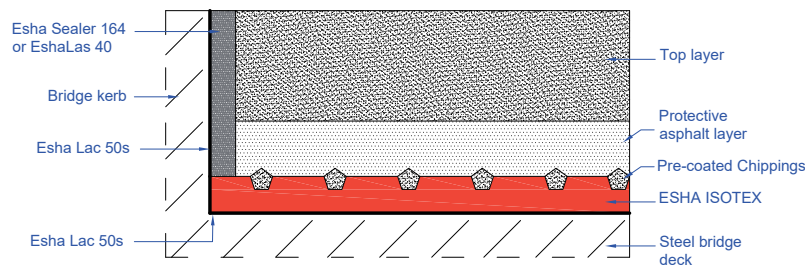
Optimum temperatures for handling and using Esha-Isotex system are between 5°C and 35°C.

### DELIVERY NOTIFICATION

The product is delivered in a special designed sliconized box (22 kg).

### APPENDIX

A schematic representation showing the construction of Esha-Isotex insulation system for a steel bridge deck.



### SPECIFICATIONS AND TYPICAL PROPERTIES

	Typical value	ZTV-Bel St requirement
Colour	Solid Black	
Odour	Bitumen	
Density	1375 kg/m <sup>3</sup>	1300-1450 kg/m <sup>3</sup>
Ring & Ball	123°C	120-130°C
Penetration	35-45 dmm	40-50 dmm
Flash point		250°C

*(The product fulfils German standard ZTV-Bel St)*

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