

# STARFLEX HR

## TWO COMPONENT HYBRID SOLVENT FREE POLYUREA SYSTEM



### CHARACTERISTICS

**Very rapid curing** and achievement of the final resistance characteristics.

**Waterproofing** and good resistance to aggressive chemicals.

**High elasticity.**

Also applicable **vertically** and on the ceiling.

**Suitable for drinking water**".

Suitable for **contact with drinking water** as per Ministerial Decree of 6 April 2004, n. 174: regulation concerning the materials and objects that can be used in fixed systems for the collection, treatment, adduction and distribution of water intended for human consumption.

Resistant to **root** penetration as per CEN/TS 14416.

Contributes to obtaining credits for **LEED** certification.

It meets the requirements of the **1504-2** standard for coatings: moisture control product 2.2 (C), physical resistance 5.1 (C), chemical resistance 6.1(C), increased resistivity 8.2 (C).

### APPLICATION TEMPERATURE

Applicable from **-20°C to +40°C** (substrate temperature), dew point > 5°C (in the absence of condensation).

### OPERATING TEMPERATURE

Operating temperature **from -40°C to +90°C** in air.

### APPLICATION FIELDS

- Waterproofing and **parking** paving.
- Waterproofing of slabs of road, **motorway and railway bridges** and viaducts.
- Waterproofing of **underground structures** (foundations, retaining walls, hanging works, etc.).
- Waterproofing of **tunnel top surfaces**.
- Suitable for use in fixed systems for the collection, treatment, adduction and distribution of water intended for human consumption.
- Waterproofing and protection of **hydraulic works** (canals, sluice gates, spillways, etc.).
- Waterproofing of **civil and industrial roofs**.
- Protection of **metal machinery** subject to abrasion.

# STARFLEX HR

## SUBSTRATE PREPARATION

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- The surfaces to be treated must be **sound, compact, free from dust and pollution** from foreign substances (dirt, oil, grease, release agents, etc.).
- The **cement substrate**, after adequate mechanical preparation, must have a surface resistance to tearing greater than 1.5 MPA, measured using suitable instruments.
- In the case of **ceramic substrates** or **old resinous coatings**, after adequate mechanical preparation, their correct adhesion to the substrate and the absence of traces of pollutants must be checked.
- Damaged **joints, holes** and other **irregularities** must be adequately levelled and repaired with **STARCEMENT 385** type epoxy grout, or **DUROGLASS P1/2** type epoxy mortar suitably loaded with quartz or thickener **AD-DENSANTE NT2**.
- In the case of **vertical substrates** (bathtubs, swimming pools, tanks, etc..) the preparation can be carried out by dry or wet sandblasting, or high pressure hydro-washing (300 bar).

It is essential to **roughen** and/or **wash** the surface before laying. The choice of the mechanical preparation method (pressure washing, sandblasting, sanding, smoothing, shot peening or milling) is to be chosen on the basis of the conditions and type of substrate.

Based on the type of substrate and the intended use, it is necessary to provide the correct primer.

**BITUMINOUS MEMBRANES:** substrate preparation carried out using medium and high pressure water washing (> 300 bar), to have a clean surface free from any pollutant. Application of **PRIMER 0230**, polyurethane primer specially formulated for laying "moisture-curing" waterproofing membranes. Indicative product consumption 0.15 kg/m<sup>2</sup>. Also available in the ultra-fast **PRIMER 0230R** version. Alternatively, application by roller or airless spray of **STARCEMENT 5/A** two-component epoxy resin-based primer in water dispersion, with a consumption of 0.1 kg/m<sup>2</sup> diluted in a 1:1 ratio with water, with the aim of consolidating the protective layer of slate of the bituminous membranes.

**TILES:** thorough cleaning of the substrate with detergents and light sandblasting, smoothing or shot peening. Subsequent application by roller or airless spray of **DUROGLASS FF4416** two-component anti-corrosion primer with adhesion on metal surfaces and different materials, with a consumption of 0.2 kg/m<sup>2</sup>. Alternatively, use **DUROGLASS P1/2**, two-component, solvent-free epoxy anchoring agent for thick skim coats (starting from 0.3 kg/m<sup>2</sup>).

**CONCRETE:** cleaning can be done by sandblasting, pressure washing, shot blasting. Application by roller or airless spray of **DUROGLASS FF4416** two-component corrosion resistant primer with adhesion on different types of surfaces, with a consumption of 0.2 kg/m<sup>2</sup>.

Alternatively, use **PRIMER 0260**, a one-component, quick-solvent polyurethane (0.15-0.20 kg/m<sup>2</sup>). For thick smoothing, use **DUROGLASS P1/2**, two-component, solvent-free epoxy anchor (starting from 0.30 g/m<sup>2</sup>). Possibility of using **DUROGLASS P2 PRIMER** two-component epoxy primer with indicated consumption of 0.4 kg/m<sup>2</sup>.

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**WET SUBSTRATES:** surface preparation carried out by high pressure water washing (> 250 bar) or sanding followed by vacuuming of the resulting dust. Application of two coats of special three-component primer based on epoxy resins for the preparation of damp concrete surfaces **DUROGLASS FU BIANCO TIX** diluted 15% with water, with an indicative consumption of 0.5 kg/m<sup>2</sup> per coat. Alternatively, application of a two-component, epoxy resin-based **DUROGLASS FU RAPID** primer, diluted 15% with water, with an indicative consumption of 0.50 kg/m<sup>2</sup> and subsequent dusting of quartz with a particle size of 0.1-0.3 mm .

**WOOD:** application of **PRIMER 0230**, a polyurethane anchor specially formulated for laying "moisture-curing" waterproofing membranes. Indicative product consumption 0.15 kg/m<sup>2</sup>.

**ALUMINIUM/IRON:** on metal substrates (e.g. pre-painted sheet metal or aluminium) and carbon steel surfaces, they must be prepared by second sandblasting according to SSPC-SP10 to Sa 2 1/2 degree, followed by primer application by roller or airless spray two-component corrosion resistant with adhesion on different types of surfaces, **DUROGLASS FF4416**, with a consumption of 0.2 kg/m<sup>2</sup>. If necessary, perform subsequent manual gluing of self-adhesive butyl band covered with non-woven fabric on the overlaps of the sheet metal in the direction perpendicular to the slope of the roof, with the aim of distributing the tensions. Alternatively, application of single-component primer based on polyurethane resins **PRIMER 0130**, with a consumption of 0.15 kg/m<sup>2</sup>.

**PVC/TPO/EPDM or OLD POLYURETIC/POLYURETHANE COATINGS:** Preparation of the substrates carried out by high pressure water washing (> 300 bar), to have a surface free from any pollutant, suitable for the subsequent application of the waterproofing system. Application of **PRIMER 0130** single-component, flexible adhesion promoter based on polyurethane resins, with a consumption of 0.15 kg/m<sup>2</sup>. Alternatively, application of **DUROGLASS FF4416** two-component anti-corrosion primer with adhesion on different types of surfaces, with a consumption of 0.2 kg/m<sup>2</sup>.

## PRODUCT PREPARATION

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For the best results, use a **two-component product** with a high-pressure bi-mixer type airless system, preferably controlled by a PLC, for dosing and flow functions. A suitable mixing gun for polyurea systems (reaction in gun) should be used. The product should be sprayed at a temperature of 70-80°C and a pressure of 180-200 bar for optimal performance. The equipment must be equipped with in-line heaters, tanks, and heated pipes. Please ensure that the components of **STARFLEX HR** are not polluted with any chemical agents (solvents, oils, water, or anything else) as this could seriously compromise the product's characteristics.

# STARFLEX HR



## PRODUCT APPLICATION

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**STARFLEX HR** can be applied by:

- Bi-mixer pump and special gun

Thoroughly mix component A before spraying. The **STARFLEX HR** product can be applied with a minimum indicative consumption of **2.2 Kg/m<sup>2</sup>** based on the desired final thickness.

To create substrates with a certain degree of non-slip properties, immediately after applying the first layer of **STARFLEX HR**, rotate the gun so that it is parallel to the surface to be treated, keep the nozzle facing upwards and move the arm by swinging it to create a “shower” of **STARFLEX HR**.

## OVER APPLICATION

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If the membrane is to be exposed to solar radiation, colour changes may occur (yellowing phenomenon), and it will therefore be necessary to apply on the surface, according to the needs, aliphatic polyurethane finishes such as **POLISTAR E/P, POLISTAR E, POLISTAR E /2, POLISTAR E/3**.

The application must be carried out after a maximum of 3-4 hours from the application of **STARFLEX HR**.

# STARFLEX HR

## WARNINGS AND PRECAUTIONS

- In the event of interruption of work, apply a coat of **DUROGLASS FF4416** as Primer taking into account the overapplication window of the same which, in the case of coatings from the STARFLEX line, ranges from a minimum of 24 hours to a maximum of 7 days. If it rains during this time, apply a coat of **PRIMER 0230**, respecting the drying times of the primer (tack free) before the next application of the polyurea.
- If applied on roofs with insulation or other compressible surfaces, especially during the winter, wait about 6-8 hours until the product has completely cured before it can be walked on. Failure to comply with the indications could create micro-lesions that are not immediately visible, but which could lead to the development of passing lesions in the following months.

## SAFETY AND CLEANLINESS

When applying these products, it is recommended to use goggles, masks and rubber gloves and all the PPE required by current regulations.

The hardened product can be removed from the equipment by immersion in N-methylpyrrolidone, dimethylformamide or, less effectively, thinner **DILUENTE 6**.

For more information regarding the precautions for use, please refer to the safety data sheet.



# STARFLEX HR

TECHNICAL DATA		
<b>Colour</b>		Neutral or RAL palette
<b>Specific weight</b>	UNI EN ISO 2811-1	Component A 1.03 ± 0.05 kg/l Component B 1.11 ± 0.05 kg/l
<b>Viscosity at 20°C</b>	UNI EN ISO 2555	Component A 650 ± 200 mPa·s Component B 1250 ± 250 mPa·s
<b>Pot life 22°C</b>	UNI EN ISO 9514	3-4 seconds
<b>Mix ratio</b>		1: 1 in volume 1: 1 in weight
<b>Non-volatile substances</b>	UNI EN ISO 3251	99.8 %
<b>Curing at 22°C, 50% R.H.</b>		- gel time: 3 seconds* - track free: 1 minute - walk over: 40 minutes - over-applicable: 80 minutes - drive-over: 12 hours
<b>Adhesion to concrete</b>	EN 1542	> 3,0 MPa
<b>Metal bond</b>	EN 13144	> 7,0 MPa
<b>Cement-fibre bond</b>	EN 1062-6 (method A)	R > 50 m
<b>Permeability to carbon dioxide</b>	EN 1062-6	SD > 50m
<b>Permeability to water vapour</b>	UNI ISO 7783-2	Class I
<b>Calculation of resistance to roots</b>	UNI CEN/TS 14416	Resistance to penetration Certificate n° LF17537/20
<b>Capillary absorption and water permeability</b>	UNI EN 1062-3	$w < 0.1 \text{ kg/m}^2 \cdot \text{h}^{0.5}$
<b>Suitable for use in fixed systems for the collection, treatment, adduction and distribution of water intended for human consumption.</b>	D.M n°174 06/04/2004	Suitable Certificate n° 2201174
<b>Resistance to direct tensile stress</b>	UNI EN 1542	> 3,00 MPa
<b>Impact resistance</b>	UNI EN ISO 6272	20Nm (Class III, no damage)
<b>Wear-resistance</b>	UNI EN ISO 5470-1	Grinder H22 1000 g 1000 rpm: < 31 mg
<b>Thermal shock resistance</b>	UNI EN 13687-05	> 3,3 MPa
<b>Elongation to breakage</b>	UNI EN 12311-2	> 350 %

# STARFLEX HR

TECHNICAL DATA		
<b>Tensile strength</b>	UNI EN 12311-2	> 16 MPa
<b>Tensile strength, -20°C</b>	UNI EN 12311-2	> 14,3 MPa
<b>Elongation to breakage, -20°C</b>	UNI EN 12311-2	> 114 %
<b>Peel strength</b>	UNI EN 12310-2	> 80 N/mm
<b>Shore D hardness</b>	EN ISO 868	> 45
<b>Crack bridging</b>	UNI EN 1062-7	Method B, dynamic: B1 (23); B2 (23); B3.1 (23); > B4.1 (23) Method A, static: A5 (23)
<b>Ozone resistance</b>	UNI EN 1844	Excellent
<b>Resistance to severe chemical attacks</b>	EN 13529	Mixture of hydrocarbons: Class I and II Sulphuric acid:10% Class I and II Sulphuric acid 20%: Class I and II Sodium Hydroxide 20%: Class I and II Sodium chloride: Class I and II
<b>Storage</b>	The product in its original sealed packaging kept in a dry and protected place at temperatures between +5°C and +35°C will keep for 6 months.	

- CR4: 60% toluene – 30% xylene – 10% methylnaphthalene
- CR9: 10% sulphuric acid:
- CR10: 20% sulphuric acid:
- CR11: Sodium hydroxide 20%
- CR12: Sodium Chloride 20%

The data and instructions given in this sheet, based on the best practical and laboratory experiences, are to be considered in any case indicative. Considering the different conditions of use, and the intervention of factors independent of MPM (support, environmental conditions, technical laying direction, etc.) whoever intends to use it is required to establish whether or not the product is suitable for use. Our warranty obligation is limited to the quality and constancy of the finished product for the above data, only for technical sheets accompanied by stamp and countersignature by our delegated personnel. site. Furthermore, the customer is required to verify that these values are valid for their relevant batch of product and are not superseded and/replaced by subsequent editions and/or new formulations. The data contained may vary at any time without prior notice by MPM.