

# IMPERMAX POLYUREA H FLEX

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## Sprayed, hot-applied polyurea waterproofing membrane

### DESCRIPTION

Impermax Polyurea H Flex is a 2-component polyurea resin, which cures very fast into an elastic membrane with crack-bridging capacity. This product can only be applied by 2-component spraying equipment. Impermax Polyurea H Flex can be combined with different geotextiles to obtain on-site applied, seamless liners (Rayston Spray liners). It can be also pigmented with aluminium particles pigments to obtain sun-reflective properties.

### APPLICATION

Waterproofing of concrete structures and bridge decks. Impermax Polyurea H Flex can be completed with an additional UV-resistant coating. Roof waterproofing. Geomembrane lining for retention basins and secondary containment structures, ponds, landfills, tunnels, canals, dam reparations, etc.



### CERTIFICATIONS

- Fire test B2 (DIN 4102-1:1998): Ignitability when subjected to direct impingement of flame. Class B2
- ETA: European Technical Assessment document N° 21/0740 (EAD 030675-00-0107) – CE marking



### TECHNICAL DATA

#### INFORMATION ON THE PRODUCT BEFORE APPLICATION

	Component A	Component B												
<b>Chemical description</b>	Polyol/Polyamine	Aromatic isocyanate prepolymer												
<b>Physical state</b>	Liquid	Liquid												
<b>Packaging</b>	Metal container 203 kg 18.8 kg	Metal container 213 kg 20.8 kg												
<b>Non-volatile content</b>	Approx 100%	100%												
<b>Lead content</b>	(< 1 mg/kg)													
<b>Flash point</b>	>100°C	>100°C												
<b>Colour</b>	Dark yellow (may darken along storage)	Slightly yellow												
<b>Density</b>	<table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Density (g/cm<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>1.05</td> </tr> <tr> <td>60</td> <td>1.02</td> </tr> </tbody> </table>	Temperature (°C)	Density (g/cm <sup>3</sup> )	20	1.05	60	1.02	<table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Density (g/cm<sup>3</sup>)</th> </tr> </thead> <tbody> <tr> <td>20</td> <td>1.14</td> </tr> <tr> <td>60</td> <td>1.10</td> </tr> </tbody> </table>	Temperature (°C)	Density (g/cm <sup>3</sup> )	20	1.14	60	1.10
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<b>VOC (2004/42/CE)</b>	<2g/L, <0,2% A, j	0 A, j												
<b>A/B mixing ratio</b>	A=1, B=1.08 by weight A=1, B=1 by volume													
<b>Density and viscosity of the mixture</b>	Fast polymerization. See Pot life data.													
<b>Colour</b>	Dark yellow, but component A is pigmented by addition of pigment paste (Pigment Spray) for Impermax Polyurea H Flex.													
<b>Pot life</b>	Gel time mixture A+B (20 g) 8-9 s at 25°C 4-6 s at 60°C													

<b>Storage</b>	Keep between 10° y 30°C. Product is hygroscopic: protect from moisture. Component B may become hazy upon storage at low temperatures. Reheat mildly before use.
<b>Use before</b>	12 months after manufacture, provided it is kept in its sealed container.

#### INFORMATION ON THE FINAL PRODUCT

<b>Final state</b>	Solid elastomeric membrane	
<b>Colour</b>	Variable, depending on the chosen pigmentation. For colours available, please contact Krypton Chemical. Also possible addition of aluminium containing pigments for sun reflection effects.	
<b>Hardness (Shore)</b>	90A/40D (ISO 868)	
<b>Tear strength</b>	69 N/mm (ISO 34-1, method B)	
<b>Mechanical properties</b>	Elongation at break: 400% Tensile strength: 15 MPa (EN-ISO 527-3)	
<b>UV resistance</b>	Good resistance to UV-induced degradation. Aromatic polyureas undergo change of colour under sunlight. Additional UV protection can be achieved by application of a Impertrans or colodur topcoat.	
<b>Static indentations</b>	Liners obtained by combination of Impermax Polyurea H Flex and selected geotextiles achieve a static indentation resistance above 3200 kN (UNE EN ISO 12236:2007)	
<b>Fire resistance</b>	Class B2 (DIN 4102-1:1998)	
<b>Water vapour permeability</b>	μ = 1534 (EN ISO 7783:2012)	
<b>Abrasion resistance</b>	Taber, CS17, 1000 c, 1kg: 25mg	
<b>Foldability at low temperature (-45°C)</b>	Does not break or crack (EN-495-5)	
<b>Onset decomposition temperature (TGA test)</b>	290,5°C	
<b>Impact strength</b>	24,5 N x m, Class III > 20 N x m (EN ISO 6272-1)	
<b>Chemical resistance</b>	Permanent contact (7 days, 80°C, 0=worst, 5=best)	
	<b>Chemical</b>	<b>Result</b>
	Water	5
	Ammonia (3%)	5
	Hydrochloric acid 3M (9%)	4
	Isopropyl alcohol	1
	Xylene	0
	Sulphuric acid (50%)	0
	Urea	5
	Ammonium nitrate	5
<b>Adhesion strength</b>	<b>Substrate</b>	<b>Adhesion strength (MPa)</b>
	Concrete (EP 100)	5.6
	Steel (PU primer)	3.6

### SUPPORT REQUIREMENTS

To achieve a good penetration and bonding, support must be:

1. Flat and levelled.
2. Compact and cohesive (pull off test must show a minimum resistance of 1,5 N/mm<sup>2</sup>).
3. Even and regular surface.
4. Free from cracks and fissures. If any, they must be previously repaired.
5. Clean and dry, free of dust, loose particles, oils, organic residues, or laitance.



#### KRYPTON CHEMICAL SL

C/ Martí i Franquès, 12 - Pol. Ind. les Tàpies  
43890 - l'Hospitalet de l'Infant - Spain  
Tel: +34 977 822 245 - Fax: +34 977 823 977

www.kryptonchemical.com - rayston@kryptonchemical.com

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## RECOMMENDED ENVIRONMENTAL CONDITIONS

Air temperature should be between 10°C and 40°C. Relative air humidity should be less than 85%.

## SUPPORT PREPARATION

Concrete substrates must be prepared mechanically using high pressure sand or abrasion, to remove the surface and obtain an open pore. Substrates must be primed and levelled until a regular surface is obtained. Sharp irregularities are eliminated using an abrading disc machine. Eliminate all dust and loose particles from the substrate by brushing or vacuum cleaning.

## MIXING

Stir and homogenise Component A using suitable mixing equipment before being loaded into the machine. Add the required pigment to the A-component and keep mixing before loading at low speed for a few minutes. Excess stirring may lead to undesirable moisture pick up. Recirculate both components while heating up to the required application temperatures.

## APPLICATION GUIDELINES

Impermax Polyurea H Flex must be applied using a 2-component hot spraying equipment. The use of a compressed air dryer (refrigeration dryer) or compressed air-drying filters is recommended.

Recommended temperatures are:

- Component A: 70°C
- Component B: 70°C
- Hose: 65°C

Pressure should be at least between 135 and 170 bar while spraying.

During application, check layer thickness and curing speed.

Spray Impermax Polyurea H Flex at 2 kg/m<sup>2</sup> as a rule.

Wind speeds more than 25 km/h may result in excessive loss of exotherm and interfere with the mixing efficiency of the spray gun affecting polyurea surface texture, cure, and physical properties and will cause overspray issues.

Contact Krypton Chemical for more detailed technical information.

## CURING TIME

Impermax Polyurea H Flex cures to touch after a few minutes after application. Approximate hardness values are provided as reference only (1 mm, polypropylene support, 25°C 50% RH).

Time	Hardness (Shore A/D)
10 min	74/27
20 min	77/29
1 hr	80/30
24 hr	88/35

## RE-APPLICATION

Usually, needed thickness can be obtained in one single coat. If necessary, a second coat can be applied immediately afterwards.

## RETURN TO SERVICE

Under most usual conditions (25°C, 50% rh), the membrane is resistant to rain droplets after 15 minutes, and able to resist light pedestrian traffic in 1 hour. After 2 days, 90% of the final properties are reached.

## TOOL CLEANING

Solvent use for machine component cleaning is discouraged. A cleaning plasticizer fluid is suitable. Component B must be completely removed from all air-exposed parts and replaced with cleaning fluid.

A maintenance work must be carried out regularly on the treated roofs according to the intended use.

This work includes the following tasks:

- Leaf removal
- Grass, dirt, moss, and other vegetation removal
- Keeping storm water system in good working order.
- Ensure gratings are in place, to prevent gutter obstructions.
- Check proper condition of several structures (flashing, seams, retaining walls...)
- Verification of possible damages due to improper use.

If aesthetic appearance of the roof is an important issue, it is essential to regularly clean the surface with water (some mild detergent may be added), according to the use.

It may be necessary to reapply decorative layers (Impertrans, Colodur) if they are worn out due to traffic, weather, corrosion, etc.

For stain removal, a surface treatment with Rayston solvent or isopropyl alcohol may be attempted. Strong acids are totally inadequate. Some solvents may damage the membrane. If this happens, the affected area must be cut and repaired with a new Impermax Polyurea H Flex or Impermax application.

## FAQ

Problem	Question	Cause	Solution
Product does not cure	AB ratio is correct?	Pressure differences	Check and correct machine operation
Bubbles or open pores	Porous support?	No primer	Apply suitable primer before Impermax Polyurea H Flex
No hiding power	Horizontal?	Too little product	Apply 1 kg/m <sup>2</sup>
		Too little pigment	Ensure full A+pigment homogenization
Colour change	Exposed to sunlight?	UV-reaction	Use a last coat in dark grey or red
	Can it be applied without pigmentation?		Not recommended. Impermax Polyurea H Flex is always delivered with the pigment of choice. Use of pigment helps to obtain a uniform appearance.

## SAFETY

Component B contains isocyanates. Always follow the safety instructions in the Material Safety Data Sheet.

As a rule, a good ventilation and/or respiratory protection is needed (combined organic vapor filters + particles) along with protective clothing.

This product must be used only for the applications here described.

This product is intended for industrial and professional use. It is not suitable for DIY-type applications.



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## **ENVIRONMENTAL PRECAUTIONS**

Empty containers must be handled with the same precautions as if they were full. Treat empty containers as hazardous waste and transfer them to an authorized waste manager. If the containers still have some material left, do not mix with other product with no knowledge of potentially dangerous reactions. Component A and B may be mixed on a 1/1 ratio to get an inert material, but never do it in volumes larger than 5 liters to prevent a dangerous heat evolution.

## **OTHER INFORMATION**

The information contained in this DATA SHEET, as well as our advice, both written as verbal or provided through testing, are based on our experience, and they do not constitute any product guarantee for the installer, who must consider them as simple information.

We recommend to study deeply all information provided before proceeding to the use or application of any of our products, and strongly advise to conduct tests "on-site" to determine their convenience for a specific project.

Our recommendations do not exempt of the obligation of installers to deeply study the right application method for these systems before use, as well as to conduct as many preliminary tests as possible should any doubt arise. The application, use and processing of our products are beyond our control, and therefore under the exclusive responsibility of the installer. In consequence, the installer will be the only responsible of any damage derived from the partial or total in-observation of our indications, and in general, of the inappropriate use or application of these materials.

**This data sheet supersedes previous versions.**



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