

# IMPERMAX POLYUREA H

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## Hot spray-applied polyurea waterproofing membrane

### DESCRIPTION

Impermax Polyurea H is a polyurea resin, applied with a hot spray machine, totally free of solvents and mineral fillers. Once cured, it forms a totally continuous waterproofing membrane (without joints or overlaps), of high mechanical and external resistance, thermoset and elastomeric (with the ability to bridge the possible fissures of the support). The membrane heals in a few seconds and its commissioning is in a few hours.



### APPLICATION

- Waterproofing of roofs, terraces and balconies on different types of supports (concrete, metal, old asphalt fabrics, prefabricated membranes ...), always using a suitable primer.
- Waterproofing and protection of concrete structures, especially those exposed to the outside.
- Protective finish of polyurethane insulating foam.
- Waterproofing of foundations and buried structures.



### PROPERTIES

- Fully continuous, thermoset, flexible and elastic membrane, with an excellent ability to bridge possible fissures of the support.
- Extremely fast curing and commissioning.
- Possibility of high solar reflectance finishes type "cool roof" with the Colodur Pigmented in white.
- It can be exposed to the outside or covered by tiles, concrete or other material. Being a membrane of aromatic nature, if it is exposed to sunlight it is recommended to protect it with an aliphatic protective finish (Colodur Pigmented or Impertrans Eco) to maintain its aesthetic appearance over time.
- Resists continuous contact with stagnant (neutral) water on decks.

### CERTIFICATIONS

- ETA: European Technical Assessment n° 11/062 (W2 10 years), certificate of resistance to root penetration is included, based on EN-13948.
- Reaction to fire class: C<sub>fl</sub>-s1, based on EN-13501-1.

### 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 196 kg 18.6 kg Component C (pigment paste) Metal can (0.4 kg or 4 kg)	Metal container 220 kg 21 kg
<b>Non-volatile content (%)</b>	100%	100%
<b>Flash point</b>	>100°C	>100°C
<b>Colour</b>	Yellow (without pigmentation) (may darken along storage)	Slightly yellow
<b>Density</b>	Temperature (°C) 25 Density (g/cm <sup>3</sup> ) 1.05	Temperature (°C) 25 Density (g/cm <sup>3</sup> ) 1.12
<b>Viscosity</b>	Temperature (°C) 25 Viscosity (mPa.s) 750	Temperature (°C) 25 Viscosity (mPa.s) 800
<b>VOC (2004/42/CE)</b>	<2g/L, <0,2% A, j	0 A, j
<b>A/B mixing ratio</b>	A=1, B=1.05 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>	Yellow - brown. Component A is pigmented by addition of pigment paste (Pigment Spray) for Impermax Polyurea H.	
<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. Use before 12 months since manufacture date	

#### 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.	
<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>Abrasion resistance</b>	Taber, CS17, 1000 c, 1kg: 25mg	
<b>Electric strength</b>	17,6 KV/mm (IEC EN-60243-1:2013)	
<b>Foldability at low temperature (-45°C)</b>	Does not break or crack (EN-495-5)	
<b>Adhesion strength</b>	<b>Substrate</b>	<b>Adhesion strength (MPa)</b>
	Concrete (EP 100 primer)	5.6
	Steel (PU primer)	3.6



#### 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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<b>External fire behaviour</b>	B <sub>roof</sub> (t1) and B <sub>roof</sub> (t2) (EN-13501-5)																																										
<b>Reaction to fire</b>	Cir-s1 (EN-1305-1)																																										
<b>Water vapour permeability</b>	μ = 2000. 14 grams/m <sup>2</sup> x day (EN 1931)																																										
<b>Chemical resistance</b>	Immersion test. Continuous contact. (0=worse, 5=better)																																										
	<table border="1"><thead><tr><th>Chemical</th><th>Conditions</th><th>Result</th></tr></thead><tbody><tr><td>Water</td><td>15d, 80°C</td><td>5</td></tr><tr><td>Brine</td><td>5d, 80°C</td><td>5</td></tr><tr><td>Diesel</td><td>16d, 80°C</td><td>5</td></tr><tr><td>Xylene</td><td>7d, 80°C</td><td>1</td></tr><tr><td>Ethyl acetate</td><td>7d, 80°C</td><td>0</td></tr><tr><td>Isopropyl alcohol</td><td>7d, 80°C</td><td>0</td></tr><tr><td>Sodium hydroxide (40g/L)</td><td>7d, 80°C</td><td>5</td></tr><tr><td>Hydrogen peroxide (33%)</td><td>7d, 25°C</td><td>4</td></tr><tr><td>Ammonia (3%)</td><td>7d, 80°C</td><td>5</td></tr><tr><td>Sulfuric acid (10%)</td><td>7d, 80°C</td><td>4</td></tr><tr><td>Hydrochloric acid conc.</td><td>7d, 80°C</td><td>0</td></tr><tr><td>Bleach</td><td>7d, 80°C</td><td>4</td></tr><tr><td>Sulfamic acid (8.5%)</td><td>7d, 60°C</td><td>4</td></tr></tbody></table>	Chemical	Conditions	Result	Water	15d, 80°C	5	Brine	5d, 80°C	5	Diesel	16d, 80°C	5	Xylene	7d, 80°C	1	Ethyl acetate	7d, 80°C	0	Isopropyl alcohol	7d, 80°C	0	Sodium hydroxide (40g/L)	7d, 80°C	5	Hydrogen peroxide (33%)	7d, 25°C	4	Ammonia (3%)	7d, 80°C	5	Sulfuric acid (10%)	7d, 80°C	4	Hydrochloric acid conc.	7d, 80°C	0	Bleach	7d, 80°C	4	Sulfamic acid (8.5%)	7d, 60°C	4
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### SUPPORT REQUIREMENTS

- In order to achieve a good penetration and bonding, support must be:
- 1.Flat and levelled
  2. Coct 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

### 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, in order 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 homogenize separately both components using suitable mixing equipment before being loaded into the machine. Add the required pigment to the A-component and stir 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 must be applied using a 2-component hot spraying equipment. Recommended temperatures are:

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

Pressure should be between 135 and 170 bar.

During application, check layer thickness and curing speed. Spray Impermax Polyurea H at 2 kg/m<sup>2</sup> as a general rule.

Wind speeds in excess of 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.



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www.kryptonchemical.com - rayston@kryptonchemical.com

### CURING TIME

Impermax Polyurea H 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, in order 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 has to be cut and repaired with a new Impermax Polyurea H 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
		Too little product	Apply 1 kg/m <sup>2</sup>
No hiding power	Horizontal?	Too little pigment	Ensure full A+pigment homogeneization
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 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 general 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 potential dangerous reactions. Component A and B may be mixed on a 1/1 ratio in order to get an inert material, but never do it in volumes larger than 5 litres in order 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" in order 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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