

IMPERMAX POLYUREA H

RAYSTON
products



Sprayed, hot-applied modified polyurea waterproofing membrane

DESCRIPTION



Impermax Polyurea H is a 2-component modified 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. This product can be combined with different geotextiles to obtain seamless liners (Rayston Spray Liners).

APPLICATION

Flexible seamless polyurea-based floorings.

Waterproofing of concrete structures. Impermax Polyurea H can be completed with an additional UV-resistant coating. Roof waterproofing. On-site applied, totally seamless linings for secondary containment, ponds, landfills, tunnels, canals, dam reparations.



PROPIEDADES

- Crack bridging ability.
- Highly elastic membrane.
- Fast curing .
- Pigmentable with Pigment Spray.

CERTIFICATIONS

ETA: European Technical Assessment Document Nº 11/062 – 10 year CE marking.



TECHNICAL DATA

INFORMATION ON THE PRODUCT BEFORE APPLICATION

	Component A	Component B
Chemical description	Polyol/Polyamide	Aromatic isocyanate prepolymer
Physical state	Liquid	Liquid
Packaging	Metal container	Metal container
	188 kg + pigment 4 kg	208 kg
	18,8 kg + pigment 0,4 kg	20,8 kg
Non-volatile content (%)	Approx 100%	100%
Flash point	>100°C	>100°C
Colour	Dark yellow	Slightly yellow

Density

Temp (°C)	Density (g/cm ³)	Temp (°C)	Density (g/cm ³)
20	1.03	20	1.12
60	1.01	60	1.10

Viscosity

approximate Brookfield

Temp (°C)	Viscosity (mPa.s)	Temp (°C)	Viscosity (mPa.s)
20	1800	20	2000
30	900	30	1000
50	250	50	400
70	100	70	150

VOC (g/L i %)	<2g/L, <0,2 %	0
VOC class as per 2004/42/EC	A, j	A, j

A/B mixing ratio A=1, B=1.12 by weight

A=1, B=1 by volume

Density and viscosity of the mixture	Fast polymerization. See Pot life data
Colour	Dark yellow, but component A is pigmented by addition of pigment paste (Pigment Spray) delivered with each kit of Impermax Polyurea H.
Pot life	Gel time mixture A+B (20 g) 16 s at 25°C 7 s at 60°C
Storage	Keep between 10° y 30°C (recommended).
Use before	12 months after manufacture, provided it is kept in its sealed container.

INFORMATION ON THE FINAL PRODUCT

Final state	Solid elastomeric membrane
Colour	Available Pigment Spray pastes are Gray RAL 7011. Tile red, Beige RAL 1001. Other pastes available on request.
Hardness (shore)	88A/42D, (ISO 868)
Water vapour permeability	μ=2000, 14g/m ² day, (EN 1931)
Chemical resistance	Permanent contact. (0=worst, 5=best)

Chemical	Conditions	Result
Water	15d, 80°C	5
Brine	5d, 80°C	5
Diésel	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

Adhesion strength EN ISO 4624	Surface	Adhesion (MPa)
	Concrete (with epoxy primer)	4,0
Plywood (with epoxy primer)		1,5
		(cohesive wood failure)
Steel	1,7	

UV resistance Good resistance to UV-induced degradation. Aromatic polyurethanes undergo change of colour under sunlight. This change does not affect their mechanical properties. Additional UV protection can be achieved by application of a Impertrans or colodur topcoat.

Thermal resistance Stable up to 80°C

Fire resistance B roof= t1 (external fire exposure test)

Static indentation The combination of Impermax Polyurea H and selected geotextiles gives aliner with an static indentation resistance above 4000 kN (according to UNE-EN ISO 12236:2007)

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 1,4 N/mm²).
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



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Latest update:

03/12/2021

Page:

1/2

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Support temperature must be between 10°C and 40°C. At higher temperatures, additional measures to be advised by the manufacturer must be taken. Support moisture must be less than 4%

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. **Best Mixing equipments should have extensible blades with overall width equivalent to 1/3 of drum diameter.** Add the required Pigment Spray to the A-component and stir before loading. 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: 55-65°C
Component B: 65-70°C

Pressure should be 140 bar.
During application, check layer thickness and curing speed.
Spray Impermax Polyurea H at 1,8-2,0 kg/m² to achieve a minimum 1,9 mm thickness
Contact Krypton Chemical for more detailed technical information.

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)
15 min	30
30 min	47
1 hr	60
3 hr	72
8 hr	79
24 hr	82
7 days	87

RE-APPLICATION

Usually, needed thickness can be obtained in one single coat. If necessary, a second coat can be applied immediately afterwards. In any case, do not wait more than 2 hours for a second coat. If spraying over a previously applied epoxy primer, ensure the primer is completely cured (ca 8 hours)

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 like Rayston Fluid is suitable. Component B must be completely removed from all air-exposed parts and replaced with cleaning fluid.

CLEANING AND MAINTENANCE

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 ²
No hiding power	Horizontal?	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 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.

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. (21/08/2020)



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Page:

2/2