

IMPERMAX COLD POLYUREA SUPREME

RAYSTON
products



High performance hand applied polyurea membrane for waterproofing applications

DESCRIPTION

Impermax Cold Polyurea Supreme is a two component polyurea membrane, cold applied (roller, notched trowel, or spreader), pigmented and completely solvent-free (low odour).

The membrane cures forming a watertight waterproofing coating, fully bonded to the support, with excellent mechanical and chemical resistances, thermostable, totally continuous (without joints or overlaps), elastomer (flexible and highly elastic).

APPLICATION

- Waterproofing of roofs, parking decks, terraces, and balconies. Can be applied over different types of supports: concrete, metal and prefabricated membranes (bitumen, PVC, EPDM...).
- Especially recommended for projects where a membrane with the performances of a hot spray applied polyurea are required, however, for some reason (windy area, lack of availability of proportioning machine or suitable electrical connections, lack of accessibility...), that is not possible.
- Waterproofing of water tanks.
- Waterproofing in indoors applications (wet rooms, kitchens, bathrooms, elevator pits ...) and any type of surface when a totally solvent-free solution is required.
- Quick repair of hot spray applied polyurea membranes. Waterproofing of hard-to-reach roof areas (with the proportioner machine or with the gun) in projects where a hot spray applied polyurea is applied.
- Pourable filler for expansion joints. Especially for large movement joints.
- Adhesion primer for polyureas over special dry supports: concrete asphalt and flexible prefabricated membranes, especially when a solvent free system is needed. Primer and sealing coating for polyureas over surfaces with large movements (as an alternative of a rigid epoxy-based primer)

PROPERTIES

- Watertight waterproofing membrane, fully bonded to the support, thermoset (do not soften at high temperature & remain elastic at even very low temperatures), continuous coating, flexible and high elastic, outdoors resistant, standing water resistant, with outstanding capacity to bridge over the fissures from the support and excellent mechanical properties (puncture resistance, tensile strength, elongation at break ...).
- Solvent-free, low odour resin.
- Self-levelling resin. Over vertical or sloped areas, the Thickening Additive (powder form) can be added to the resin to prevent it from sagging.
- Possibility to obtain large thickness in a single layer.
- Easily applied with a notched trowel or spreader. Roller can be used for thin layers.

CERTIFICATES

CE marking, EN-1504-2 protection, and repair of concrete structures. Certificate number 0370-CPR-2247.



TECHNICAL DATA

INFORMATION ON THE PRODUCT BEFORE APPLICATION

	Component A	Component B
Chemical description	Mixture of polyol and amine prepolymers and mineral fillers	Solventless polyisocyanate
Physical state	Liquid	Liquid
Packaging	Metal container 7.8 kg	Metal container 13.2 kg

Non-volatile content (%)	Approx 100%	100%		
Flash point	>100°C	>100°C		
Colour	Grey (may darken along storage)	Colourless		
Density	Temperature (°C) 25	Density (g/cm ³) 1.32	Temperature (°C) 25	Density (g/cm ³) 1.02
Viscosity approximate Brookfield	Temperature (°C) 25	Viscosity (mPa.s) 2200	Temperature (°C) 25	Viscosity (mPa.s) 5000
VOC	<2 g/L, <0.2% A, j	0 A, j		
A/B mixing ratio	A=100, B=170 by weight A=100, B=220 by volume			
Initial mixture properties	Temperature (°C) 25	Density (g/cm ³) 1.13	Viscosity (mPa.s) 3200	
Colour	Standard colour is light grey. Other colours available on request.			
Pot life	Conditions 20°C, 50%hr	Pot life (min) 30		
Storage	Keep at temperatures between 10° and 30°C, protected from moisture.			
Use before	12 months after manufacture date.			

INFORMATION ON THE FINAL PRODUCT

Final state	Highly elastic polyurea membrane																						
Colour	Light grey																						
Solid density	1,13 g/cm ³																						
Hardness (shore)	70A (ISO 868)																						
Mechanical properties	Elongation at break: >950% Maximum tensile strength: 12 MPa (EN ISO 527-1/3) Tear strength: 48 N/m (EN ISO 34-1)																						
Chemical resistance	Permanent contact. (0=not recommended, 5=best)																						
	<table><thead><tr><th>Chemical</th><th>Result</th></tr></thead><tbody><tr><td>Water</td><td>5</td></tr><tr><td>Saturated brine (NaCl)</td><td>5</td></tr><tr><td>Chlorinated water (20 ppm)</td><td>5</td></tr><tr><td>Hydrochloric acid (20%)</td><td>0</td></tr><tr><td>Hydrochloric acid (2%), pH = 0.25</td><td>4</td></tr><tr><td>Hydrochloric acid (0.1M), pH = 1</td><td>5</td></tr><tr><td>Sodium hydroxide (1%), pH = 13.4</td><td>5</td></tr><tr><td>Bleach</td><td>0</td></tr><tr><td>Xylene</td><td>2</td></tr><tr><td>Isopropyl alcohol</td><td>0</td></tr></tbody></table>	Chemical	Result	Water	5	Saturated brine (NaCl)	5	Chlorinated water (20 ppm)	5	Hydrochloric acid (20%)	0	Hydrochloric acid (2%), pH = 0.25	4	Hydrochloric acid (0.1M), pH = 1	5	Sodium hydroxide (1%), pH = 13.4	5	Bleach	0	Xylene	2	Isopropyl alcohol	0
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Isopropyl alcohol	0																						
Adhesion strength	Concrete: 1,5 MPa (EN 13892-8), 2,5 MPa primed with Epoxy 100																						



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UV resistance	Impermax Cold Polyurea Supreme undergoes a slight colour change in sunlight, but this process does not alter its mechanical properties.
Use temperature	Stable between -15°C and 80°C
Water vapour resistance factor	$\mu = 304$ (EN-ISO 7783: 2012)
Liquid water permeability	$W = 0,02 \text{ Kg/m}^2 \times \text{h}^{0,5}$ (EN-1062-3: 2018)
Watertightness (60kpa, 6 meters of water column)	Watertight (EN-1928)
Foldability at low temperature (-45°C)	Does not break or crack (EN-495-5)
Crack bridging properties	Class A5, -10°C (EN-1062-7, Method A)
Rebound resilience	50% (ISO-4662)

SUPPORT REQUIREMENTS

To obtain optimal penetration and adhesion, the support must always meet the following:

1. Levelled.
2. Cohesive with a minimum strength of 1.5 N/mm² (pull-off test)
3. Even and smooth appearance.
4. Free of discontinuities, fissures, and cracks. If there are any, they should be treated previously (filled with a polyurethane putty, for example)
5. Sound, clean, dry, without dust or loose materials, free of laitance, dirt, grease, oils, and mosses. If concrete, totally cured.

WEATHER CONDITIONS

The air temperature should be between 10°C and 40°C. The relative humidity must be less than 70%.

If the temperature of the product is higher than 25°C at the time of mixing the two components, there is a risk that the working time will be too short.

The temperature of the support must be at least 3°C above the dew point to avoid condensation on the surface.

SUPPORT PREPARATION

The support preparation (cleaning, grinding, even sand blasting...) and the application of the appropriate primer are of paramount importance.

Remove all dust and loose materials from the surface with a brush or a vacuum cleaner.

On a porous support, the primer should be applied in a quantity enough to completely seal the porosity of the support. After curing should have a shiny appearance. If it has a matt or a semi-gloss finish, it means that the support has completely absorbed the resin, the support is not well sealed, and an additional layer of primer is needed.

On a porous and dry support (humidity less than 4%) Primer Epoxy 100 is recommended.

Primer Epoxy 100 can be applied in a single thick layer or in two layers, to improve the adhesion over the support. In that case, the first layer diluted with Rayston Solvent (5-10%), to increase penetration in the support (anchorage effect) and the second layer not diluted with subsequent broadcasting of quartz sand over the non-cured resin.

On a porous, wet and horizontal support (without ponding water) apply the Primer GC (roller or trowel). On a porous, horizontal, or vertical and wet support (without ponding water and not saturated with water) apply the Primer GC Thixo (roller or airless).

Tecnocem (self-levelling waterborne epoxy-cement mortar) can be applied (thick layer, horizontal) to get a even support, especially if it is wet and there is a risk of negative pressures.

Non-porous supports must be dry, clean and degreased. On flexible membranes (old bitumen, old PVC...), mastic asphalt, metal, coated supports... a layer of the single component, moisture cured, low odor and ultra-high solids content, reference Porosity Sealer Flex 100 will be applied (200-300 grams/m²). In the case of applications over very smooth supports, a gentle sanding, if possible, will significantly increase the adhesion of the treatment.

It is advisable to always carry out prior adhesion tests, especially in the case of porous and absorbent substrates that could be contaminated or non-porous substrates that are very smooth and/or shiny or whose composition is unknown.

MIXING

Impermax Cold Polyurea Supreme, is supplied in containers pre-packaged with the right mixing ratio. Partial mixtures are not recommended.

Before mixing, precondition both the A and B components to a temperature of approximately 15-20°C.

Open the container of component A and mix vigorously until the contents are completely homogeneous, incorporating all the material that may remain on the walls and the bottom of the container. Next, pour component A into the container of component B and mix again, scraping the sides and the bottom of the container several times to ensure complete mixing. Pour the mixture into a larger clean container and mix again. Use a low-speed electric mixer (about 300 rpm). Keep the mixer bladed fully submerged in the resin to avoid introducing air bubbles. Don't mix by hand or using wood or metal sticks.

By adding Thickening Additive, at 1-2% by the weight of the total amount of the resin (A+B), the right thixotropy of the resin can be obtained, depending on the slope and the condition of the support, the temperature of the resin and how it is applied. The Thickening Additive must be added when the two components (A+B) are mixed.

APPLICATION

Details and singular points:

To avoid sagging in these areas, the resin will be applied (roller or brush) always with either the Thickening Additive or as an alternative reinforced with Geomax or the self-adhesive strip Butyl Tex. On points with complex geometry the resin will be applied preferably reinforced with Geomax or the self-adhesive strip Butyl Tex.

Horizontal surface:

The mixed resin is poured onto the prepared support and quickly spread with a notched trowel or a spreader. It is advisable to wear spiked shoes and use a spiked roller to crush bubbles and help to distribute better the resin over the surface (cross passes, maximum 10 minutes after the mixture). Depending on the size of the surface to be coated, allocate enough workers to carry out the mixing, application and deaeration quickly and evenly.

After application, curing resin should be protected from direct contact with water for about 24 hours.



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PROTECTIVE FINISH

Impermax Cold Polyurea Supreme should be protected with an aliphatic topcoat to increase its mechanical strengths (scratch and wear resistance) and keep the colour when exposed to sunlight. Impertrans pigmented (solvent borne) or Impertrans ECO (waterborne) can be applied for standard applications. Other topcoats may be more suitable for specific applications, please consult the technical office of Krypton Chemical, S.L.

COVERAGE

Normal consumption depends on the state of the support and the desired thickness.

Normally about 2 kg/m² will be applied in a single layer.

CURING TIME

The curing time of the material is influenced by the environment, resin, and support temperatures. At low temperatures, the chemical reactions are slowed down, this lengthens the pot-life, open time, and total curing times. High temperatures speed up the chemical reactions thus the time frames are shortened accordingly.

Conditions	Total (hours)
20°C, 50%hr	4

RE-APPLICATION

A second layer of Impermax Cold Polyurea Supreme can be applied up to 24 hours after the first layer gets touch dry, depending on environmental conditions.

RETURN TO SERVICE

Under normal conditions a light pedestrian traffic is possible the next day. A complete curing (final resistance of the coating) needs about 3-4 days depending on environmental conditions.

TOOL CLEANING

Reusable tools should be cleaned carefully with Rayston Solvent. The cured resin can be removed with the Paint Stripper K.

FAQ

Problem	Answer
Blisters of bubbling	Bubble formation is common under unsuitable environmental conditions. Do not apply the product in situations of high humidity and temperature favouring the formation of bubbles or absorption of moisture. Ensure a correct and sufficiently abundant primer of the support to eliminate all porosity. Areas affected by bubbles should be sanded to regularize the surface and apply a new layer of Impermax Cold Polyurea Supreme.
Areas that don't harden	If the mixing has not been complete, there are bags of component A left unacted that are dragged by the mixing mass. These bags remain as soft areas that do not heal, sometimes under a hard surface. They should be repaired by extracting the defective material and filling them with new mixture.

Colour change	Under exposure to sunlight, aromatic polyureas undergo colour change, although this does not affect their properties, it is an aesthetic change. This can happen even within a few hours. Apply a protective layer in polyurethane aliphatic single component such as pigmented Colodur or a polyaspartic.
The irregularities are not filled	It is necessary a previous treatment of the support that serves to fill the hole

MAINTENANCE

It is necessary to repair locally always in a prudent way, trying to affect as little as possible the aesthetics of the different premises or areas, and above all the appearance of "patches". The steps are as follows:

- Cut the perimeter to be treated.
- Start the product by manual or mechanical means, depending on the area and the time available.
- Preparation of the support to obtain a clean, healthy, and cohesive support.
- Localized treatment by Impermax Cold Polyurea Supreme according to previous instructions.
- Apply the aliphatic finish to match the appearance of the entire surface.

SAFETY

Impermax Cold Polyurea Supreme contains isocyanates. The handling of these products requires prior consultation of the safety data sheet. In general, ensure good ventilation during work and avoid all contact of the skin with the product. This product is not intended for non-professional users or DIY-type uses.

ENVIRONMENTAL PRECAUTIONS

Empty containers should be handled with the same precautions as if they were full. Consider packaging as waste to be treated through an authorized waste manager. If the packages contain debris, parts A and B may be mixed provided that the correct ratio is respected, and that the volume does not exceed 5 liters to avoid any violent reaction.

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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