IMPERMAX COLD POLYUREA SUPREME

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 (with wearing course protection), 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.

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 slopped 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.

CE

- Root resistance according to CEN/TS 14416:2014 (without internal reinforcement).
- Roofs exposed to external fire. Class $B_{roof}(t4)$. Combustible support (not foamed).

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	>100ºC	>100ºC
Density	1.32 g/cm³ 25ºC	1.02 g/cm³ 25ºC
Viscosity	2200 mPa.s 25ºC	5000 mPa.s 25ºC
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 (ºC)	Density (g/cm³)	Viscosity (mPa.s)
	25	1.13	3200

Colour	Standard colour is light grey. Other colours available on request.	
Pot life	Conditions	Pot life (min)
	20ºC, 50%hr	30
Storage	Keep at temperatures between 10º and 30ºC, protected from moisture.	
Use before	12 months after manufacture date.	

INFORMATION ON THE FINAL PRODUCT	
Final state	Highly elastic polyurea membrane
Colour	Standard colours are light grey (similar to RAL 7001) and dark grey (similar to RAL 7011)
Solid density	1,13 g/cm³
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)
Heavy metal content (mg/kg)	Antimony (Sb): <1 Arsenic (As): <1 Lead (Pb): <1 Cadmium (Cd): <0.1 Chromium (Cr): <1 Nickel (Ni): <1 Mercury (Hg): <0.1 Selenium (Se): <1 Cobalt (Co): <1
Chemical resistance	Permanent contact. (0=not recommended, 5=best)

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

Adhesion strength	Concrete: 1,5 MPa (EN 13892-8) 2.5 MPa primed with Rayston Epoxy 100
UV resistance	Impermax Cold Polyurea Supreme undergoes a slight colour change in sunlight, but this process does not alter its mechanical properties.

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Use temperature	Stable between -15ºC and 80ºC
Water vapour resistance factor	μ = 769 (EN-ISO 7783: 2012)
Liquid water permeability	W = 0,009 Kg/m^2 x h^{0,5} (EN-1062-3: 2018)
Watertightness (60kpa, 6 meters of water column)	Watertight (EN-1928)
Foldability at low temperature (-45ºC)	Does not break or crack (EN-495-5)
Crack bridging properties	Class A5, -10ºC (EN-1062-7, Method A)
Rebound resilience	50% (ISO-4662)
Reaction to fire	Class E (EN 13501-1)

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 Mpa (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 5ºC and 35ºC. The relative humidity must be less than 70%.

If the temperature of the resin is quite higher than 25ºC at the time of mixing the two components, there is the risk that the working time will be too short. If the temperature of the resin is too low at the time of mixing the two components (too high viscosity), there is a risk that the two components are not well homogenized.

The temperature of the support must be at least 3ºC 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%) Rayston Epoxy 100 is recommended.

Rayston 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).

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 me 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/m^2). 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, it is recommended precondition both A and B components to a temperature of approximately 15-20ºC (optimal conditions to obtain a mixture that is as homogeneous as possible and an optimal working time). Lower temperatures will require longer mixing time.

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 an spiked roller to crash 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. Resin is rainproof about 2 hours after its application (20ºC).

In water containment projects, curing resin should be protected from direct contact with water (ponding) for about 24 hours.

PROTECTIVE FINISH

Impermax Cold Polyurea Supreme could 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. Topcoats based on polyaspartic resins do not have good adhesion over the Impermax Cold Polyurea Supreme. Other topcoats may be more suitable for specific applications, please consult the technical office of Krypton Chemical, S.L.

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COVERAGE

The recommended coverage per layer and the total coverage depends on the support (completely flat or pitched, for example) and the thickness of the cured coating required in each case. Normally a minimum of 2 kg/m^2 will be applied in a single layer (flat support).

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)
20ºC, 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. Longer times can lead to adhesion issues. Same remark applies to any polyurethante topcoat applied afterwards.

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 5-6 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 lumps of component A left unacted that are dragged by the mixing mass. These lumps 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 topcoat based on a single component polyurethane (Impertrans Pigmented) or, as an alternative apply Impertrans Eco.
Cavities that are not well filled when resin is applied	It will be necessary a previous treatment of the support (levelling)

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:

a. Cut the perimeter to be treated.
b. Remove the damaged coating by manual or mechanical means, depending on the area and the time available.
c. Preparation of the support to obtain a clean, healthy, and cohesive support.
d. Localized treatment by Impermax Cold Polyurea Supreme according to previous instructions.
e. 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

Consider packaging as a waste to be treated through an authorized waste manager. If the empty drums contain remains of liquid resins, 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. If the liquid is fully cured, then the empty drums are not hazard.

RECYCLABILITY

The coating, once cured, is inert, free of hazardous materials and heavy metals, so it is fully recyclable at the end of its useful life, for example, as a filler for lightened concrete or mortars.

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 trained installer will be solely responsible for any damage resulting from the partial or total misinterpretation of the advice contained in the different documents supplied by the manufacturer and in general, of the inappropriate use or application of the resins.

This data sheet supersedes previous versions.

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