POLYUREA RAYSTON X5

Expandable polyurea for waterproofing spray applications

DESCRIPTION

Polyurea Rayston X5 is an expanding polyurea designed for spray-applied waterproofing using a hot spray machine. It increases its initial volume by 3 to 5 times, helping to fill cracks and level irregular substrates. The expansion agent is water, with a much lower environmental impact than other foaming agents. Once cured, it forms a continuous, flexible and elastic waterproofing membrane, capable of bridging possible cracks in the substrate.

If it is exposed to the exterior, it should always be protected with an aliphatic protective finish (Impertrans Pigmented, Impertrans ECO, Colodur Pigmented, Impertop Fast 2K pigmented, Impermax A). Roof waterproofing applied in two stages, when a simpler, faster and cheaper solution is needed than a traditional polyurethane system applied in three stages (primer, membrane and finish).

APPLICATIONS

- Waterproofing of non-accessible roofs or those subject to light foot traffic (limited resistance to puncture).
- First layer of primer (adhesion and support regulator) for polyureas, when a primer applied at high productivity is necessary.
- Comfort layer for floors or continuous sheet for absorbing impact noise.

CERTIFICATIONS

- CE marked EN 1504-2: 0370-CPR-2247
- Asbestos encapsulation certificate (finished with pigmented Colodur or Impermax A)

CE

TECHNICAL DATA

INFORMATION ON THE PRODUCT BEFORE APPLICATION		
	Component A	**Component B**
Chemical description	Polyol/Polyamine	Aromatic isocyanate prepolymer
Physical state	Liquid	Liquid
Packaging	Metal container 196 kg 18.6 kg	Metal container 220 kg 21 kg
Non-volatile content	100%	100%
Flash point	>100ºC	>100ºC
Colour	Dark yellow	Yellowish
Density	1.08 g/cm^3 25ºC	1.14 g/cm^3 25ºC
Viscosity	1160 mPa.s 25ºC	390 mPa.s 25ºC

A/B mixing ratio	A=100, B=110 by weight A=100, B=100 by volume
Density and viscosity of the mixture	Fast polymerization. See pot life data.
Pot life	Cream time (25ºC): 7-8 seconds Cream time (50ºC): 4 seconds
Storage	Keep between 10º y 30ºC.
Use before	6 months after manufacture date, kept in its sealed container.

INFORMATION ON THE FINAL PRODUCT	
Final state	Solid elastomeric foam
Colour	White or light grey paste is recommended. The foaming process turns the colour to a pastel shade.
Density	200 kg/m^3
Hardness (Shore)	45-50A (ISO 868)

Mechanical properties	Maximum elongation: >125% Tensile strength: 1.7 MPa (UNE EN ISO 527-1/3) Tear strength 7,7 N/mm (UNE EN ISO 527-1/3)	
Static punching (EOTA, TR-007)	P3 at TH3, complies	
Adhesion strength	Surface	Adhesion strength (MPa)
	Concrete	1
	Concrete (with Rayston Epoxy 100)	1,1
UV resistance	Polyurea Rayston X5 is based on aromatic isocyanates. A colour change under sunlight is to be expected, which, however, does not affect its mechanical properties. Additional UV protection (to prevent yellowing) is provided by an aliphatic finish such as Impertrans Pigmented or Colodur Pigmented.	
Extreme temperature behaviour	Stable up to 80ºC	
External fire behaviour	B_{roof}(t1) (EN 13501-5)	
Thermal conductivity	0.044 W/mK (10ºC) 0.045 W/mK (20ºC) 0.046 W/mK (30ºC) 0.048 W/mK (40ºC) (ASTM 518)	
Crack bridging (static)	Class A5 (EN-1062-7)	
Reaction to fire	Class E (EN-1305-1)	
Water vapor resistance factor	μ = 1069 (EN-ISO 7783: 2012)	
Liquid water permeability Kg/m^2 x h^{0,5}	W = 0,001	
Watertightness (10 kPa, 1 meter water column)	Watertight (EN-1928)	
Impact noise reduction (10 mm.)	ΔLw (CI, Δ): 23 (-11) dB (EN-ISO-10140-3 y EN-ISO-717-2)	

SUPPORT REQUIREMENTS

To obtain good penetration and adhesion, a porous substrate (concrete or mortar) should always have the following characteristics:
1. cohesive, compact and continuous, with a minimum strength of 1.5 N/mm2 (pull off test). Sharp peaks or sharp edges should be previously sanded and rounded.
2. Free of cracks and crevices. If present, they should be pre-treated (e.g. filled with polyurethane putty).
3. Sound, clean, dry (humidity below 4%), fully cured, free of dust, loose materials or particles, surface laitance and free of grease, oil and moss.

The foaming process during curing allows the coating to easily conform to irregular substrates (voids, peaks, and valleys). However, the applied layer thickness must be sufficient to fully compensate for the size of these irregularities (depth of cavities or height differences between the valley bottom and peak top).

AMBIENT HUMIDITY AND TEMPERATURE CONDITIONS

The recommended temperature of the substrate for the application should be between 10ºC and 40ºC. If the temperature is higher than 45ºC, additional measures should be taken according to the manufacturer's instructions.

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To avoid surface condensation, ambient humidity should be below than 85%, and the substrate temperature should be at least 3ºC above the dew point.

MIXING

Shake and homogenize the two components using suitable equipment. Add the (pre-dosed) amount of Pigment Spray to component A and homogenize. Recirculate the two components while heating to the prescribed application temperature.

APPLICATION / USE

Polyurea Rayston X5 can only be applied using spraying equipment suitable for hot two-component systems.

The recommended temperatures are as follows:
- Component A: 60ºC
- Component B: 60ºC

The pressure should be set to about 100-120 bar.

The spray gun must be an air purge type. It is possible to apply the resin directly (without primer) on a dry porous substrate without any risk of rising air (surface gradually heated by direct sunlight during the morning and midday). In this case, it is recommended to apply the prescribed amount (depending on the requirements of each project) in at least two successive coats: a first very thin layer of about 150-250 grams/m2 and the rest of the amount 5-10 minutes later.

The standard recommended dosage is between 1-1.5 kg/m2, with the objective of creating a membrane of more than 5 mm thick. If the surface is very uneven, a higher application rate will be required.

In an exterior application, Polyurea Rayston X5, if exposed, should always be protected with an aliphatic protective finish. To obtain an optimum adhesion between the finish and the Polyurea Rayston X5, the finish should be applied shortly after the application of the membrane, always the same day, when the membrane has lost its temperature.

Primer:
On a non-porous substrate, no adhesion primer is normally required. In this case, the surface must be clean, degreased and free of dust, materials and loose particles.
On a porous substrate that is not completely dry (humidity above 4%), an epoxy primer type H Primer or GC Primer is recommended. Polyurea Rayston X5 is very sensitive to the presence of surface moisture. To avoid the appearance of bubbles in the Polyurea Rayston X5 membrane, the surface where it is applied (substrate or primer) must be completely dry.

CURING TIME

Polyurea Rayston X5 cures to touch after a few seconds after application.

TOOL CLEANING

To keep equipment in good conditions (spraying gun, gaskets), it is recommended not to use solvents. A cleaning fluid like Rayston Fluid can be used instead. Component B must be thoroughly removed and replaced with this fluid.

SAFETY

Component B of Polyurea Rayston X5 contains isocyanates and Component A contains corrosive polyamines that can cause burns. Always follow the safety instructions in the Material Safety Data Sheet. As a rule, a good ventilation, protective clothing, and respiratory protection is needed (combined organic vapor filters + particles A2P). 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 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 litres 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.