

POLYUREA RAYSTON A

RAYSTON
products



Aliphatic pure polyurea for waterproofing applications

DESCRIPTION

Polyurea Rayston A (aliphatic) is a pure polyurea resin, totally free of solvents and mineral fillers. Spray applied with a proportioning machine. Once cured, it forms a continuous and seamless high performant membrane, chemical and outdoors resistant, that has got a thermosetting and elastomeric behavior (tough and elastic at the same time, with an outstanding capacity to bridge over the fissures from the support). The membrane cures in a few seconds and returned to service in a matter of hours. Polyurea Rayston A can be applied either adhered or not adhered over the support (combined with the special non-woven geotextile Geomax Spray 200, getting a seamless liner).



APPLICATION

Waterproofing and protection of concrete structures, especially swimming pools, resort & wave lagoons, artificial beaches, waterparks, decorative fountains, aquariums...

Protective coating over different types of supports exposed outdoors: metals (truck bed liners, containers, for example), polyurethane insulating foam, theme parks, architectural design, marine applications...



PROPERTIES

UV, sunlight and color stable when exposed outdoors (not yellowing). Excellent crack bridging properties. Highly flexible, excellent elongation at break. Thermosetting behavior. Thermally stable, even at extreme temperatures. Instant curing. Touch dry in 30 seconds. Excellent chemical resistance in continuous contact with water, brine, slightly chlorinated water and slightly alkaline or acidic water.



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	Polyamine	Aliphatic isocyanate prepolymer
Physical state	Liquid	Liquid
Packaging	Metal container	Metal container
	196 kg	220 kg
	18.6 kg	21 kg

Non-volatile content (%)	Approx 100%	100%		
Flash point	>100°C	>100°C		
Density	Temperature (°C) 25	Density (g/cm ³) 0.99	Temperature (°C) 25	Density (g/cm ³) 1.09
Viscosity approximate Brookfield	Temperature (°C) 25	Viscosity (mPa.s) 300	Temperature (°C) 25	Viscosity (mPa.s) 800
A/B mixing ratio	A=1, B=1.17 by weight A=1, B=1 by volume			
Density and viscosity of the mixture	Fast polymerization. See Pot life data			
Colour	Both components are supplied colourless. Component A is pigmented by addition of pigment paste (Pigment Spray) delivered with each kit of Polyurea Rayston A.			
Pot life	Gel time mixture A+B (20 g) 4 s at 25°C Tack free time 30 s at 70°C			
Storage	Keep between 10° y 30°C.			
Use before	12 months after manufacture.			

INFORMATION ON THE FINAL PRODUCT

Final state	Elastomeric solid membrane	
Colour	Standard colours are white and blue (similar to RAL 5015)	
Hardness (Shore)	80A/30D	
Mechanical properties	Elongation at break: 240% Tensile strength: 10 MPa (EN-ISO 527-3)	
Gloss (60°C)	80-85%	
Tear strenght	69 N/mm (ISO 34-1, method B)	
Adhesion strength	Substrate	Adhesion strength (MPa)
	Concrete (with epoxy primer)	4.0
	Plywood (with epoxy primer)	1.6 (cohesive wood failure)
	Steel (PU Primer)	5.3
	High density PU foam (150 kg/m ³)	>1.5 foam failure
Water vapour resistance factor	$\mu = 5805$ (EN-ISO 7783: 2012)	
Liquid water permeability	$W = 0,003 \text{ Kg/m}^2 \times \text{h}^{0.5}$ (EN-1062-3: 2018)	
Crack bridging properties (static)	Class A5, 23°C and -10°C (EN-1062-7, Method A)	
Watertightness (60kpa, 6 meters of water column)	Watertight (EN-1928)	
Water depth penetration under direct pressure (50 meters of water column)	Watertight, without water penetration (EN-12390-8)	
Foldability at low temperature	Does not break or crack (EN-495-5)	



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Chemical resistance chart Immersion test, 80°C, 7 days (0 = no resistance, 5 = good resistance)

Chemical	Result
Water	5
Brine, saturated (NaCl)	5
Chlorinated water (20 ppm)	5
Bleach	3
Caustic soda, NaOH 2% (pH = 13.7)	5
Hydrochloric acid, HCl 0.1M (pH = 1)	5
Hydrochloric acid, HCl 20%	0
Hydrochloric acid, HCl 2% (pH = 0.25)	3
Xylene	0
Isopropyl alcohol (IPA)	0

UV resistance Polyurea Rayston A is an aliphatic isocyanate-based resin. It has an excellent gloss and colour retention when exposed to the sunlight.

SUPPORT REQUIREMENTS (ADHERED SYSTEM)

In order to achieve a good penetration and bonding, a porous support (concrete, for example) must be:

1. Flat and levelled.
2. Compact and cohesive (pull off test must show a minimum resistance of 1,5 N/mm²).
3. Even and regular surface. Totally continuous.
4. Free from cavities, cracks and fissures. If any, they must be previously repaired (filled in with a polyurethane mastic, for example).
5. Clean and dry, free of dust, loose particles, oils, organic residues or laitance.
6. Totally cured.

Metal substrates must be clean and free of rust, oils, greases or other loose materials.

SUPPORT REQUIREMENTS (FLOATING SYSTEM)

Non adhered systems (continuous liners, without seams with Geomax Spray 200) does not need special support requirements and preparation. The system can be applied either over an uneven concrete support or directly over the soil.

RECOMMENDED ENVIRONMENTAL CONDITIONS

Air temperature should be between 10°C and 40°C. Relative air humidity should be less than 85%. Higher humidities do not prevent correct polymerization but may make adhesion increasingly difficult to substrates because of condensation on surfaces.

Substrate temperature has to be 3 degrees above the dew point.

Avoid spraying in excessively windy conditions for exterior applications. Avoid spraying during sustained wind speeds or gusts exceeding 25 km per hour.

SUPPORT PREPARATION

Concrete substrates can be prepared mechanically using high pressure sand or abrasion, in order to remove the surface irregularities and obtain an open pore. Substrates must be primed and levelled until a regular surface is obtained. Sharp irregularities can be eliminated using an abrading disc machine.

All dust and loose particles from the substrate can be eliminated by brushing or vacuum cleaning.

The primer must be applied in a quantity enough to completely seal the porosity of the substrate. Once cured it should have a shiny appearance, if it has a matt or semi-gloss appearance it means that the support has completely absorbed the resin, the support it is not well sealed, and an additional layer of primer is required.

Over a dry porous surface (moisture lower than 4%) Primer Epoxy 100 is recommended.

Primer Epoxy 100 can be applied in a single thick layer or in two layers if improved adhesion of the system is required. First layer diluted with Rayston Solvent (5-10%), second layer with no dilution and broadcasting quartz sand over it.

Over a damp porous surface (with no ponding) Primer GC is recommended. In case of a buried tank, with negative pressures, a previous treatment with Tecnoem is recommended.

Rayston 100 Epoxy Gel is designed to be applied mainly over dry, irregular, vertical surface with a trowel. Permits support preparation and priming in a single step.

Metal substrates should be cleaned, degreased and primed with either an adhesion promoter type PU Primer or an anticorrosive primer, prior to application.

MIXING

Both the component A side and the component B side should be preconditioned between 25°C-30°C before loading (heating belts may be used). Stir and homogenize separately both components using suitable mixing equipment before being loaded into the machine. 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

Polyurea Rayston A must be applied using a 2-component hot spraying equipment.

Recommended temperatures are:

- Component A: 68°C
- Component B: 70°C
- Hose: 67°C

Pressure must be adjusted to 140 bar.

During spraying, check coating thickness to ensure curing evolution is correct. Polyurea Rayston A is applied at 1,5-2 kg/m², obtaining a 1,5-2 mm thickness. Please contact Krypton Chemical for specific application details.

CURING TIME

Polyurea Rayston A cures to touch after a few minutes after application. Approximate hardness values are provided here as reference only (1 mm, polypropylene support, 25°, 50% rh)

Time	Hardness Shore A
5 min	25
10 min	36
20 min	50
1 hour	63
24 hours	72
4 days	80

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RECOATING

It is recommended to obtain the right thickness with a single application. Where an epoxy primer has been previously applied, spray Polyurea Rayston A only after the primer is fully cured.

RETURN TO SERVICE

Under most conditions (25°C, 50% rh), the membrane is rain-resistant after 10 minutes.

COLOR FASTNESS

Different colors than the standards may have a poor color fastness even in an aliphatic resin matrix.

Chlorine is a powerful bleaching agent. Chlorinated water may bleach Polyurea Rayston A coating other than white color.

TOOL CLEANING

In order 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.

FAQ

Problem	Question	Cause	Solution
Does not cure or remains sticky	AB ratio is correct?	Pressure differences	Check and correct pumping equipment
Bubbles or open pores	Porous support?	No primer	Apply an Epoxy type primer before Polyurea
Not enough hiding power	Horizontal?	Too few No pigment	Use 1 kg/m ² minimum Mix and homogeneize pigment in component A before spraying

SAFETY

Component B of Polyurea Rayston A 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 general 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 contains 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 in order to get an inert material, but never do it in volumes larger than 5 liters 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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