

POLYUREA RAYSTON FAST

RAYSTON
products



Polyurea membrane for waterproofing in spray applications Extra fast curing

DESCRIPTION

Polyurea Rayston Fast is a 2-component polyurea system for elastic membrane application with crack-bridging capability. It is an extra fast-curing system that can only be applied by hot mechanical spraying equipment. Polyurea Rayston Fast can be combined with different geotextiles to obtain on site applied, seamless liners.



APPLICATIONS

- Waterproofing of concrete structures, especially vertical or steep sloped surfaces
- Primary and secondary containment of liquids, for example in chemical factories.
- On-site applied liners, totally seamless, for primary containment applications: ponds, landfills, tunnels, channels, dam repairing...
- Waterproofing of hydraulic structures, water tanks, sewage installations ...
- Roof waterproofing. Sewage and wastewater treatment structures. On-site applied liners, totally seamless, for secondary containment applications, ponds, landfills, tunnels, canals, dam repairing.



Polyurea Rayston Fast can be completed with an aliphatic polyurethane topcoat to ensure UV protection.

PROPERTIES

- Crack-bridging capability. Highly elastic membrane.
- Very fast curing, that avoids totally sagging of the resin if applied over vertical surfaces using two-component spraying equipment.
- It can be pigmented.
- Very good resistance



CERTIFICATIONS

Applus (Independent laboratory):

- Drinking water certification (Migration test). 928/09/8505
- Low-temperature foldability: 11/2855-1313
- Mechanical properties: 11/2855-1314
- Dynamic and Static indentation test according to EOTA. 11/2855-1315

AITEX (Independent laboratory):

- Mechanical properties EN ISO 527-1/3.
- Static indentation/CBR UNE-EN-ISO 12236:2007.
- Tear, according to UNE-EN ISO 34-1:2011

TECHNICAL DATA

INFORMATION ON THE PRODUCT BEFORE APPLICATION

	Component A	Component B
Chemical description	Polyamine	Aromatic isocyanate prepolymer
Physical state	Liquid	Liquid
Packaging	Metal container 197 kg	Metal container 219 kg
	23.5 kg	26 kg
Non-volatile content (%)	100%	100%
Flash point	>100°C	>100°C
Colour	Yellow (without pigment) (may darken along storage)	Yellow

Density	Temperature (°C)	Density (g/cm ³)	Temperature (°C)	Density (g/cm ³)
	20	1,1	20	1,14
	60	0,98	60	1,10
Viscosity	Temperature (°C)	Viscosity (mPa.s)	Temperature (°C)	Viscosity (mPa.s)
	20	475	20	800
Approximate values	30	250	30	450
Brookfield	50	90	50	200
	60	65	60	120
A/B mixing ratio	A=1, B=1.17 by weight A=1, B=1 by volume			
Colour	Dark yellow, but component A is pigmented by addition of pigment paste (Pigment Spray) delivered with each kit of Polyurea Rayston Fast.			
Curing performance	Gel time mixture A+B (20 g) 1-2 seconds. Tack free 10 seconds.			
Storage	Keep between 10°C and 30°C.			
Use before	12 months after manufacturing date.			

INFORMATION ON THE FINAL PRODUCT

Final state	Elastomeric solid membrane
Colour	Available Pigment Spray pastes are blue RAL 5015, gray RAL 7011, tile red, Beige RAL 1001. Other pastes are available under request.
Gloss (60°)	80-85
Hardness (shore)	55D
Mechanical properties	Maximum elongation: 225% Tensile strength: 16,2 MPa (UNE EN ISO 527-1/3) Tear strength 100N/mm (UNE EN ISO 34-1 method B)
Chemical resistance	Permanent contact test (5=ok, 0=Not recommended)

Chemical	Conditions	Result
Water	15d, 80°C	5
Salt water (saturation)	7d, 80°C	5
Xylene	7d, 80°C	2
Ethyl acetate	7d, 80°C	1
Isopropyl alcohol	7d, 80°C	0
Sodium hydroxide (50%)	7d, 80°C	5
Hydrogen peroxide (33%)	7d, 25°C	4
Sulphuric acid (10%)	7d, 80°C	5
Sulphuric acid (30%)	30d, 80°C	4
Bleach	7d, 80°C	4
Ammonia (3%)	7d, 80°C	5
Diesel	16d, 80°C	5
Hydrochloric acid 12M (37%)	7d, 80°C	0
Hydrochloric acid 6M (18%)	7d, 80°C	1
Hydrochloric acid 3M (9%)	7d, 80°C	4
Hydrochloric acid 0.75M (2%)	7d, 80°C	5
Sodium hypochlorite 15%	7d, 80°C	4
Engine oil	7d, 80°C	5
Crude petroleum	21d, 80°C	5
Sulfamic acid 85%	7d, 60°C	4
Oleic acid	7d, 80°C	0
Glycerine	7d, 80°C	5

Adhesion strength	Surface	Adhesion strength (MPa)
	Concrete (with epoxy primer)	
	Plywood (with epoxy primer)	1.6 (cohesive wood failure)
	Steel (PU primer)	5.3

UV resistance Polyurea Rayston Fast is an aromatic isocyanate-based product. A colour change is to be expected under sunlight. This change does not affect its mechanical properties. An additional UV protection can be provided with an Impertrans/Colodur topcoat.



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Abrasion resistance	10 mg (Taber, 1000 c. CS-10, 1kg)
Thermal resistance	Stable up to 200°C (6-hour test). According to low temperature tests, (UNE_EN 495-2001), the membrane can be folded at -45°C without cracking or breaks.
Indentation	Polyurea Rayston Fast gives, at 2-mm thickness, a resistance to indentation equivalent to a p4 level (approx 25 kg/cm ²) at TH4 (90°C) as directed by EOTA guide ETAG 005. The combined liner of Polyurea Rayston + selected geotextiles gives an static indentation resistance higher than 4000 kN (UNE-EN ISO 12236:2007)

SUPPORT REQUIREMENTS

In order to achieve a good penetration and bonding, support must be:

1. Flat and leveled
2. Compact 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

Support temperature must be between 10°C and 40°C. Support moisture must be less than 4%

TEMPERATURE AND HUMIDITY 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. If underlying moisture is suspected, it is recommended to apply 2 coats of epoxy (Rayston Epoxy primer). First one as such and the second one with quartz sand spreaded over.

MIXING

Stir and homogenise 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 AND RECOMMENDED QUANTITIES

Polyurea Rayston Fast must be applied using a 2-component hot spraying equipment. Recommended temperatures are:

- Component A: 60-65°C
- Component B: 65-70°C

Pressure must be adjusted to 140 bar.
During spraying, check coating thickness to ensure curing evolution is correct. Polyurea Rayston Fast is applied at 1,5-2,0 kg/m², obtaining a 1,5-2 mm thickness.

Wind speeds in excess of 25 km/h may result in excessive loss of exotherm and interfere with the mixing efficiency of the spray gun affecting polyurea surface texture, cure, and physical properties and will cause overspray issues.

Please contact Krypton Chemical for specific application details.

CURING TIME

Gel time: 1-2 s
Tack free time: ca 10 s
Approximate hardness values are provided here as reference only (1 mm, polypropylene support, 25°C 50% RH)

RECOATING

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

TOOL CLEANING

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

FAQ

Problem	Question	Answer	Solution
Does not cure or remains sticky	Ratio A/B correct?	Different pressure	Check and correct pumping equipment Apply an Epoxy-type primer before Polyurea
Bubbles or open holes in the membrane	Porous substrate?	No primer	Open holes are frequent with fast-curing polyurea Use 1 kg/m ² minimum. Mix and homogenize pigment in component A before spraying
Not enough hiding power	Horizontal?	Too few No pigment	Mix and homogenize pigment in component A before spraying
Gray colour darkens upon exposure to sun	Exposed?	Components react with UV light.	Apply an aliphatic topcoat afterwards (eg: Impertrans, Colodur)

SAFETY

Component B of Polyurea Rayston Fast 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 filter+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.



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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.



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