POLYUREA RAYSTON P

Polyurea membrane for waterproofing, application by projection

DESCRIPTION

Polyurea Rayston P is a system based on pure polyurea, of two components of extra fast curing for the application of elastic membranes, with crack bridging. Only applied by hot mechanical projection. The product can be combined with different geotextiles to obtain "liners" without application joints in continuous.

APPLICATION

- Waterproofing of concrete structures.
- Roof waterproofing.
- Liners of on-site application, totally continuous, for secondary containment, rafts, landfills, tunnels, canals, repair of dams, reservoirs, etc.
- Wastewater facilities.
- Polyurea Rayston P can be coated with aliphatic polyurethane to provide UV protection to colour change.
- Waterproofing of all type of hydraulic infrastructures also wastewater installations (high resistance to H2S)
- Waterproofing of foundations, especially those designed as barriers to Radon gas.

PROPERTIES

- Crack bridging capability.
- Membrane of high elasticity, totally continuous.
- Very fast curing with application by hot projection equipment for two components.
- Pigmentable.

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 194 kg 18.5 kg	Metal container 220 kg 21 kg
Non-volatile content	Approx 100%	100%
Flash point	>100ºC	>100ºC
Color	Yellow (without pigmentation) (may darken along storage)	Yellowish

Density	Temperature (ºC)	Density (g/cm^3)	Temperature (ºC)	Density (g/cm^3)
	25	1.01	25	1.12

Viscosity	Temperature (ºC)	Viscosity (mPa.s)	Temperature (ºC)	Viscosity (mPa.s)
	25	440	25	425

A/B mixing ratio	A=1, B=1.11 by weight A=1, B=1 by volume
Density and viscosity of the mixture	Fast polymerization. See pot life data.
Colour	Dark yellow. Component A is pigmented by addition of pigment paste (Pigment Spray) delivered with each kit of Polyurea Rayston P
Pot life	Gel time mixture A+B (20 g): 4 s at 25ºC 3 s at 60ºC Tack free time: 30 s at 70ºC
Storage	Keep between 10º y 30ºC.
Use before	12 months after manufacture.

INFORMATION ON THE FINAL PRODUCT

Final state	Elastomeric solid membrane
Colour	Spray pigment is supplied for Blue 5015, Grey RAL 7011, Tile, Beige RAL 1001. Other colours to consult.
Hardness (Shore)	92A/40D
Mechanical properties	Elongation at break: 497% Tensile strength: 21.6 MPa (EN-ISO 527-3)
Gloss (60ºC)	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)	2.5 foam failure

Chemical resistance

Immersion test, 80ºC, 7 days (0 = no resistance, 5 = good resistance)

Chemical	Conditions	Result
Water	15d, 80ºC	5
Salt water (saturation)	15d, 80ºC	5
Xylene	7d, 80ºC	2
Ethyl acetate	7d, 80ºC	1
Isopropyl alcohol	7d, 80ºC	0
Sodium hydroxide (50%)	7d, 80ºC	5
Hydrogen peroxide (33%)	7d, 25ºC	4
Sulphuric acid (10%)	7d, 80ºC	5
Sulphuric acid (30%)	30d, 80ºC	4
Phosphoric acid (54%)	7d, 80ºC	4
Bleach	7d, 80ºC	4
Ammonia	7d, 80ºC	5
Diesel	16d, 80ºC	5
Hydrochloric acid 12M (37%)	7d, 80ºC	0
Hydrochloric acid 6M (18%)	7d, 80ºC	1
Hydrochloric acid 3M (9%)	7d, 80ºC	4
Hydrochloric acid 0.75M (2%)	7d, 80ºC	5
Sodium hypochlorite (2%)	7d, 80ºC	3

KRYPTON CHEMICAL SL
C/ Martí i Franquès, 12 - Pol. Ind. les Tàpies
43890 - l'Hospitalet de l'Infant - Spain
Tel: +34 977 822 245 - Fax: +34 977 823 977
www.kryptonchemical.com – rayston@kryptonchemical.com

	Engine oil (1%)		
	Crude petroleum	7d, 80ºC	5
	Sulfamic acid	21d, 23ºC	5
	Oleic acid	7d, 60ºC	4
	glycerine	7d, 80ºC	0
	Ethanol/water (20/80 w/w)	7d, 80ºC	5
	urea		
	Ammonium nitrate	7d, 80ºC 24d, 60ºC	4 5
UV resistance	Polyurea Rayston A is an aliphatic isocyanate-based resin. It has an excellent gloss and colour retention when exposed the sunlight.		
Abrasion resistance	10 mg (Taber, CS-10, 1000 c, 1 kg)		
Thermal resistance	Stable up to 180ºC. According to low temperature foldability test (UNE EN 495-5:2001), the elastomer can be bent at -45ºC for a temperature TH4 (90ºC), according to the ETAG Guide 005 of the EOTA. The liner obtained by combining the Polyurea Rayston P and selected geotextiles, allows to obtain a resistance to static punching (according to UNE-EN ISO 12236:2007 standard)		

SUPPORT REQUIREMENTS

To obtain good penetration and adhesion, the support must always have the following characteristics:

1. Levelled
2. Cohesive / compact with a minimum resistance of 1,5 N/mm^2 (pull-off test)
3. Regular and fine appearance
4. Free of fissures and cracks. If there are any, they should be treated beforehand.
5. Healthy, clean, dry, free of dust or traces of materials or loose particles, surface slabs and free of fats, oils, and mosses

ENVIRONMENTAL CONDITIONS

Concrete supports should be prepared mechanically using an abrasive jet or scarifying to lift the surface and get an open pore. The support is printed and levelled until a regular surface is achieved. The pointed irregularities are eliminated with a polisher. Remove all dust and loose material from the surface with a brush, broom and/or vacuum cleaner.

NOTE: on a porous support with a high degree of humidity (without reaching the stagnation of water) the recommended primer is the First GC.

MIXING

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

APPLICATION GUIDELINES

Polyurea Rayston P can only be applied by means of projection equipment suitable for hot two-component systems. The use of a compressed air dryer (refrigeration dryer) or compressed air-drying filters is recommended.

The recommended temperatures are as follows:

- Component A: 65ºC
- Component B: 70ºC
- Hose: 65ºC

Pressure should be at least 140 bar while spraying.

During the application it is convenient to verify the layer thickness and that the evolution of the curing is correct.

Polyurea Rayston P is applied to 1.5-2.0 kg/m^2, to obtain a thickness between 1.5 and 2 mm.

Contact Krypton Chemical for more technical details of the application.

CURING TIME

Polyurea Rayston P acquires hardness to the touch within a few seconds of application. Indicative values of the evolution of Shore A hardness (1 mm, about plastic, 25ºC, 50%hr)

Time	Hardness Shore A
5 min	28
10 min	40
20 min	55
1 hour	70
24 hours	80
4 days	88

REAPPLICATION

It is recommended to obtain the necessary thickness with the application of a single layer. If a previous epoxy primer has been applied, apply Polyurea Rayston P only on the dry primer (approximately 8 hours).

RETURN TO SERVICE

Under normal conditions (25ºC, 50% hr), the membrane is resistant to raindrops in 10 minutes.

TOOL CLEANING

In order to keep the materials in good condition of the projection machine (gun, gaskets, etc.), the cleaning of the equipment with solvents is not recommended. Instead, a plasticizer-type cleaning fluid, such as Rayston Fluid, can be used. Component B should be completely cleaned of those parts exposed to air and replaced with the plasticizer cleaner.

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

PRESERVATION AND MAINTENANCE OF THE PRODUCT

The covers made with Polyurea Rayston P must be maintained depending on the use made of them.

This maintenance includes the following operations:

- Removal of leaves
- Removal of grass, moss, vegetation, and various wastes
- Maintain the proper functioning of stormwater sewerage.
- Verify the presence of the sink bars in the places foreseen for this purpose, to avoid the obstruction of these in time.
- Verification of the correct maintenance of various structures (joint covers, seams, parapets, cornices...)
- Verification of possible breaks that may cause improper use.

- If the aesthetic aspect of the cover were an important criterion, it is essential to regularly clean the surface with water (some detergent may be added) depending on the use.

It may be necessary to provide for the renovation of decorative layers (Impertrans / Colodur) in function of the wear they suffer from traffic, or weathering (atmospheric corrosion, UV rays...)
For stain removal, a surface treatment with Rayston solvent or isopropyl alcohol can be tested. Strong acids are discouraged. Some solvents can damage the membrane. If this happens, the affected area should be cut and repaired with new Polyurea Rayston P product, covering the original sheet at least 3 cm in all directions.

SECURITY

Component B of Polyurea Rayston P contains isocyanates and component A corrosive polyamines that can cause burns. Always follow the instructions on the safety sheet of this product and take the protective measures described therein. In general, adequate ventilation and/o respiratory protection is mandatory for the operator (combined particle and particulate filter) organic steam A2P2), along with protective clothing for the skin. The product should be used only for the intended uses and in the prescribed form. This product should be intended for industrial and professional uses only. It is not ideal for DIY type use.

ENVIRONMENT

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 traces, do not mix them with other products without first ruling out possible dangerous reactions. Component A and B remnants can be mixed in equal parts to convert them into an inert solid material but never in a volume greater than 5 liters at a time to avoid dangerous heat generation.

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.