APPLICATION GUIDE.

Rayston Floor PU 30 Flex System

by Krypton Chemical

Content

1. General terms and conditions

RECOMMENDATIONS

MANUFACTURER

The manufacturer of the products used in the works described in this specification shall demonstrate in writing that its Quality Assurance system complies with the requirements of the Spanish Standard UNE-ISO 9001.

APPLICATOR

For a correct application of the systems specified in this report, it is recommended that the application company has satisfactorily completed an instruction program on their installation or application and the appropriate methods for the preparation of the substrate, in addition to having the necessary equipment for the correct application of the product.
The application company must have the means and equipment necessary and in suitable conditions for the correct application of the system.

EXECUTION OF THE APPLICATION:

CONDITIONS

Before starting the work described in this specification, it shall be verified that the environmental, site and substrate conditions are suitable for the application.
The final responsibility for any decision regarding the application of the system on site shall rest with the project manager, project execution manager and/or builder, and in no case with the supplier of the product.

PREPARATION

The good preparation of the substrate is vital for the correct application of the products. Therefore, the technical instructions recommended by the manufacturer should be followed.

APPLICATION

It is recommended that the products described in this report be applied or installed according to the manufacturer's instructions and in compliance with current regulations.

PROTECTIVE SYSTEMS

Before starting the application work, the necessary measures will be taken for the protection of workers in terms of Occupational Risk Prevention, and the appropriate measures will be taken so that personnel outside the work site are not affected by the application.

2. Proposed solution

This document is intended to assist you and the applicator during the application of the **RAYSTON FLOOR PU 30 Flex** system. A two component, 100% solids, self-leveling, pigmented, polyurethane resin based, anti-skid finishing system for the protection of concrete surfaces and pavements.

The **RAYSTON FLOOR PU 30 Flex** system must be completely continuous, without joints. It must effectively protect the pavement from cleaning products, traffic and the normal use of the facilities by the users. Among the advantages of the system we have: Solvent-free, waterproof and non-porous, good resistance to impact and abrasion, easy to clean, wide range of colors and possibility of obtaining different slipperiness.

3. System Steps

The system should follow the following steps:

- Primer: Rayston Epoxy 100
- Main Layer: Pavisoft
- Top Coat: Colodur Eco

4. Support requirements and treatment of details and singular points.

1 Requirements to be met by the substrate:

The concrete substrate must meet the following properties:

- Minimum cohesion (pull-off resistance) of 1.5 N/mm^2.
- Compressive strength (minimum 25 N/mm^2)

- RH <4%.
- Seamless
- Cohesive
- Not contaminated
- Leveling

2 Moisture Content, Ambient and Substrate Temperatures.

Before application, confirm the moisture content of the substrate, RH, dew point or dew point. If the humidity of the substrate is higher than 8%, and if it is possible we should dry the surface by means of devices enabled for this purpose, otherwise another type of primer will be evaluated.

The temperature and humidity of the environment and substrate (min. + 10ºC and max. + 30ºC) should be controlled during the whole application cycle (before - during - after), to avoid accelerated reactions. In addition to this, the dew point should also be controlled (always apply when the temperature is 3ºC above).

Note: The speed of any chemical reaction depends on the temperature, as a general rule the higher the temperature, the faster the reaction. Condensation on the substrate should be at least 3°C above the dew point, and the ambient humidity should not exceed 85%.

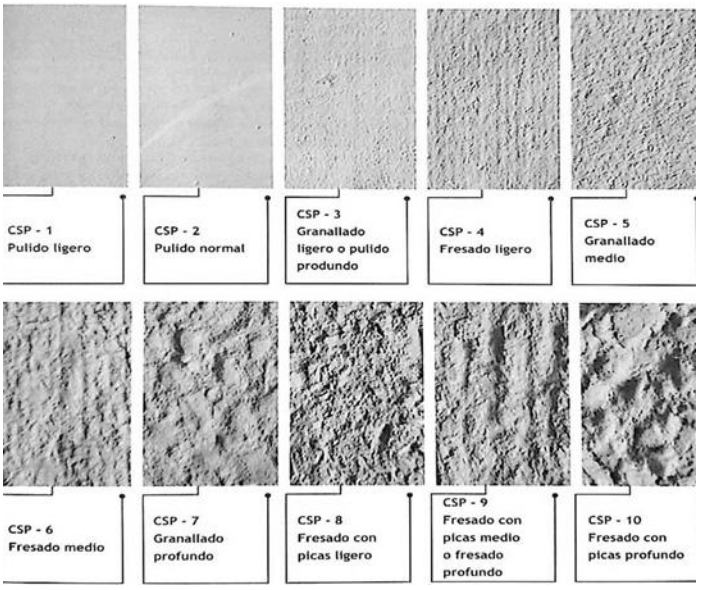
3 Preparation of the substrate

To ensure a good compatibility of the system with the existing support and to obtain good adhesion, it is very important that the support has minimum conditions and the following ones properties:

1. Cohesive.
Regular and homogeneous.
Fully continuous.
4. Free of fissures, cracks and crazing (to be treated beforehand).
5. Clean and free of dust, grease, fluids and any other type of contaminating chemical agent.
6. Fully cured.
7. Free of particles and other materials not completely adhered to the substrate.
8. As dry as possible (no risk of negative pressure).

The stand will be washed with a high-pressure water machine to remove the dirt (degreasing) and impurities. It will be important that there are no material remains since may affect the adhesion of the membrane to the substrate.

The degree of roughness in concrete should be CSP1- CSP2 according to ICRI (INTERNATIONAL INSTITUTE for Concrete Repair) Technical Guide No. 03732 "Selection and Specification of Concrete Surface Preparation for Coatings, Sealers and Polymeric Coatings. "



4 Treatment of damages and shocks:

Before priming the surface, local treatments will be made with dry mortar based on Rayston Epoxy 100 resin, with 0.4 to 0.9 mm granulometry aggregate or equivalent, or with cementitious repair mortar type R4, assuring a complete aesthetic homogeneity with the existing treatment. Possible cracks or small cavities will be filled with a polyurethane putty type Rayston Flex or equivalent.

5 Treatment of details and singular points:

Right angles should be avoided in horizontal-vertical joints, corners and other parts of the structure, i.e. it is advisable to round these areas of the surface with a mortar **(encounters).**

Regarding the **expansion joints of** the structure, if they have a movement greater than 50% of the joint size, mechanical joints should be placed (for example, a joint with a minimum width of 10 cm should be opened a maximum of 15 cm). To ensure the watertightness of the system, these mechanical joints should be placed according to the manufacturer's specific recommendations.

If the movement is smaller, they can be treated with Rayston Joint Geo high elasticity band, after filling them appropriately (polyethylene foam cylinder and polyurethane putty type Rayston Flex). Rayston Joint Geo adheres to the primed substrate thanks to an adhesive (PU 2K adhesive) or an epoxy resin such as Rayston Epoxy 100 applied on the geotextile adhered to the membrane. Polyurea membranes do not have a good adhesion on the Rayston Flex Joint Geo strip, so that, in case of movement of the joint, this movement will not be transferred to the polyurea membrane, or in any case the movement will be attenuated to this polyurea membrane, reducing the risk of cracking of the same.

Rayston Joint Geo can be supplied in different widths, it is advisable to always use a band with the appropriate width.

For small jobs, Rayston Flex 3040 one-component polyurethane putty should be applied manually. For higher productivity, it is possible to apply, alternatively, the very high elasticity polyurea based filler (bi-component, curing in a few seconds) reference Rayston Flex 70 with the Rayston Spray Gun portable machine. If it is necessary to fill a large number of linear meters of joint, the application will be more efficient with the Rayston G-1 machine.

Similar treatment will be done on cracks larger than 2 mm or even smaller in width if they are suspected of moving and/or continuing to open over time (unstabilized cracks or fissures).

Important: Treatment done in winter (lowest possible temperatures) will always be more effective than treatment done in summer. In winter, with low temperatures, the materials will be contracted and the joint edges will be farther apart. In summer, with high temperatures, the materials will be expanded and the joint edges will be closer together. If the treatment is done in summer, without leaving any slack in the membrane, as winter sets in and the environment cools, the joint edges will separate and the membrane will be stressed with the risk of cracking.

5. Steps and application of the system

5.1 Primer

RAYSTON EPOXY 100 is a high viscosity, high solids epoxy system consisting of 2 pre-metered components. Depending on the porosity of the substrate, it can be thinned with Rayston solvent to improve liquid penetration and adhesion performance. Ideally applied in two stages to achieve maximum adhesion.

Apply 0.5 kg/$m^2$of Rayston Epoxy 100 in two coats. The first coat of primer can be diluted with 10%-15% of Rayston Thinner, to penetrate (anchor) inside the surface and help its consolidation. In this first coat a total of 0.2 Kg/m^2should be applied.

Then, once the first coat has cured, apply the second coat with a light wet dusting of 0.3 - 0.8 mm granulometry aggregates. A total of 0.3 Kg/m^2will be applied.

For its application, the material must be spread evenly avoiding accumulations, working within the useful life of the product (see FT), with rubber trowel or roller.

Important: The primer is applied with the purpose of sealing the porosity of a surface. It should never be applied when there is rising air, i.e. when there is direct sunlight on a porous exterior surface that is gradually heating up. The product recommended in this system RAYSTON EPOXY 100 can only be used if the humidity of the substrate is less than 4% (if it is higher, ask the technical office for a list of primers).

Application tools Rayston Epoxy 100:

5.2 Main layer

PAVISOFT is a two-component aromatic polyurethane resin, self-leveling 100% solids. Solvent free, flexible, waterproofing, abrasion resistant. The required quantity for this system will be 3Kg/m^2.

The application will be applied by pouring all the product from the container on the surface and spreading it quickly with the help of a spatula or notched trowel. It is advisable to have spiked shoes, and to proceed to the deaeration of the product with a spiked roller in crossed passes, up to a maximum time of 10 minutes from the mixing. Depending on the size of the surface to be applied, assign sufficient personnel to carry out the mixing, application and deaeration quickly and uniformly.

5.3 Top Coat

Apply 0.5 Kg/m^2 of **COLODUR ECO** in two coats of 0.25 Kg/m^2 each. Colodur Eco is a high performance resin based on 2-component aliphatic polyurethane, water-based, which provides hard and flexible coatings at the same time, with high resistance to abrasion and chemical agents. It is an excellent surface protection for pavements subjected to intense wear and tear. This product does not yellow when exposed to UV rays, making it suitable for outdoor use. The absence of solvents allows the use of this product in areas with public presence, without the need to evacuate them.

Spread the material with a Teflon microfiber roller of 5-6 mm approx. with beveled edges, distributing the material from one end of the pavement to the other in the direction of pouring the product with the same roller with the transversal direction, we will distribute the material covering approximately 1.30 m without overlapping the previous strip of the roller again at 1.35 m.

Overlap less than 5 cm. Then switch to a dry roller and roll out the overlap slowly, checking for areas of excess material.

If we want to achieve a surface without overlaps, always keep the edge of the application "fresh".

To achieve an anti-slip finish, add 5-7% anti-slip additive in the last coat.

6. Certificates

Pavisoft Certificates

The Pavisoft product has been thoroughly tested by the Applus laboratory, which has performed the following tests.

- Adhesion to concrete supports, UNE-EN 1381:2003
- Pencil hardness, UNE 48269:95
- Surface hardness, UNE-EN 13892-6
- Impact resistance, UNE-EN ISO 6272-1:2012
- Wear resistance BCA, UNE-EN 13892-4:2003
- Determination of slip resistance UNE-ENV 1263:2003
- Compressive and flexural strengths, UNE-EN 13892-2:2003
- Determination of bending properties. UNE-EN ISO 178:2003

Colodur ECO Certificates

The Colodur ECO product has been thoroughly tested by the Applus laboratory, which has performed the following tests:
- Abrasion Resistance TABER s/n UNE 48250
- Scratch resistance y/n UNE EN ISO 1518
- Resistance to liquids (engine and diesel) y/n UNE EN ISO 2812-3
and UNE EN ISO 2812-4
- Stain resistance due to contact with Vulcanized Rubber
- Determination of brightness y/n UNE EN ISO 2813
- Colorimetric determination (CIELAB coordinates) s/n UNE 48073/2 and ISO 7724/2
- Determination of the whiteness index and yellowness index y/n ASTM E313
- Outdoor accelerated weathering test
Test method s/n UNE EN ISO 11341: 2005 "Paints and varnishes: Ageing

7. Maintenance

It is advisable to maintain the installations and carry out periodic cleaning by removing surface residues and dirt prior to cleaning.

A minimum frequency of two visual inspections per year is recommended, one at the beginning of spring and the other at the beginning of fall.

In addition, the roof will always be inspected after other professionals have performed work such as construction, installation of new equipment or repair of existing equipment.

8. Conclusions

The **RAYSTON FLOOR PU 30 Flex** system proposed by Krypton Chemical, has been used in a large number of works and rehabilitation projects in Spain and other countries. It has a great track record of success.

This system is totally continuous (without joints), remains adhered to the treated surface and offers great resistance over time. In addition, it is a system that easily and efficiently solves all the singular points that can be found in an installation of these characteristics. It has an aliphatic finish.

This system, applied on site by a company approved by Krypton Chemical, is CE marked, based on tests carried out by the APPLUS laboratory.

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