Leeson Polyurethanes

A bond for life

# Equine Flooring System
# Installation Guide

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## INTRODUCTION

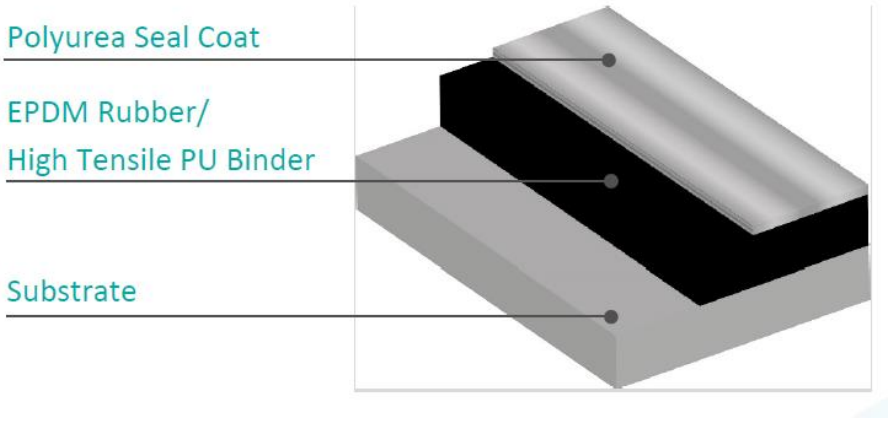
Leeson Polyurethanes have been supplying the Equine Flooring System since the mid 2000's and over that time the system has demonstrated its quality, durability, and ease of maintenance. When used as described in the installation guidance, the Equine Flooring System retains its integrity and have a service life in excess of 10 years.

Equine Flooring System is a high-performance polyurethane and polyurea based system, incorporating bound rubber for impact absorption and a polyurea wear layer for chemical resistance and ease of cleaning. Equine Flooring System, when cured, gives excellent strength and elongation performance and is therefore an exceedingly durable system.

Equine Flooring System gives a seamless flooring system for use in stables, parade grounds and equine walkways allowing for a hygienic, easy clean surface.

Equine Flooring System comprises:

- Primer – PU3922 applied at 0.3kg/m²
- Base Layer – Rubber crumb, typically EPDM 1-3mm, bound with PU4517 at 20% of the rubber crumb weight. Applied at a thickness of 40 – 50mm
- Wear layer




## Preparation Before Application

The system is generally applied to preexisting concrete. The sub-base must be sound and free from cracks, which may cause delamination of the system if present. Remedial work to the sub-base should be undertaken before the installation of the Equine Flooring System.

The surface must be free from contamination or water prior to application, as such cleaning/drying may be required. Equine Flooring System should be applied at 10°C - 35°C ground temperature and 10°C - 35°C ambient temperature, temperatures of 15°C - 20°C are optimum for ease of application. The relative humidity should be between RH 30-85%. The ambient temperature, relative humidity and ground temperature should be tested and recorded prior and during application. All substrates to be coated should have a surface temperature at least 3°C above dew point and rising to reduce delamination risk due to condensation, or surface foaming of the system.

## Priming

Surface preparation and primer application is extremely important. All surfaces should be free from dust, grit, grease, and liquid, ensure that the surface is clean and dry before proceeding with the application. Once prepared PU3922 should be applied to the surface.

| PU3922 | |
|---|---|
| Criteria | Typical Value |
| Appearance: | Light Brown Liquid |
| Solids: | 54 ± 3% |
| Viscosity at 23ºC: | 60 ± 15 mPa.s. |
| Thinner: | Xylene |
| Cure Rate: | Product should be left to cure for 3 hours. Ensure there is no solvent left on the floor before over coating. |
| Coverage: | 0.3 kg/m² |
| Specific gravity: | 1.0 gm/cc |

1) Temperature and Relative Humidity during Primer Application:
Application temperature 10°C - 35°C, 15°C - 20°C is optimum for ease of application. The relative humidity should be between RH 30-85%.

2) Application Equipment:
Equipment should be protected from contamination from water, grease and oils. If the system is to be applied outside, then protection against rain should be made. Personal protective equipment should be worn as per the Health & Safety datasheet from Leeson Polyurethanes Ltd. As PU3922 is solvented the use of open flames or red-hot surfaces should be prohibited.

3) Areas not to be coated:
These areas should be protected with masking tape to avoid unnecessary cleaning after application.

4) Application of PU3922:
PU3922 is best applied with a roller.

5) Coverage of PU3922:
Typical application is 0.3 kg/m². The final surface should appear smooth and free from foreign particles.

6) Cure Rate:
Cure time for PU3922 is 3 hours, however variations in humidity and temperature will alter the cure speed, it is advised that the primed surface is checked at regular intervals to ensure it is cured.

## Application of Base Layer

PU4517 has been formulated as a flexible moisture curing binder for rubber crumb shock pads which are laid by hand

| PU4517 | |
|---|---|
| Criteria | Typical Value |
| Appearance: | Brown Liquid |
| Viscosity at 23ºC: | 3,800 ± 500 mPa.s |
| NCO content: | ca 8 – 9 % |
| Binder Loading: | 20% of Rubber Crumb Weight |

1) Temperature and Relative Humidity during Primer Application:
Application temperature 10°C - 35°C, 15°C - 20°C is optimum for ease of application. The relative humidity should be between RH 30-85%.

2) Application Equipment:
Equipment should be protected from contamination from water, grease and oils. If the system is to be applied outside, then protection against rain should be made. Personal protective equipment should be worn as per the Health & Safety datasheet from Leeson Polyurethanes Ltd.

3) Areas not to be coated:
These areas should be protected with masking tape to avoid unnecessary cleaning after application.

4) Mixing of PU4517:
A high torque rotary mixer, or a forced action pan mixer, such as a Baron mixer should be used to mix the rubber crumb with the PU4517. The rubber should be added to the mixing pan first and the mixer turned on, then the correct amount of PU4517 should be added to the mixer and allowed to mix until all the rubber granules are coated in binder.

5) Application of PU4517:
The coated rubber mix can then be laid out on a prepared surface and compacted using a hand trowel or weighted roller. Ensure an even compaction of the rubber. A release agent should be used on all tools to avoid adhesion of the binder to the tools (water or soapy water should not be used as a release agent as it can lead to foaming of the binder, which will lower the physical performance of the system once cured). Ensure all equipment is cleaned well after use.

6) Coverage of PU4517:
Equine Flooring System's base layer is generally applied at a thickness of 40 to 50mm, rubber crumb has a varied density due to production methods, this gives a coverage range of 18 ± 5 kg/m².

The PU4517 should be applied at a rate of 20% of the rubber crumb weight, this gives a coverage range of 3.6 ± 1 kg/m².

7) Cure Rate:
The coated rubber mix has a cure time of 5 – 7 hours at 20ºC and 2 – 3 hours at 30ºC. In some cases, particularly low temperatures, D4861 Rubber Crumb Binder Accelerator can be added to increase the cure speed:

| D4861 addition | 5°C | 10°C | 15°C |
|---|---|---|---|
| 0% | 10 hours | 8 hours | 6.5 hours |
| 0.01% (1 ml in 9 Kg) | 6 hours | 5 hours | 4.5 hours |
| 0.02% (2 ml in 9 Kg) | 4 hours | 3 hours | 2.5 hours |
| 0.03% (3 ml in 9 Kg) | 3 hours | 2 hours | 1.5 hours |

## Application of Wear Layer

PURA4421 is a fast setting, hand applied two component pure polyurea coating. It is 100% solids and contains no VOCs. It has been developed as a high strength, flexible protective coating.

| Criteria | PURA4421 Polyol | PURA4421 NCO |
|---|---|---|
| Colour | Black Liquid | Unpigmented Liquid |
| Ratio by Weight: | 9.6 | 90.4 |
| Viscosity at 23ºC | 550 ± 250 mPa.s | 12,000 ± 2,500 mPa.s |
| Pot Life at 19ºC | 8- 15 min | |
| Tack Free Time at 19ºC | 30 min | |
| Typical Overcoat Time at 19ºC | 45 min | |
| Shore Hardness | 75 Shore A | |

1) Temperature and Relative Humidity during Primer Application:
Application temperature 10°C - 35°C, 15°C - 20°C is optimum for ease of application. The relative humidity should be between RH 30-85%.

2) Application Equipment:
Equipment should be protected from contamination from water, grease and oils. If the system is to be applied outside, then protection against rain should be made. Personal protective equipment should be worn as per the Health & Safety datasheet from Leeson Polyurethanes Ltd.

3) Areas not to be coated:
These areas should be protected with masking tape to avoid unnecessary cleaning after application.

4) Mixing of PURA4421:
Ensure that both components are mixed well before pouring the Polyol component into the NCO component. The two components should be mixed together in the NCO pail for 1 minute using a high torque helical blade mixer ensuring a homogeneous black colour is achieved.

5) Application of PURA4421:
The PURA4421 should be poured immediately onto the surface. The product should then be pushed out, using a squeegee, to the required thickness.

6) Coverage of PURA4421:
Equine Flooring System's wear layer is generally applied at a coverage of 1 - 2 kg/m².

7) Cure Rate:
PURA4421 should be allowed to cure for a minimum 2 hours at 20°C and a maximum 24 hours at 20°C prior to overcoating. The cure time will be extended at low temperatures.