Leeson Polyurethanes

A bond for life

Sports Flooring/Jogging Track Systems

Installation Guide

Leeson Polyurethanes Ltd. Hermes Close, Warwick, CV34 6RP, UK.
Tel: +44 (0) 1926 833367 Fax: +44 (0) 1926 881469 sales@lpultd.com | www.lpultd.com

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Introduction

Leeson Polyurethanes have been rubber crumb systems since the mid 1990's and over that time the systems have demonstrated their quality, durability and ease of maintenance. When used as described in the installation guidance, the Sports Pitch systems retain their integrity and have a service life in excess of 10 years. A maintenance guide is provided to keep the surfacing in optimum condition.

Leeson Sports Pitch Binder is a multi-component encapsulated sandwich system for athletic tracks and multi-use games areas (MUGAS)

System Components

Leeson Primer PU4279

Moisture Curing Single Component PUR Primer

Product Description – Leeson Primer PU4279 is a moisture curing, solvent containing, single component PUR primer with low viscosity.

Field of Application – Leeson Primer PU4279 is used as a primer on concrete or bituminous substrates for sports surfaces.

Properties – Leeson Primer PU4279 shows good adhesion to non-porous substrates. It is of very low viscosity and therefore exhibits a high capillary activity. Leeson Primer PU4279 is easy to apply. The material reacts with humidity and eliminates carbon dioxide to produce a resistant, tough elastic film. Fully cured, Leeson Primer PU4279 exhibits excellent mechanical properties.

Technical Data

Figures are guide values and should not be used as a base for specifications			
Density	At 20°C	g/cm^3	0.98
Solid density		%	60
Viscosity	Brookfield, 23°c	mPa.s	70
Substrate and application temperature	min. max	°C °C	5 40
Recommended relative humidity	min. max	% %	40 90

Consumption – Approx. 0.15 kg/m^2 for Leeson Primer PU4279.

Application Method – Leeson Primer PU4279 is a single component material. Pour the amount required from the pack into an application pack and apply it immediately.

The average material temperature should be 15-25°C.

Leeson Primer PU4279 is applied to the pre-treated surface by spraying, using a low pressure airless equipment.

For small areas, also a paint roller or brush can be used.

When exceeding the maximum coverage quantity, the material can foam and cure very slowly. We therefore recommend applying a thin and uniform layer. Avoid puddles.

The working life and curing time of Leeson Primer PU4279 is influenced by the ambient, material and substrate temperatures. At low temperatures, the chemical reactions are generally slowed down; this lengthens the pot life, re-coating interval and open time. At the same time, the viscosity increases which leads to a higher consumption. High temperatures and humidity accelerate chemical reactions so the contrary is true. Direct sunshine on the coating shortens the time frame considerably.

The next layer can be applied when the primer becomes sticky.

Apply only as much as can be re-coated during the following 24 hours.

If this interval is exceeded, a new coat of bonding agent has to be applied to avoid poor adherence.

After application, the material should be protected from direct contact with water. Within this period, adhesion of the next coat could be impaired.

Cleaning Agent – Re-useable tools should be cleaned carefully with NF5 or other suitable solvents (e.g butyl acetate). Never use water or alcoholic solvents as cleaners.

Substrate Condition – Substrate to be coated have to be firm, dry and load bearing, free of loose and brittle particles and substances which impair adhesion such as oil, grease, rubber skid marks, paint or other contaminants.
The temperature of the substrate must be at least 3°C above the current dew point temperature.

Pack Size – Leeson Primer PU4279 is supplied in 200 kg drums or 25 kg tins.

Colour – Straw coloured.

Storage – Store in original close packaging under dry conditions at a temperature range of 5 – 25°C
Do not expose the drums to direct sunlight.

Before use, please see “best before” date on the pail / drum.

Safety Precautions – Leeson Primer PU4279 is non-hazardous in its cured condition.
For protective measures, transport regulations and waste management please refer to the Material Safety Data Sheet of the Products.

Leeson Binder PU 4872

Moisture Curing Single Component PUR Binder

Product Description – Leeson Binder PU4872 is a moisture curing, solvent free, un-pigmented PUR binder of medium viscosity. It is based on MDI.

Field of Application – Leeson Binder PU 4872 is used as a moisture curing binder for recycled granules for in situ base mats. Depending on the type of surface, these mats are coated with a Leeson top sealer, a structural spray coating or a self levelling coating in order to obtain weather resistant and permanently elastic synthetic coating.

Properties – Due to the medium viscosity, Leeson Binder PU 4872 is easily mixed with the rubber granules and there is hardly any run-off from the granules. The long curing time of Leeson Binder PU

4872 allows day construction joints to be easily and correctly made. The yellowing which occurs when Leeson Binder PU 4872 is exposed to UV light does not affect its mechanical properties.

Technical Data

Figures are guide values and should not be used as a base for specifications			
Density	DIN 53217, at 23°C	g/cm^3	1.06
Viscosity	At 23°C	mPas	1,600
NCO Content	DIN 53185	%	8-9%
Ready for foot traffic	At 23°C / 50 % rel. hum.	H	48
Substrate and application temperature	minimum maximum	°C °C	5 40
Permissible relative humidity	minimum maximum	% %	35 90

Application Method – During application the temperature of Leeson Binder PU 4872 should be between 15 and 25 °C. For the installation of a base layer, mix 1-4 mm recycled rubber granules (normally SBR) and Leeson Binder PU 4872 in a ratio of 100:21 (by weight) using a forced mixer rotating at approximately 300 rev/min, for 3-5 minutes. Ensure that the mixer reaches the sides and bottom areas of the mixing vessel.

The material is applied using a specially designed paving machine. In order to achieve good surface strength, the rubber granule mat must be compacted thoroughly. If necessary, roll the surface additionally.

Particular attention should be paid to the construction joints, which, if possible, should be made before the material has significantly cured. If this cannot be accomplished cured joints should be primed with Leeson Prime PU4279 and well trowelled.

The mechanical characteristics decrease if above mentioned quantity of Leeson Binder PU 4872 is lowered, and the requirements of EN 14877 specification might not be met.

The rubber granules must be dry as moisture will accelerate the curing of the binder making installation more difficult or even impossible and may result in the binder foaming, leading to an uneven surface and a weak mat.

The working life and curing time of Leeson Binder PU 4872 are influenced by the ambient, material and substrate temperature, as well as by humidity. At low temperatures and humidity, the speed of the reaction is reduced resulting in a longer pot life, re-coating interval and open time. At the same time, the viscosity increases requiring increased mixing time and a higher consumption. At high temperatures and humidity, the speed of reaction is accelerated and the contrary is true.

When the humidity is below 40% it may be necessary to carefully mist spray the mat with water to avoid unacceptable cure times, which might impair the quality of the elastic layer.

At low temperatures, curing can be slightly accelerated by use of catalyst. The quantity of catalyst needed depends on the ambient conditions and has to be defined at the job site and may vary daily. As a guide, 0.2 %w/w of D4861 ACCELERATOR, as a percentage of the binder, may be used.

For the installation of the granule mats, we recommend the use of recycled rubber than have been tested and shown to be suitable for use with Leeson Binder PU4872.

In order to meet the required standards (EN 14877), the size of the granules should be between ø 1-4 mm.

Cleaning Agent – Re-useable tools should be cleaned carefully with CLEANER NF5 or other suitable solvents (e.g butyl acetate) before curing has taken place. Never use water or alcoholic solvents as cleaners on uncured materials!

Substrate Condition – Substrates to be coated have to be dry, load bearing, free of loose particles and substances which impair adhesion such as oil, grease, paint or other contaminants.

On concrete, it is necessary to apply Leeson Prime PU4279 (see product data sheet) before installing in situ rubber granule mats. The bond strength of the substrate must be at least 1.0 N/mm^2 (check with an approved pull off tester e.g. Elcometer).

The moisture level must not exceed 4% (check with CM equipment), which corresponds to maximum 75% relative humidity according to ASTM F 2170. If using the calcium chloride test, the maximum allowable vapour emissions is 4.0 lbs. as per ASTM F 1869.

On asphalt, primer Leeson Primer PU4279 must be used.

The temperature of the substrate must be at least 3°C above the dew point temperature.

Pack Size – Leeson Binder PU 4872 is supplied in 220 kg drums.

Colour – Straw coloured.

Storage – Store in unopened drums under dry conditions at a temperature range of 5 – 25 °C.
Do not expose the drums to direct sunlight.

Before use, please see “best before” date on the pail / drum.

Safety Precautions – Leeson Binder PU 4872 is non-hazardous in its cured condition.
For protective measures, transport regulations and waste management please refer to the Material Safety Data Sheet of the product.

Leeson PU4731/1 Pore Sealer

Two component, Thixotropic PUR Coating for Sports Surfacing Systems with Granular finish.
Product Description – Leeson PU4731/1 Pore Sealer is solvent free, elastic, thixotropic, two-component polyurethane coating.

Fields of Application – Leeson PU4731/1 Pore Sealer is used as a trowel applied coating to in-fill between the SBR granules of the shock pad base layer for the installation of sports surfacing systems, for example, full pour or sandwich systems, for athletic tracks, runways, multipurpose sports facilities, school playgrounds and ball game courts.

Properties - Leeson PU4731/1 Pore Sealer exhibits a long pot life, excellent curing properties and a very good moisture resistance during the curing process. The material shows and outstanding durability, wear resistance, strength and elasticity once fully cured. The material is easy to apply in most of the world’s climate zones.

Technical Data

Figures are guide values and should not be used as a base for specifications			
Mixing Ratio	In parts by weight		586:100
Viscosity	Component A, at 23°C Component B, at 23°C Mix at 23°C	mPas mPas mPas	Thixotropic 150 Thixotropic
Pot Life	at 12°C at 23°C at 30°C	min min min	88 65 52
Ready for foot traffic (broadcast surfaces)	At 23°C and 50% rel. humidity	H	>16
Substrate and application temperature	minimum maximum	°C °C	5 40
Permissible relative humidity	Maximum	%	90

Application Method – The A component of Leeson PU4731/1 Pore Sealer should be pre-mixed before application. This can be achieved by thoroughly stirring in the pail using a forced stirrer.
Components A and B of Leeson PU4731/1 Pore Sealer are weighed out in separate drums in the ratio of 586:100 by weight respectively.

Part A and Part B are poured into a mixing container and thoroughly mixed using a slowly rotating mixer at about 300 rev/min ensuring that the mixer reaches the sides and bottom of the mixing vessel.

The mixing process takes at least 2 minutes and should be performed until the blend is homogenised and streak free. It is essential to obtain a homogenous mix.

The average component temperature should be 15-25°C.

After the mixing, Leeson PU4731/1 Pore Sealer is applied to the SBR Base Course using a squeegee, scraper, or a notched trowel. The tooth size should be selected according to the thickness of the layer required. Working and curing time of Leeson PU4731/1 Pore Sealer are influenced by the ambient and substrate temperature. At low temperatures, the chemical reactions are slowed down'; this lengthens the pot-life, re-coating interval and open time. High temperature and humidity accelerate chemical reactions so the contrast is true. Direct sunlight shortens the time frame considerably.

Leeson PU4731/1 Pore Sealer exhibits excellent water resistance during curing. Nevertheless, as with all systems based on isocyanate, water might cause foaming on the surface of the coating, therefore, after application, the material should be protected from contact with water for a few hours. In case of (expected) rain, Leeson PU4731/1 Pore Sealer should not be applied.

Cleaning agent – Re-useable tools should be cleaned carefully with CLEANER NF5 or other suitable solvents (e.g. butyl acetate). Never use water or alcoholic solvents as cleaners.

Substrate condition – Substrates to be coated have to be firm, dry, load bearing and free of loose and brittle particles and substances which impair adhesion such as oil, grease, rubber skid marks, paint or other contaminants.

Colour – Standard colours: oxide red and unpigmented. Other colours on request.

Storage – Store in original closed packing under dry conditions at a temperature range of 5-25°C.
Do not expose the drums to direct sunlight.
Before use, please see “best before” date on the pail/drum.

Safety Precautions – Leeson PU4731/1 Pore Sealer is non-hazardous in its cured condition.
For protective measures, transport regulations and waste management please refer to the Material Safety Data Sheet of the product.

Leeson PU4732 Flood Coat

Two component, Self Levelling PUR Coating for Sports Surfacing Systems with Granular finish.
Product Description – Leeson PU4732 Flood Coat is solvent free, elastic, self levelling, two-component polyurethane coating.

Fields of Application – Leeson PU4732 Flood Coat is used as a self levelling coating for the installation of sports surfacing systems, for example, full pour or sandwich systems, for athletic tracks, runways, multipurpose sports facilities, school playgrounds and ball game courts. Leeson PU4732 Flood Coat can also be used for the re-topping of old PUR surfaces.

Properties - Leeson PU4732 Flood Coat exhibits a long pot life, excellent curing properties and a very good moisture resistance during the curing process.
The material shows and outstanding durability, wear resistance, strength and elasticity once fully cured.
The material is easy to apply in most of the world’s climate zones.

Technical Data

Figures are guide values and should not be used as a base for specifications			
Mixing Ratio	In parts by weight		145:100
Density	Component A, at 23°C Component B, at 23°C Mix at 23°C	g/cm^3 g/cm^3 g/cm^3	1.42 1.12 1.30
Viscosity	Component A, at 23°C Component B, at 23°C Mix at 23°C	mPas mPas mPas	3500 1700 2800
Pot Life	at 12°C at 23°C at 30°C	min min min	48 35 28
Ready for foot traffic (broadcast surfaces)	At 23°C and 50% rel. humidity	H	>16
Ready for removing excess granules	At 23°C and 50% rel. humidity	h	<20
Recoating interval (only for surfaces not broadcast with EPDM)	At 30°C and 75% rel. humidity At 23°C and 75% rel. humidity	h, max h, max	36 48
Substrate and application temperature	minimum maximum	°C °C	5 40
Permissible relative humidity	Maximum	%	90

Application Method – The A component of Leeson PU4732 Flood Coat has to be homogenised before application. This can be achieved by rolling the drums or by thoroughly stirring in tote using a forced stirrer.
Components A and B of Leeson PU4732 Flood Coat are weighed out in separate drums in the ratio of 145:100 by weight respectively.

Part A and Part B are poured into a mixing container and thoroughly mixed using a slowly rotating mixer at about 300 rev/min ensuring that the mixer reaches the sides and bottom of the mixing vessel.

The mixing process takes at least 2 minutes and should be performed until the blend is homogenised and streak free.

The mixed material is then tipped into 2nd clean drum and mixed for a further minute. For any mixer, we recommend you follow the manufacturer's instructions but it is essential to obtain a homogenous mix.

The average component temperature should be 15-25°C.

After the mixing, Leeson PU4732 Flood Coat is applied to the pre-treated substrate using a squeegee, scraper, or a notched trowel. The tooth size should be selected according to the thickness of the layer required.

Within 5-10 minutes, the fresh surface has to be covered with excess EPDM or recycled granules (appropriate grain size usually ø1-3mm to ø1-4mm).

In order to avoid possible bald spots, it might be necessary to broadcast additional granules after some minutes. Excess and loose granules are removed after curing and can be re-used.

Working and curing time of Leeson PU4732 Flood Coat are influenced by the ambient and substrate temperature. At low temperatures, the chemical reactions are slowed down'; this lengthens the pot-life, re-coating interval and open time. High temperature and humidity accelerate chemical reactions so the contrast is true. Direct sunlight shortens the time frame considerably.

Leeson PU4732 Flood Coat exhibits excellent water resistance during curing. Nevertheless, as with all systems based on isocyanate, water might cause foaming on the surface of the coating, therefore, after application, the material should be protected from contact with water for a few hours. In case of (expected) rain, Leeson PU4732 Flood Coat should not be applied.

Cleaning agent – Re-useable tools should be cleaned carefully with CLEANER NF5 or other suitable solvents (e.g. butyl acetate). Never use water or alcoholic solvents as cleaners.

Substrate condition – Substrates to be coated have to be firm, dry, load bearing and free of loose and brittle particles and substances which impair adhesion such as oil, grease, rubber skid marks, paint or other contaminants.

Under these conditions, Leeson PU4732 Flood Coat can be applied directly on asphalt without any primer.

On concrete, it is necessary to apply primer Leeson Primer PU4279 (see product data sheet). The bond strength of the substrate must be at least 1.0 N/mm2.

The moisture level must not exceed 4% (check with CM equipment), which corresponds to maximum 75% relative humidity according to ASTM F 2170. If using the calcium chloride test, the maximum allowable vapour emissions is 4.0 lbs. as per ASTM F 1869.

The temperature of the substrate must be at least 3°C above the current dew point temperature. Fresh surfaces consisting of smooth or broadcast Leeson PU4732 Flood Coat, fresh pore-sealed surfaces with Leeson PU4731 Pore Sealer can be re-coated without the use of a primer if substrate is dry and clean.

In case of coating or pore sealers older than 24-48 hours (please refer to the technical data sheet of the corresponding product), the application of primer Leeson Primer PU4279 with a maximum coverage rate of 0.08 kg/m^2, before recoating, is mandatory. If necessary, the surface should be ground.
When coating an old PUR surface, adhesion tests should be carried out first. It may be necessary to grind the surface and remove the dust.

In all cases the surface must be thoroughly cleaned by high-pressure water and then left to dry.
Always supply Leeson Primer PU4279 (max. coverage is 0.08 kg/m^2) as a primer before the application of Leeson PU4732 Flood Coat.

Pack Size – Leeson PU4732 Flood Coat is supplied 25kg kits.

Colour – Standard colours: oxide red and oxide green. Other colours on request.

Storage – Store in original closed packing under dry conditions at a temperature range of 5-25°C.
Do not expose the drums to direct sunlight.
Before use, please see “best before” date on the pail/drum.

Safety Precautions – Leeson PU4732 Flood Coat is non-hazardous in its cured condition.
For protective measures, transport regulations and waste management please refer to the Material Safety Data Sheet of the product.

EPDM 0.5-1.5mm

Granules for the In-Situ Construction of Running Tracks and Multi-Purpose Playgrounds.

Product Description – 0.5 – 1.5mm granules are used for spray coat application.

Field of Application – 0.5-1.5mm is used – together with a Leeson coating – for the in-situ construction of running tracks or multi-purpose playgrounds.

Properties – 0.5-1.5mm granules are available in different colours. The granules are durable, flexible, if high quality and easy to apply.

Pack Size – 0.5-1.5mm EPDM granules are delivered in bags at 25kg.

Colour – Red, further colours on request.

Storage – 0.5-1.5mm EPDM granules to be stored under dry conditions and sheltered from weather.

Safety Precautions – 0.5-1.5mm EPDM granules after application is non-hazardous.

Installation Guide – Sandwich System

Supply and installation of Leeson Sandwich System (approx. 14mm thick), a rubberized flooring for a jogging track over an asphalt (substrate supplied by others).

- Preparation
- Priming
- Installation of Base Layer
- Pore Sealer Application
- Coating Application

Product Involve

Primer	Leeson Primer PU4279 (for asphalt)
Base Layer (11 mm thick)	SBR granules (1-4mm) + Leeson Binder PU4872 (binder)
Pore Sealer	PU4731/1 Pore Sealer
Coating	Leeson PU4732 Flood Coat
EPDM Granules	0.5-1.5mm blend

General

The area where the rubber flooring will be laid shall be inspected, marked on the drawings and the structure and agreed & signed off upon in terms of area as well as quality prior to acceptance for the flooring to go on.

The main contractor to provide the floor / substrate in a blemish free and in a flat condition as acceptable to the client / consultant.

Preparation

The surfaces agreed for the rubber flooring installation to go on shall be accepted by Leeson free from oil, grease, rubber skid marks, paint, friable matter, curing compounds, coatings, markings, surface cracks, structural defect or any other matter that shall hamper the installation of the safety flooring in any way

Vacuum the area to remove the dust and loose debris

The kerbstones have to be finished 18mm above the substrate such that the rubber surfacing is flush with the kerbstone top.

Priming

Apply the primer PU4279 for asphalt on to the substrate. Allow for this application to cure sufficiently

Protect the material from direct contact with water until the next coat is applied.

Base Layer

Mix the batched **Leeson Binder PU4872** and SBR Granules (1-4mm) using a specially designed mixer to the specified ratios

Application of the Mix

Install the Base layer at a thickness of 10 mm (approx.) to the primed surface to form the resilient base layer while the primed surface is still tacky. Allow sufficient curing prior to installation of the pore sealer.

Pore Sealer

Mixing of PU4731/1 (red)

Mix the PU4731/1 using a paddle mixer to the specified mixing ratios.

Application of the Mix

Install the pore filler, PU4731/1, onto the SBR surface to fill the voids between the SBR granules. Allow for sufficient curing

Coating

Mixing of PU4732 (red), EPDM (dust and 0.5-1.5mm)

Mix the batches PU4732, and apply. Broadcast with EPDM (0.5-1.5mm and dust) using a paddle mixer to the specified mixing ratios.

Application of the Mix

Install the coating on the surface by trowelling and then back rolling. Allow for this application to cure sufficiently.

Remove excess EPDM rubber.