Leeson Polyurethanes
A brand of ICP Building Solutions Group

# LeesonBound® UVR PU4844/60

LeesonBound UVR PU4844/60 is a high-performance polyurethane-based resin for use in SUDS compliant porous bound aggregate Systems incorporating resin and a range of aggregate blends. LeesonBound UVR PU4844/60, when cured, gives excellent strength and elongation performance and is therefore an exceedingly durable system. LeesonBound UVR PU4844/60 is based on aliphatic polyurethane technology to give enhanced UV performance.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 17/5413

LeesonBound UVR PU4844/60 is maintained under the BBA Agrément Certificate 17/5413.

| | |
|---|---|
| Usability: | Its ease of spreading allows for rapid application, and the cure speed for the product allows for application sites to be opened to use in a timely fashion. |
| Site Safety: | LeesonBound UVR PU4844/60 is a solvent free system and does not require heat lances or burners to apply, lowering the number of risks installers may be exposed to. |
| Versatile: | LeesonBound UVR PU4844/60 can be used to produce a range of surfaces include roads, pedestrian bridges, cycle paths, driveways, walkways, stairs, car park decks, balconies, patios, and internal flooring. LeesonBound UVR PU4844/60 can be used with a range of aggregates to provide varied aesthetic finishes. |
| Strong, resilient system: | The cured LeesonBound UVR PU4844/60 exhibits excellent resistance to extreme temperatures (-20˚C to +120°C), moisture and chemical contact for extended periods without loss of strength. |

## Technical Specification

| Parameter | Specification | |
|---|---|---|
| | LeesonBound UVR PU4844/60 Part A Resin | LeesonBound UVR PU4844 Part B Hardener |
| Colour: | Opaque Buff | Transparent Colourless |
| Specific gravity: | 1.01 g/cm³ | 1.16 g/cm³ |
| Solids Content: | 100% | 100% |
| Mixing Ratio by Weight: | 1.04 | 1 |
| Mixing Ratio by Volume: | 1.16 | 1 |
| Viscosity at 23ºC: | 2,500 ± 500 mPa.s | 2800 ± 500 mPa.s |
| Mix Viscosity at 23ºC: | 2,650 ± 500 mPa.s | |
| Pot life at 19ºC: | 60 ± 5 minutes | |
| Binder Hardness, Shore A (48 hrs) | ≥80 | |
| Cure Time at 20ºC:* | 5 ± 1 hour | |
| Cure Time at 25ºC:* | 3.5 ± 1 hour | |
| Cure Time at 30ºC:* | 2.5 ± 1 hour | |

*Cure time refers to the complete resin bound system. After this time the installed surface will be tack free and can accept light foot traffic

A bond for life



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Performance data for the cured bound stone system (results are reported as a guide, aggregate selection and blend design will affect results achieved for the cured system):

| Parameter | Test Results |
|---|---|
| Resistance to Scuffing | Scuffing at 45ºC to TRL Report 176:1997 Appendix G |
| 3mm aggregate blend | Erosion Index 0.0 |
| 5mm aggregate blend | Erosion Index 0.0 |
| Resistance to Permanent Deformation | $WTS_{AIR}$ to BS EN 12697-22:2003 at 60ºC (1000 cycles) |
| 3mm aggregate blend | 0.0053mm |
| 5mm aggregate blend | 0.0293mm |
| Water Permeability (Vertical) | BS EN 12697-19:2004 |
| 3mm aggregate blend | 1.17 x $10^{-3}$·m·s |
| 5mm aggregate blend | 4.79 x 10-3.m.s |
| Water Permeability (Horizontal) | BS EN 12697-19:2004 |
| 3mm aggregate blend | 1.36 x $10^{-3}$·m·s |
| 5mm aggregate blend | 5.11 x 10-3.m.s |
| Skid Resistance | TRL Report 176:1997 Slide 57 |
| 3mm aggregate blend | 49 |
| 5mm aggregate blend | 50 |
| Slip Resistance | TRL Report 176:1997 Slide 97 |
| 3mm aggregate blend | 52 |
| 5mm aggregate blend | 53 |
| Fire Classification | CEN/TS 1187:2012 Test 4 and EN 13501-5:2016 |
| 20mm ± 2mm installation thickness | $B_{ROOF}$(t4) |

## Instructions For Use

For full installation instructions refer to the installation document *LeesonBound® UVR PU4844-60 - Installation Guide*.

A LeesonBound Application Day Sheet is available and strongly recommended to record site information and conditions as well as recording batch numbers and stone mixes used on the application site.

**Substrate preparation:**

- The areas to which the System is to be applied shall be clearly defined and marked on the existing surfacing prior to commencement of work on-site.
- All imperfections in the substrates shall be reinstated with a material approved by the Client in consultation with the Installer.
- The substrate shall be clean, dry and free from contaminants including but not limited to, ice, frost, loose aggregate, oil, grease, road salt and other loose matter which may impair the adhesion of the System. Where the application surface does not comply with this it shall either be cleaned by the Installer or others, by grit blasting, high pressure water jetting, low pressure water/abrasive blast cleaning, scarifying, scrabbling or other means approved by the Client. To remove dust and other loose matter the substrate should be vigorously brushed or treated with hot compressed air. Any oil visible on the substrate shall be removed by washing and scrubbing with a suitable detergent solution followed by flushing with clean water or by other suitable means.
- Areas not to be treated shall be suitably masked.



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**Bituminous Surfaces:**

- Asphalt should be at least 30 days old to ensure it is fully cured before installation. The substrate should have a texture depth of between 0.5mm and 2.0 mm as determined by the sand patch test.

**Concrete Surfaces:**

- Concrete is to be hot compressed air blasted then primed with a suitable primer with the primer being allowed to cure following the manufactures recommendations. The LeesonBound UVR PU4844/60 should be applied within the primer's overcoat window.

**Weather Conditions:**

- Installation of the System shall only be carried out at a temperature of +5ºC to +35ºC and relative humidity of 30% to 85%. Predicted ambient conditions (Temperature, Relative Humidity and Dew Point) for the cure time of the product as indicated in the table above should be reviewed to determine the minimum exposure temperature.
- The System shall only be applied when the substrate temperature is at least 3°C above the determined Dew Point.
- Ambient and substrate temperatures together with relative humidity shall be recorded at the start and if weather is variable during the installation process.
- Substrates shall be dry before and during the installation of the System.
- The Installer will notify the Client of the curing period of the system dependent upon the prevailing weather conditions.

**Application:**

1. Mix the Part A component fully (typically 30 seconds) prior to addition of the Part B component. Then mix the Part A & Part B together for 1-2 minutes to a smooth consistency.

2. If the predicted minimum exposure temperature during curing will be less than 20ºC D4860 Accelerator should be used with each mix to reduce the cure time, limiting the risk of exposure to adverse conditions. Please refer to the below table. Accelerator is typically added with simple plastic syringe to the Part A prior to mixing.

| Minimum Temperature (°C) | D4860 Accelerator Addition Level |
|---|---|
| 17.5 | 5.1 ml per kit |
| 15.0 | 11.3 ml per kit |
| 12.5 | 19.2 ml per kit |
| 10.0 | 33.8 ml per kit |
| 7.5 | 50.2 ml per kit |
| 5.0 | 74.0 ml per kit |

3. The mixed PU resin should then be introduced into the mixer containing the aggregate. The aggregate must be dry (<0.5% moisture) and free from dust. While the mixer is running with the dry aggregate, add the PU resin at a ratio of minimum 7.0% up to 15% depending on end user requirements and the size and particle distribution of the aggregate – smaller particles, or greater particle distribution will require relatively more PU resin as the overall surface area is increased. Resin additions at these levels will ensure a well bonded, durable and sound system. A rotary mixer or low speed paddle mixer are suitable for mixing. Mix for 5 minutes until all of the aggregate is uniformly coated. As aggregates are naturally occurring materials it is advised to use the same batch of aggregate for a single installation to minimise the risk of visible colour variation.



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Approved aggregate blends for use with LeesonBound UVR PU4844/60 can be found in the LeesonBound Installation Guide.

Caution: ensure that the mixing time for each mix is the same, if a mix is left in the mixer for longer than other mixes noticeable appearance variations can occur as the aggregate becomes scuffed or worn.

4. The blend of PU and aggregate should then be immediately applied to the surface, levelled and then compacted with a trowel. The surface temperature should be between +5°C and +35°C for application (note comments above regarding the accelerator use for lower temperatures). The system should be applied at least 3°C above the dew point determined for the substrate. Care should be taken to ensure that the correct, even coverage rate is applied across the application area. This is especially important at high temperatures where the PU can be thinner. The surface should be installed at a minimum thickness of 3x the maximum stone grading used. Once levelled and compacted the surface can be smoothed with a trowel coated in a release agent, this allows for the top facing stones to be knitted together, giving an even surface. Suitable release agents are organic solvents such as xylene and white spirit, water should not be used as a release agent as it may cause foaming in the system.

5. To create a non-slip surface the top can be scattered with microfine glass particles. Application rates will vary depending on the aggregate used but is in the order of 50 – 100 grams per square meter of resin bound surface.

6. Once installed protect the surface from use during its curing process. At the end of the cure time the surface will be tack free and can accept light foot traffic. The installed surface should not be open to regular foot traffic or vehicular use for at least 24 hours.

## Packaging

LeesonBound UVR PU4844/60 is supplied as a 7.5kg kit, with LeesonBound UVR PU4844/60 Part A supplied as 3.83kg in a 11 litre plastic pail and LeesonBound UVR PU4844 Part B supplied as 3.67kg in a 3.8 litre plastic pail.

## Storage

LeesonBound UVR PU4844/60 Part A and Part B should be stored in their original, unopened containers, in dry conditions at a temperature between +5ºC and +35ºC. Storage outside of these conditions will reduce the product's shelf life.

LeesonBound UVR PU4844/60 Part A and Part B have a shelf life of 12 months from point of manufacture.

## Health and Safety

LeesonBound UVR PU4844/60 Part A is not classified as a hazardous substance, however, the wearing of goggles and gloves is to be recommended.

LeesonBound UVR PU4844 Part B contains a non-volatile diisocyanate, when used in the European Union, Norway, Iceland, Liechtenstein and the United Kingdom adequate training is required before industrial or professional use. Before use, ensure that you have read the Safety Data Sheet for this product.

- Ensure non-porous gloves and eye protection is worn when handling.
- Avoid prolonged contact with skin.
- In cases of contact with eyes, flush out with excess water and seek medical attention.



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## Additional Notes

The LeesonBound UVR PU4844/60 system will only be as strong as the weakest component. A wide range of aggregate blends have been tested to determine suitability; assistance can be given in aggregate choice. Therefore, aggregate choice is important. The suitability in a given application of weaker aggregates such as crushed glass should be considered carefully. Movement in the sub-base will lead to reflective cracking in the LeesonBound system, therefore ensuring the application surface is suitable for use is integral to the longevity of the LeesonBound UVR PU4844/60 system.

This information is for general guidance only and may contain inappropriate information under particular conditions of use. All recommendations and suggestions are therefore made without guarantee. Samples will be provided on request to enable customers to satisfy themselves as to the suitability of the product for any specific purpose and to assess the product under their own working conditions.

Every care has been taken to ensure that the information provided in the literature is correct and up to date. However, it is not intended to form any part of a contract or provide a guarantee. Purchasers/intending purchasers should contact Leeson Polyurethanes to check whether there have been any changes to the information since publication of the literature. Please ensure you have read the hazard labels and material safety data sheet before using this product.

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