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# LEESONGRIP® 2-1 D3149/20
## Cold Applied Polyurethane HAPAS Type 1 High Friction Surfacing Material

LEESONGRIP 2-1 D3149/20 is a polyurethane-based, cold applied, HAPAS/BBA approved Type 1 high friction surfacing system for use on bituminous and concrete highways. LEESONGRIP 2-1 D3149/20 comprises a two-component polyurethane binder incorporating 1-3mm grade calcined bauxite aggregate.

LEESONGRIP® 2-1 D3149/20 is maintained under the BBA HAPAS Certificate 23/H6948.

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 23/H6948

As a Type 1 HAPAS approved high friction surfacing system LEESONGRIP 2-1 D3149/20 provides an effective road safety measure, reducing accidents by reducing braking distances if vehicles need to stop suddenly and lowering the risk of skidding if brakes are applied sharply. Colour coated calcined bauxite aggregate can also be used to highlight approaches to potential road hazard areas.

| | |
|---|---|
| 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: | LEESONGRIP 2-1 D3149/20 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: | LEESONGRIP 2-1 D3149/20 can be used to produce a range of surfaces include roads, pedestrian crossings, cycle paths, driveways, bridges, walkways, stairs, car park decks, ramps, flooring and airport runways. LEESONGRIP 2-1 D3149/20 can be used with a range of aggregates to provide varied aesthetic finishes. |
| Strong, resilient system: | The cured LEESONGRIP 2-1 D3149/20 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 | LEESONGRIP 2-1 D3149/20 | |
|---|---|---|
| | Part A Resin | Part B Hardener |
| Colour: | Opaque Buff | Transparent Brown |
| Specific gravity: | 0.96 g/cm³ | 1.24 g/cm³ |
| Solids Content: | 100% | 100% |
| Mixing Ratio by Weight: | 2.15 | 1 |
| Mixing Ratio by Volume: | 2.78 | 1 |
| Viscosity at 23ºC: | 4,000 ± 600 mPa.s | 300 ± 75 mPa.s |
| Mix Viscosity at 23ºC: | 1,600 ± 400 mPa.s | |
| Pot life at 19ºC: | 25 ± 5 minutes | |
| Hardness, Shore A | ≥ 90 | |

A bond for life



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For HAPAS Type 1 high friction surfacing aggregate type and performance is critical, for this application 1-3mm calcined bauxite aggregate is required.

| Parameter | 1-3mm Calcined Bauxite Aggregate | |
|---|---|---|
| | Requirement | Test Method |
| Polished Stone Value, PSV 10/6: | 70+ | BS EN 1097-8:2009 |
| Aggregate Abrasion Value, AAV: | ≤ 4 | BS EN 1097-8:2009 Annex A |
| Particle Density: | ≥ 2.8 | BS EN 1097-6:2000 |
| Moisture Content: | ≤ 0.5% | EN 1097-6:2000 |
| Particle Angularity: | Blocked shape (not flakes) | Visual Assessment |
| Grading % Passing:<br>4.00mm<br>3.35mm<br>1.18mm<br>0.60mm | <br>100%<br>≥ 95%<br>≤ 5.0%<br>≤ 0.5% | EN933-1:1997 |
| Chemical Composition:<br>$Al_2O_3$<br>$Fe_2O_3$<br>$SiO_2$<br>$K_2O+Na_2O$<br>$TiO_2$ | <br>≥ 82.0%<br>≤ 4.5%<br>≤ 12.5%<br>≤ 0.5%<br>≤ 4.5% | XRF Spectrometry |

All HAPAS Type 1 high friction surfacing systems must perform to exacting performance standards as described in Guidelines Document for the Assessment and Certification of High Friction Surfacing

| Parameter | LEESONGRIP 2-1 D3149/20 | |
|---|---|---|
| | Requirement | Test Method |
| Skid Resistance:<br>Initial<br>After 100,000 wheel-passes | <br>≥ 65<br>≥ 70 | TRL Report 176:1997, Appendix E |
| Texture Depth:<br>Initial<br>After 500 wheel-passes<br>After 100,000 wheel-passes<br>After heat ageing and 500 wheel-passes | <br>≥ 1.4mm<br>≥ 1.2mm<br>≥ 1.1mm<br>≥ 1.2mm | BS 598-105:2000 or BS EN 13036-1:2010 |
| Erosion Index:<br>After 500 wheel-passes<br>After 100,000 wheel-passes<br>After heat ageing and 500 wheel-passes | <br>≤ 3<br>≤ 3<br>≤5 | BBA Guidelines SG1, Appendix D |
| Tensile Adhesion:<br>Stress at -10°C<br>Stress at 20°C | <br>≥ 1.0 N/mm²<br>≥ 0.5 N/mm² | TRL Report 176:1997, Appendix J |
| Resistance to Freeze/Thaw:<br>Texture Depth<br>Erosion Index | <br>≥ 1.2mm<br>≤ 5 | TRL Report 176:1997, Appendix L |
| Resistance to Diesel:<br>Texture Depth<br>Erosion Index | <br>≥ 1.2mm<br>≤ 5 | TRL Report 176:1997, Appendix M |

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When Installed following the installation instructions and in accordance with the HAPAS Type 1 high friction surfacing systems requirements the LEESONGRIP 2-1 D3149/20 will have a service life of between 5 and 10 years, based on the below traffic levels.

| Site Category(1) | Site Definition | Maximum Traffic Levels – Type 1(2) |
|---|---|---|
| Q | Approaches to and across major junctions, approaches to roundabouts. | 3500 |
| G1 | Gradient 5% to 10%, longer than 50 m. | 3500 |
| S1 | Bend radius <500 m – dual carriageway. | 3500 |
| R | Roundabout. | 3500 |
| G2 | Gradient >10%, longer than 50 m. | 2500 |
| S2 | Bend radius <500 m – single carriageway. | 2500 |
| K | Approach to pedestrian crossing and other high risk situations. | 2500 |

(1) As defined in CS 228
(2) Commercial vehicles per lane per day

## Instructions For Use

For full installation instructions refer to the installation document *LEESONGRIP® 2-1 D3149-20 - Installation Guide (HAPAS)* and HAPAS Certificate 23/H6948. For decorative and off-highway applications refer to the *LEESONGRIP® 2-1 D3149-20 - Installation Guide (Resin Bonded)*.

## Packaging

LEESONGRIP 2-1 D3149/20 is supplied as a 17kg kit, with LEESONGRIP 2-1 D3149/20 Part A supplied as 11.60kg in a 25 litre metal ring latch pail and LEESONGRIP 2-1 D3149/20 Part B supplied as 5.40kg in a 5 litre plastic jerry.

LEESONGRIP 2-1 D3149/20 can also be supplied in IBCs for metering on site, with LEESONGRIP 2-1 D3149/20 Part A supplied at 1045kg and LEESONGRIP 2-1 D3149 Part B supplied as 1250kg.

## Storage

LEESONGRIP 2-1 D3149/20 Part A and LEESONGRIP 2-1 D3149 Part B should be stored in their original, unopened containers, in dry conditions at a temperature between 10ºC and 35ºC. Storage outside of these conditions will reduce the product's shelf life. Once opened, containers of LEESONGRIP 2-1 D3149 Part B should be used within 14 days.

LEESONGRIP 2-1 D3149/20 Part A and LEESONGRIP 2-1 D3149 Part B have a shelf life of 12 months from point of manufacture.

## Health and Safety

LEESONGRIP 2-1 D3149/20 Part A is not classified as a hazardous substance; however, the wearing of goggles and gloves is to be recommended.



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LEESONGRIP 2-1 D3149 Part B contains a non-volatile isocyanate, when used in the European Union, Great Britain, Norway, Iceland or Liechtenstein from 24 August 2023 adequate training is required before industrial or professional use. Before use, ensure that you have read the Safety Data Sheet for this product. 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.

- 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.

## Additional Notes

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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