UKAS TESTING
0013

LUCIDEON
providing material solutions

# TEST REPORT

| | |
|---|---|
| **Lucideon Reference:** | N261865 (QT-80253/1/JB)/Ref. 1 |
| **Project Title:** | Testing of Ryno Ltd's Artificial Grass System in Accordance with EOTA TR005:2003 |
| **Client:** | Ryno Ltd<br>Castle Point<br>Castle Way<br>Ellon<br>Aberdeenshire<br>AB41 9RG |
| **For the Attention of:** | Mr Amos Whiteside |
| **Author(s):** | Mr Justin Fryer |
| **Report Date:** | 27 May, 2026 |
| **Purchase Order No.:** | 19708 |

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Mr Matthew Amos
**Testing Team**
**Reviewer**

Mr Justin Fryer
**Testing Team**
**Project Manager**

AMRIC INSIDE





Lucideon Limited
Queens Road, Penkhull
Stoke-on-Trent
Staffordshire, ST4 7LQ, UK

T +44 (0)1785 331874
query@lucideon.com
www.lucideon.com
Reg. England 1960455

**CONTENTS**

## 1 INTRODUCTION

Lucideon Limited were contracted by Ryno Ltd to determine the resistance to wind loads in accordance with EOTA TR 005:2003 [1] of their Artificial Grass System.

Testing was performed between 13 May and 23 May 2026 within the Lucideon Structures Laboratory, Queens Road, Penkhull, Stoke-on-Trent, ST4 7LQ.

## 2 TEST RIG CONSTRUCTION (WIND UP-LIFT RIG)

The wind up-lift rig base is constructed from 145 mm x 100 mm timber sections.

All timber sections are connected by way of mortice and tenon joints combined with hex−head steel wood screws.

Four No. legs sit at the 4 No. corners of the rig connected at the top by timber beams of the size previously stated, such that the internal dimensions of the opening are 3050 mm x 4050 mm.

At centre span of the 4050 mm length side 2 No. legs per side clamp a timber beam, again (145 mm x 100 mm), at the base of the legs. This beam is held in place by M10 x 200 mm Hex-Head Steel Woodscrews, 4 No. per leg.

A further timber beam (145 mm x 100 mm) is connected to the inner face of the corner legs spanning the 3050 mm, parallel to the centre span beam.

4200 mm x 150 mm x 50 mm timber joists set at 400 mm centres are fixed perpendicularly across the aforementioned beams using M10 x 150 mm Hex-Head Steel Woodscrews, 1 per beam junction.

The inner sides of the rig were lined with 18 mm OSB 3 board prior to the installation of the client's sample.

The lid of the test rig is constructed from insulated panels with an aluminium framework.

There is a small 400 mm x 400 mm window on each side of the lid and a 600 mm x 600 mm pneumatic damper, attached to one side of the lid.

A large outlet funnel is situated on the top of the rig to connect to the fan and drag the air out and across the sample, once connected to the large 6 kPa (Kilopascal's) fan used for testing.

An air conditioning unit sits on top of the lid and can be used to regulate the temperature, during curing and testing (23 ± 5°C).

A rubber seal lines the base of the lid, which forms an air-tight seal with the top of the base.

A calibrated pressure transducer (MTR042) was sited within the test lid, to measure the pressure within the rig during testing at a frequency of 1 Hz.

[1] TR 005:2003 Determination of the Resistance to Wind Loads of Partially Bonded Roof Waterproofing Membranes.

A calibrated thermocouple was sited within the test lid, to measure the temperature during curing and testing.

Temperature readings were taken daily during the curing period and at a frequency of 1 Hz during testing.

The wind up-lift rig was set at a depth of 300 mm and lined with 18 mm plywood, fixed by way of 5 mm x 75 mm wood screws.

## 3 SAMPLE PREPARATION

Ryno Ltd. provided all components pertinent to the construction of the test sample.

The sample was constructed within the wind up-lift rig, by Representatives from Ryno Ltd on 7 and 8 May 2026.

- RDA-C ‘click head’ Self-levelling adjustable joist support pedestals installed at 600 mm centres (400 mm near one edge due to the size of the rig).
- Aluminium Joists attached to the pedestals and set at 600 mm centres
- Baseboards installed perpendicular to the rails and screwed down using Baseboard screws as detailed in Figure 1 below, with a 6-8 mm gap between each base board.
- The Artificial Grass Shockpad was installed leaving a 250 mm perimeter.
- Artificial Grass Adhesive was installed around the perimeter of the Shockpad.
- One half of the artificial grass was installed such that a joint was present across the centre of the test rig.
- A strip of Grass joint tape, approximately 200 mm wide was installed with a strip of the artificial grass adhesive across it and was positioned beneath the installed artificial grass such that a second piece could be adhered and thus jointed together.
- The second half of the artificial grass was installed and adhered to both the jointing tape and the perimeter base boards.
- Sand was then spread across the entire surface and brushed into the artificial grass. (There was residual surface sand due to the wetness of the delivered sand. Usually this would be fully incorporated into the artificial grass to help the blades stand-up but as this was deemed not an important requirement for this test, as much as possible was brushed in, with the remainder left on the surface.)
- Lead bars were positioned at the adhesive areas to aid in the adhesion whilst curing (these were removed for testing).

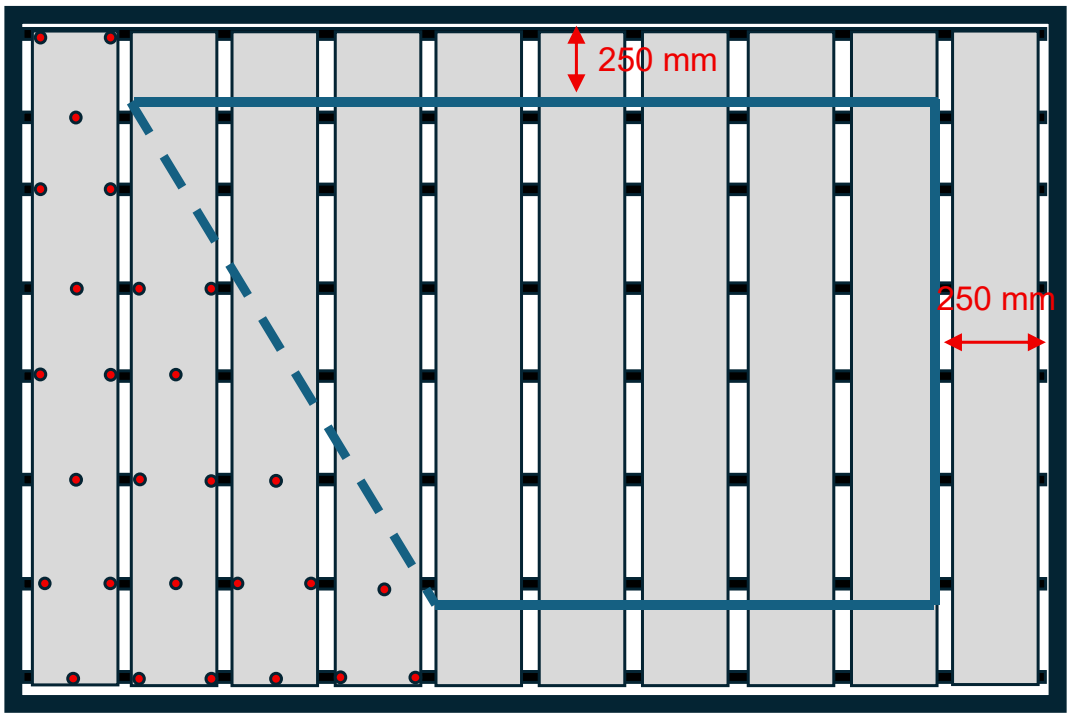



**Figure 1** – Test Layout

Technical Data Sheets for components used can be found in Appendix A.

## 4 TEST METHOD

The sample was subjected to a number of proportional sequential loading cycles in accordance with Table 1 of EOTA TR 005:2003.

The sequence of these loadings can be seen in the Table below:

**Table 1** – Peak Suction Pressure at Each Cycle

| Applied Suction Pressure (kPa) | Number of Cycles |
|---|---|
| 1.0 | 4 |
| 1.5 | 1 |
| 2.0 | 1 |
| 2.5 | 1 |
| 3.0 | 1 |
| 3.5 | 1 |
| 4.0 | 1 |

All cycles were in accordance with EOTA TR 005 Figure 2 – Proportional Array of Suction Pressures, which can be seen in Figure 2 below:

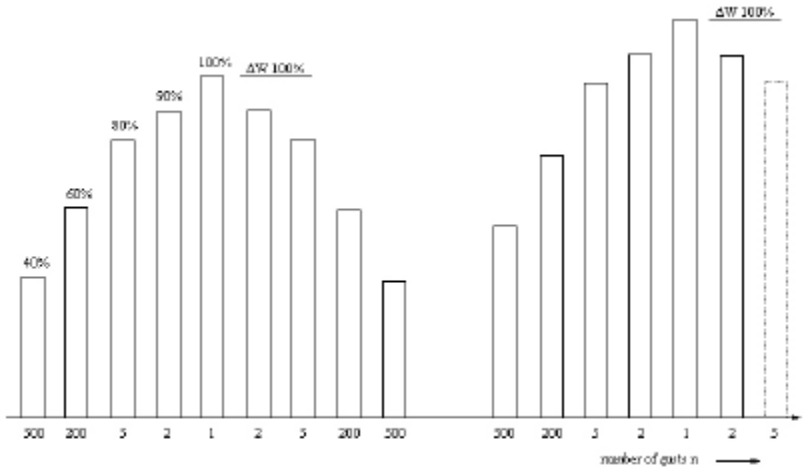



**Figure 2 – Proportional array of suction pressures**

**Figure 2** – EOTA TR005 Figure 2 – Proportional Array of Suction Pressures

The lapse time for each suction pressure was in accordance with EOTA TR 005 Figure 5 − Time/Suction Pressure Diagram as seen in Figure 3 below:

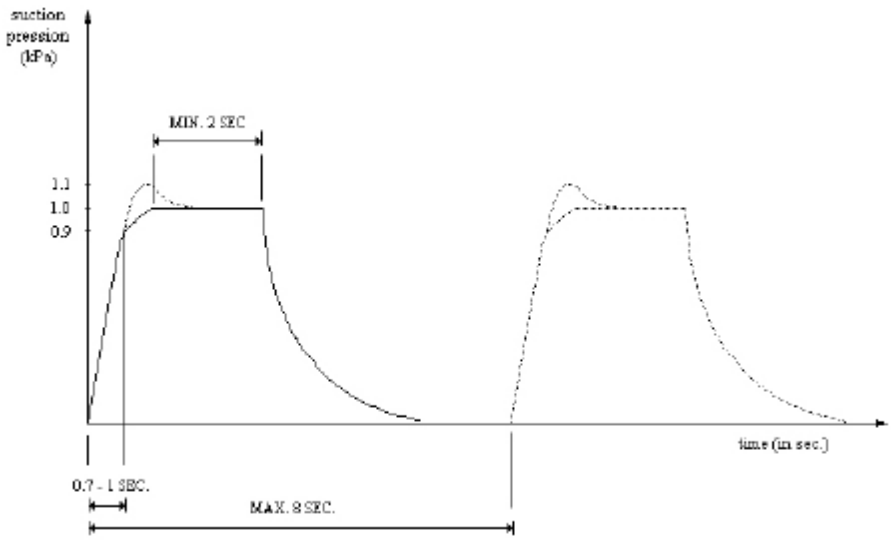



**Figure 5 – Time/suction pressure diagram (trapezium)**

**Figure 3** – EOTA TR005 Figure 5 – Time/Suction Pressure Diagram

The behaviour of the sample was observed during each cycle.

Three transducers were positioned beneath the base boards prior to testing and attached at centre span between the rails to record the movement of the sample during testing.

A further transducer was positioned below the joists to measure the movement of the test rig during testing, the differential between the 2 would constitute the actual up-lift of the system during testing.

## 5 RESULTS

No deterioration was noted during testing up to and including a pressure of 6000 Pascals at which point the limit of the test rig was achieved.

The maximum differential deflection during testing was 0.19 mm.

The lack of differential movement during testing shows that Ryno Ltd's Artificial Grass System pressure equalises quickly enough to alleviate any deterioration of the system due to wind up-lift forces.

This gives Ryno Ltd's Artificial Grass System a resistance to wind up-lift in excess of 6000 Pascals.

## 6 DISCUSSION

To give some context to the results obtained during testing:

It has been recorded that gusts of up to 100 mph (44.70 $ms^{-1}$) occur in the UK on average once every 50 years, and as such, it was deemed prudent to test beyond this maximum potential wind speed.

Wind Pressure ($Nm^{-2}$) = ½ x Air Density ($kgm^{-3}$) x wind speed² ($ms^{-1}$) x Drag Coefficient.

The air density was taken as 1.25 $kgm^{-3}$.

The wind speed = 44.70 $ms^{-1}$.

The drag coefficient (taken as 1.0).

This gave a pressure of 1225.73 $Nm^{-2}$ (1.23 kilopascals).

In any particular situation, the wind load, dependant on the basic wind speed (the value of wind speed for a 3 second gust), which varies across the country, the height above ground, the degree of protection from other buildings and also geographic features (e.g. escarpments.,) is determined in accordance with BS EN 1991-1-4:2005 +A1:2010 and this is, of course, very specific to the building, its location orientation etc.

To give a feel the pressure from a 3 second gust at 10 m above the ground, would range from around 0.6 $kNm^{-2}$ in a city centre anywhere in England, to 1.4 $kNm^{-2}$ in open country.

To this wind load, is applied a partial safety factor, which is taken from BS EN 1990, which covers the Basis of Structural Design.

These factors can also be complicated to select, but a common number used is 1.5. Thus, the wind load for which an element must be designed, is defined.

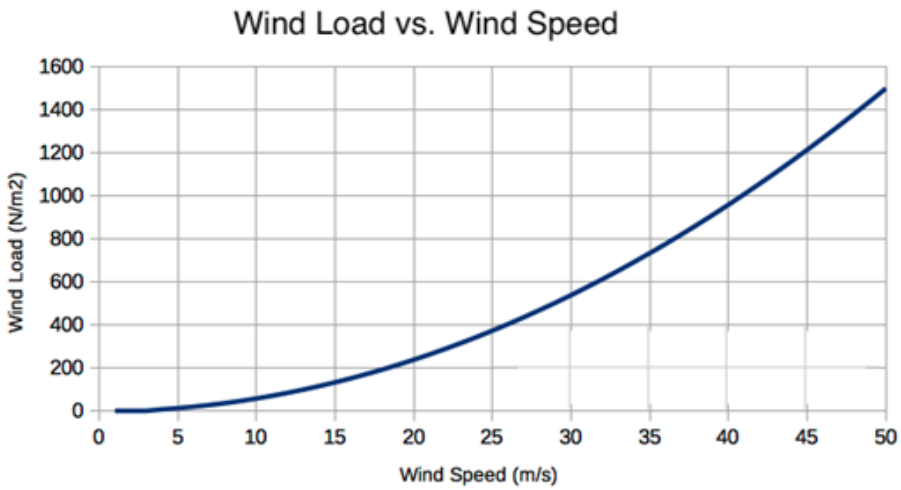



**Figure 4** – Basic Wind Speed Against Wind Load Chart

**NOTE: The results given in this report apply only to the samples that have been tested.**

**All samples tested were supplied and installed by the client.**

**END OF REPORT**

## PLATES

**Plate 1** – Pedestals Positioned at 600 mm Centres

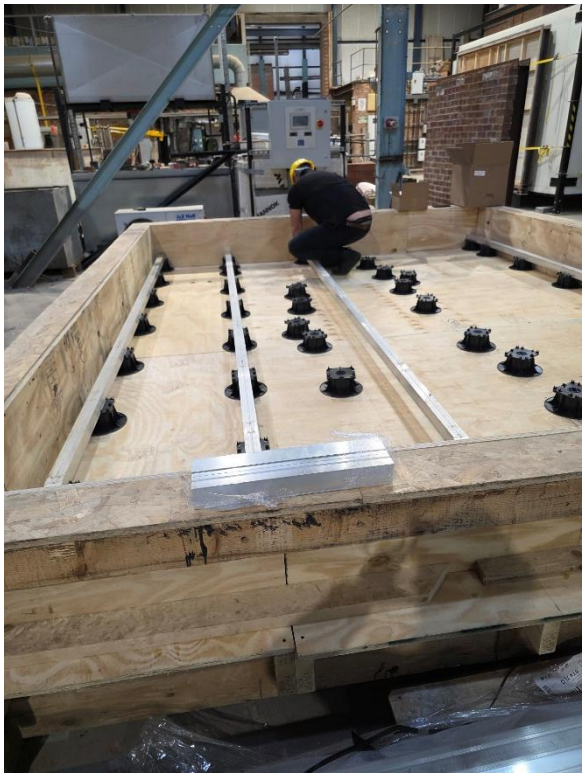


**Plate 2** – Rails Installed at 600 mm Centres

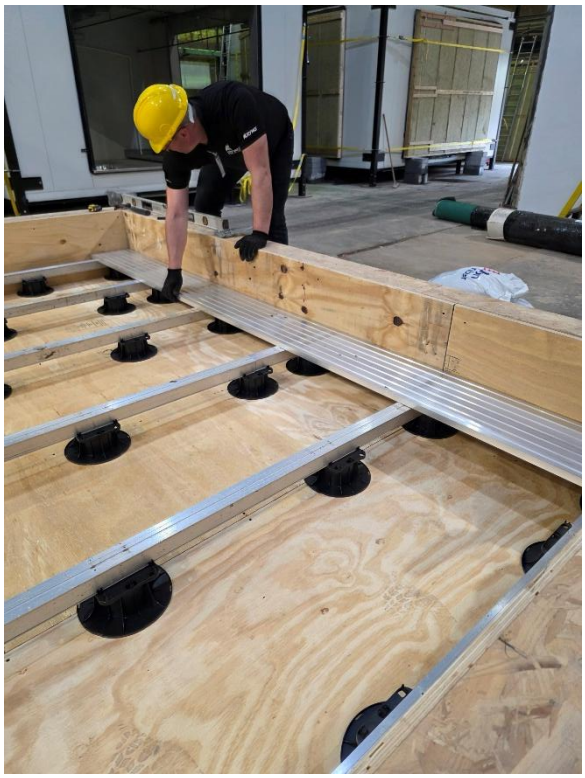


**Plate 3** – Base Boards Installed

**Plate 4** – Base Boards Screwed to Each Rail

**Plate 5** – 6-8 mm Gap Left Between Each Base Board

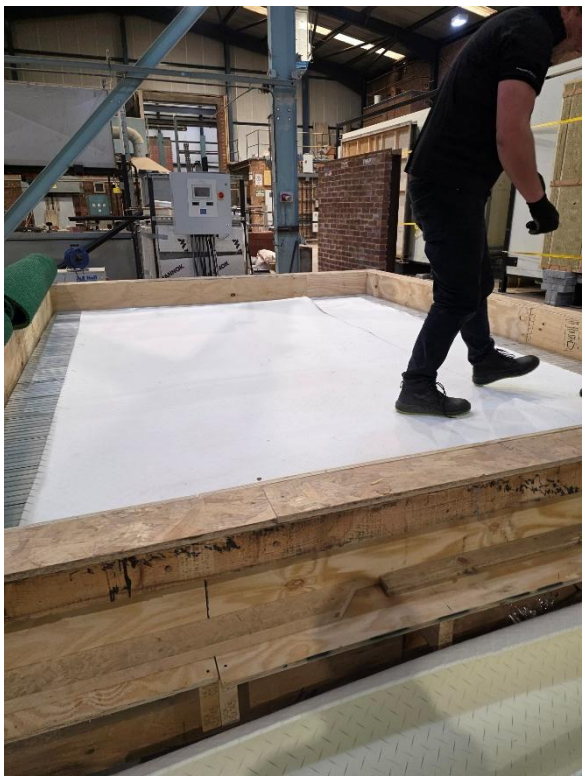


**Plate 5** – Shockpad Installed

**Plate 6** – Adhesive on Jointing Strip for the Artificial Grass

**Plate 7** – Adhesive Installed Around the Perimeter of the Shockpad onto the Base Boards

**Plate 8** – First Half of the Artificial Grass Installed with Joint Adhered to the Underside of the Grass

**Plate 9** – Grass Fully Installed, Sand is Laid Out on the Surface

**Plate 10** – Sand is Brushed Across the Entire Surface

**Plate 11** – Weights Added to Hold the Sample Down Whilst the Adhesive Cures

**Plate 12** – Sample Following Testing

# AG
# Glade Artificial Grass

## Overview

Glade Artificial Grass is an exceptionally realistic looking premium artificial grass product. It has a blend of multi-coloured grass blades for a natural appearance, and is made from anti-static 'pcr' recycled fibres. It has a pile depth of 35mm, and is stitched into a bio-based backing which uses renewable materials like soybeans to replace petroleum, enhancing sustainability. It has been tested to BS EN 13501-5 and achieved a $B_{roof}(t4)$ classification, making it suitable for rooftop applications.

- Exceptionally realistic
- Environmentally friendly
- Blend of 3 colours for natural aesthetic
- $B_{roof}(t4)$ classified in accordance with BS EN 13501-5

## Details

| | |
|---|---|
| **Material** | 100% PE monofilament with PP thatch |
| **Dimensions** | 4x25m roll |
| **Weight** | 2.2kg/m2 |

## Performance

| | |
|---|---|
| **Reaction to fire (BS EN 13501-5)** | $B_{roof}(t4)$* |
| **Porosity** | >1600-1800 L/h/m2 |
| **Warranty** | 15 years** |

*when installed as part of a complete RYNO system

## Finishes

| | | | |
|---|---|---|---|
|  | | | |
| **Glade** | | | |

### Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

## Compatible Components

| | | | |
|---|---|---|---|
|  | **BB**<br>Baseboard |  | **AG-SP**<br>Artificial Grass base shockpad |
|  | **ES**<br>Artificial Grass Adhesive | | |

### Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

# AG-SP
# Artificial Grass Base Shockpad

## Overview

The Artificial grass base shockpad is a 10mm thick closed-cell PE foam shock pad which provides a perfectly stable feeling on the artificial grass surface. It is highly durable, providing consistent performance throughout its service life, has excellent drainage properties with no water absorption, and is quick and easy to install. It has been tested as part of a complete system build up and achieved $B_{roof}(t4)$ classification under BS EN 13501-5.

- Provides stable subsurface
- Achieves $B_{roof}(t4)$ classification
- Quick and easy to install

## Details

| | |
|---|---|
| **Material** | Closed-cell PE foam |
| **Weight** | 0.5kg/m2 |
| **Dimensions** | 1.2m x 1.6m, thickness 10mm |

## Performance

| | |
|---|---|
| **Reaction to fire (BS EN 13501-5)** | $B_{roof}(t4)$* |

*when installed as part of a complete RYNO system

## Compatible Components

| | | | |
|---|---|---|---|
|  | **BB**<br>Baseboard |  | **AG**<br>Glade Artificial Grass |

**Got questions? Give us a shout.**

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500**
or reach out on **sales@rynosystems.com**

# BB
# Baseboard

Patent Pending:
GB2407530.1

## Overview

Component Summary:
The Baseboard sits on joists to create a solid raised surface. This can be used as a surface to fix planters and furniture to, or additional support for paving, small cuts or other floor surfaces. The sub floor allows for the paving or decking to interface seamlessly with the planters or other flooring surfaces while providing complete support to small cuts and details.

- Corrosion resistant aluminium
- 23mm and 25mm thicknesses available
- Rapid installation
- Provides complete and versatile support

## Details

| | |
|---|---|
| **Material** | Aluminium 6063-T6 |
| **Dimensions** | See "Part information" below |

## Performance

| | |
|---|---|
| **Reaction to fire (BS EN 13501-1)** | Inherently A1 (Decision 94-611/EC) |
| **Maximum span** | See "Part information" below |
| **Biological and chemical** | Resistant to moulds, algae, alkali, bitumen, UV |
| **Warranty** | 30 years* |

*when used as part of a complete Ryno system

## Part information

| Code | Dimensions | Maximum span |
|---|---|---|
| **BB23** | 23x260x3600mm | 600mm |
| **BB25** | 25x260x3600mm | 700mm |

## Compatible components

| | | | |
|---|---|---|---|
|  | **RST**<br>Aluminium Paving Support Rail |  | **DS**<br>Aluminium Joist |
|  | **BBF**<br>Baseboard Fixing |  | **DSB**<br>Decking Screw |
|  | **PHS**<br>Pan-head Screw |  | **RBG**<br>Resin Bound Gravel Kit |
|  | **CBP**<br>Contour Bespoke Planter Edge |  | **LBP**<br>Ledge Bespoke Planter Edge |
|  | **ABP**<br>Ascent Bespoke Planter Edge |  | **SM**<br>Stabilisation Mesh |
|  | **BP**<br>Boundary Profile | | |

## Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

## Compatible systems

**TerraSmart®**
Resin Bound Gravel System

Raised, lightweight flooring system with a seamless resin bound aggregate finish.

**TerraSmart®**
Contour Bespoke Planter System

For designs featuring waves, curves, and radiances

**TerraSmart®**
Ledge Bespoke Planter System

For designs featuring straights and angled corner details

**TerraSmart®**
Ascent Bespoke Planter System

Featuring a backward slant on the planter face

**TerraSmart®**
Rail Paving System

Premium, versatile paving system for waterproofed substrates, **where non-combustibility isn't required**

IGNO

**TerraSmart®**
Rail Paving System

Premium, versatile paving system for waterproofed substrates

## Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

# BBS
# Baseboard Screw

## Overview

The Baseboard Screw features a self-tapping tip and partial thread designed to securely grip the fastening surface whilst fixing down Baseboards, perfect for where the head of the screw is engage with a separate surface to the fixing point. This robust self-drilling countersunk torx screw is crafted from high-grade A2 stainless steel, ensuring exceptional durability and lasting resistance to corrosion.

- Wide thread for secure connection
- A2 stainless steel
- Perfect for Baseboard

## Details

| | |
|---|---|
| **Material** | Stainless Steel A2 |
| **Dimensions** | Thread Size 4.5mm<br>Thread length 24mm<br>Overall length 40mm |
| **Drive type** | Torx T20 |
| **Weight** | 0.34kg/100 |

## Performance

| | |
|---|---|
| **Reaction to fire (BS EN 13501-1)** | Inherently A1 (Decision 94-611/EC) |

## Compatible Components

| | | | |
|---|---|---|---|
|  | **BB**<br>Baseboard |  | **DS**<br>Aluminium Joist |

**Got questions? Give us a shout.**

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

## Compatible Systems

**TerraSmart®**
Rail Paving System

Premium, versatile paving system for waterproofed substrates

**TerraSmart®**
Ledge Bespoke Planter System

For designs featuring straights and angled corner details

**TerraSmart®**
Contour Bespoke Planter System

For designs featuring waves, curves, and radiances

**TerraSmart®**
Ascent Bespoke Planter System

Featuring a backward slant on the planter face

**TerraSmart®**
Resin Bound Gravel System

Raised, lightweight flooring system with a seamless resin bound aggregate finish.

## Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

# DS
# Aluminium Joist

## Overview

The DS aluminium Joist is a non-combustible aluminium support joist designed specifically for RYNO flooring systems. Secure the support joists to decking pedestals or cleats to create a robust and durable support structure for your system.

- Multipurpose design – rapid installation
- Multiple joist depths available to suit various applications
- Manufactured from incredibly strong and lightweight aluminium
- Supports large allowable spans
- Available in a mill finish or powder coated

## Details

| | |
|---|---|
| **Material** | Aluminium 6063-T6 |
| **Dimensions** | See “Part information” below |
| **Height Range** | See “Part information” below |
| **Weight** | See “Part information” below |

## Performance

| | |
|---|---|
| **Reaction to fire (BS EN 13501-1)** | Inherently A1 (Decision 94-611/EC) |
| **Maximum spacing** | Determined by Deckboard or Top Rail. See applicable datasheet. |
| **Maximum span** | See “Part information” below |
| **Warranty** | 30 years* |
| **Design Life** | 60 years |

*when used as part of a complete RYNO IGNO system

## Part information

| Part code | Height | Dimensions | Weight | Maximum span |
|---|---|---|---|---|
| **DS15** | 15mm | 48 x 15 x 3600mm | 1kg/m | 360mm |
| **DS25** | 25mm | 48 x 25 x 3600mm | 1.078kg/m | 600mm |
| **DS50** | 50mm | 48 x 50 x 3600mm | 1.24kg/m | 1200mm |
| **DS50C** | 50mm | 48 x 50 x 3600mm | 0.86kg/m | 1050mm |
| **DS75** | 75mm | 48 x 75 x 3600mm | 1.58kg/m | 1600mm |
| **DS75C** | 75mm | 48 x 75 x 3600mm | 1.1kg/m | 1450mm |

## Compatible components

| | | | |
|---|---|---|---|
|  | **RD-FR**<br>Non-Combustible Adjustable Joist Support |  | **RDF**<br>Fixed Head Adjustable Joist |
|  | **RDA-C**<br>Self-levelling Adjustable Joist Support with Clip-on Head |  | **ADC**<br>Joist Support Cleat |
|  | **VC**<br>Vitrified Composite Decking Board |  | **ADB**<br>Aluminium Decking Board - Indirect Fix |
|  | **CDB-C**<br>Classic Composite Decking Board |  | **CDB-S**<br>Signature Composite Decking Board |
|  | **CDB-P**<br>Performance Composite Decking Board |  | **DSC**<br>Joist Connector Bracket |
|  | **VCT**<br>Decking Clip - Vitrified Composite |  | **RST**<br>Aluminium Paving Support Rail |
|  | **PHS**<br>Pan-head Screw |  | **DSB**<br>Decking Screw |

# ES
# Artificial Grass Adhesive

## Overview

ES Artificial Grass Adhesive is a two component polyurethane based adhesive system, which is designed for bonding artificial grass carpets to substrates to produce a strong invisible joint along the carpet joints. It is a high quality product which provides joint strengths up to 50% higher than standard two part adhesives. It also allows installation in adverse weather conditions and with the addition of an accelerator, meaning it can also be used in temperatures as low as 3 - 5 ºC. It achieved a $B_{roof}(t4)$ classification when used as part of a complete TerraSmart Artificial Grass System build up.

- Suitable for use in adverse weather conditions
- Rapid cure times
- $B_{roof}(t4)$ rated when used as part of the TerraSmart Artificial Grass System assembly

## Details

| | |
|---|---|
| **Material** | Liquid aliphatic isocyanate |
| **Colour and form** | Green paste. Tough flexible film in cured state |
| **Cure time (80% of strength in 48 hours)** | Ambient temperature 5°C: 12 hours<br>Ambient temperature 10°C: 8 hours<br>Ambient temperature 20°C: 4 hours<br>Ambient temperature 30°C: 2 hours |
| **Packaging** | 11kg tub |
| | |

## Compatible Components

| | | | |
|---|---|---|---|
|  | **BB**<br>Baseboard |  | **AG**<br>Glade Artificial Grass |

**Got questions? Give us a shout.**

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

# RDA-C
# Self-levelling Adjustable Joist Support Pedestal with Clip-on Head

## Overview

The RDA-C Self-Levelling Adjustable Joist Support Pedestal is a plastic support pedestal for decking and railing applications, with an innovative click-head design that accepts DS aluminium Joists. Its "ball and socket" floating head design allows for slope correction on tapered roofs, and the adjustable thread provides millimetre-perfect adjustability across a large height range. These features combined support ultra-rapid and straightforward installation.

- Secure screwless click-fix design
- Accommodates single and double joists
- Millimetre-perfect height adjustment
- Large height range available
- Cut-off base allows for placement against the wall abutment
- Height extension collar raises the total height in 100mm increments
- Holes in base allow drainage and fixing to substrates

## Details

| | |
|---|---|
| **Material** | Polypropylene (recyclable) |
| **Dimensions** | Base size: 200mm (diameter)<br>Head size: 130mm (diameter) |
| **Maximum slope correction** | 5% (1:20 gradient) |
| **Joist width capacity** | 48mm |

## Performance

| | |
|---|---|
| **Reaction to fire (BS EN 13501-5)** | $B_{ROOF}(t4)$* |
| **Compressive strength** | 1500kg+ per pedestal |
| **Allowable load** | See “Compatible system” data |
| **Biological and chemical** | Resistant to moulds, algae, alkali, bitumen, UV |
| **Warranty** | 10 years* |

*when used as part of a complete RYNO system

### Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

## Part Information

| Code | Height range | Box quantity | No. of extension collars |
|---|---|---|---|
| **RDA-1** | 20-25mm | 25 | 0 |
| **RDA-2** | 25-35mm | 25 | 0 |
| **RDA-3** | 35-50mm | 25 | 0 |
| **RDA-4** | 50-80mm | 25 | 0 |
| **RDA-5** | 80-130mm | 25 | 0 |
| **RDA-6** | 130-230mm | 25 | 0 |
| **RDA-7** | 230-330mm | 25 | 1 |
| **RDA-8** | 330-430mm | 25 | 2 |
| **RDA-9** | 430-530mm | 25 | 3 |
| **RDA-10** | 530-630mm | 25 | 4 |
| **RDA-11** | 630-730mm | 25 | 5 |
| **RDA-12** | 730-830mm | 25 | 6 |
| **RDA-13** | 830-930mm | 25 | 7 |
| **RDA-14** | 930-1030mm | 25 | 8 |

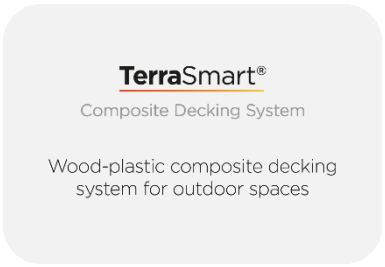
## Compatible components

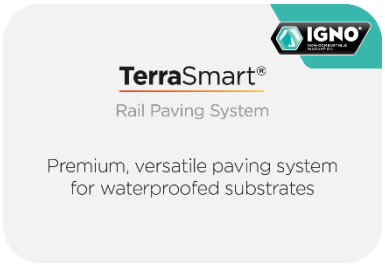
| | | | |
|---|---|---|---|
|  | **DS**<br>Aluminium Joist |  | **BRSP**<br>Base Rubber Shock Pad |
|  | **PHS**<br>Pan-Head Screw | | |

### Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**

## Compatible systems




### Got questions? Give us a shout.

Visit **www.rynosystems.com** or call us today on **+44 (0)203 967 3500** or reach out on **sales@rynosystems.com**