

# Roof Lantern      Roof Lantern Pyramid

## NBS158 Brett Martin Roof Lantern NBS Specification

**Consult Brett Martin Daylight Systems early in the design process as we can provide in-depth assistance with design and specification.**

Brett Martin Roof Lantern is an elegant, double-glazed glass rooflight, with a fully thermally broken and powder coated aluminium frame. It is intended for quick and easy installation on flat roofs of all modern building types to provide natural light.

The product features a slender aluminium frame offering clean sight lines and neat junctions, with a variety of glazing and frame configuration options. The product achieves a vertical centre-pane glazing U-value of 1.2 W/m<sup>2</sup>K and overall rooflight U<sub>r</sub>-Value of 1.8 – 2.03 W/m<sup>2</sup>K depending on specification, which is better than the performance of the limiting U-value for rooflights currently set out in English building regulations.



- Stylish and slender frame, with clean sight lines and neat junctions.
- Toughened inner pane as standard with optional laminated inner pane for enhanced overhead safety as recommended by the Rooflight Association.
- Roof Lantern available in 9 standard sizes from 1500 x 1000mm to 3000 x 2000mm. Bespoke size also available.
- Roof Lantern Pyramid available in 4 standard sizes from 1000 x 1000mm to 2500 x 2500mm. Bespoke sizes also available.
- Self-clean glass as standard.
- Contemporary 4 pane, or more traditional looking Roof Lantern 6 pane option.
- Variety of external/internal frame powder coat colour options in combinations of grey RAL 7016, white RAL 9010, and black RAL 9005.



**Consult Brett Martin Daylight Systems technical literature for further details.**

**Full NBS Specification clause on Page 2**



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# Roof Lantern Pyramid

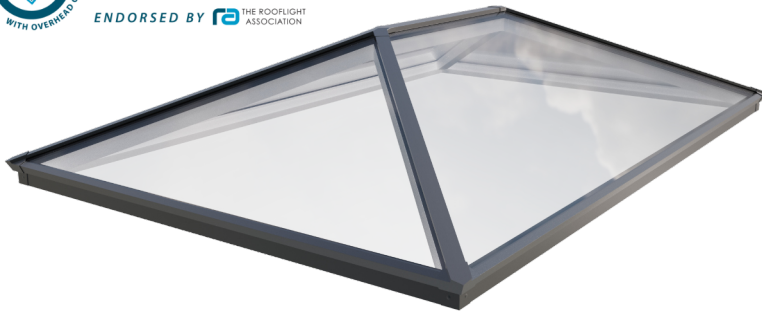
## NBS158

Brett Martin Roof Lantern  
NBS Specification

<b>Manufacturer:</b>	Brett Martin Daylight Systems Ltd., Sandford Close, Aldermans Green Industrial Estate, Coventry, CV2 2QU. Tel: 024 7660 2022 Fax: 024 7660 2745. <b>Email:</b> daylight@brettmartin.com <b>Web:</b> www.brettmartin.com
<b>Product ref:</b>	Brett Martin Roof Lantern rooflight
<b>Type:</b>	Double glazed roof lantern with thermally broken aluminium frame.
<b>Size:</b>	Rooflight size in mm equals overall external dimension of builders upstand. Consult Brett Martin Daylight Systems for details): <b>Roof Lantern:</b> 1500 x 1000mm / 2000 x 1000mm / 2000 x 1500mm / 2500 x 1000mm / 2500 x 1500mm / 2500 x 2000mm / 3000 x 1000mm / 3000 x 1500mm / 3000 x 2000mm. Non-standard sizes also available (...mm x ...mm). <b>Roof Lantern Pyramid:</b> 1000 x 1000mm / 1500 x 1500mm / 2000 x 2000mm / 2500 x 2500mm Non-standard sizes also available (...mm x ...mm).
<b>Frame:</b>	Fully thermally broken rooflight assembly minimises the risk of condensation. <b>Number of glazing panes:</b> 4 panes / 6 panes (Roof Lantern only) <b>External powder coat colour:</b> Grey RAL 7016 / White RAL 9010 / Black RAL 9005   <b>Internal powder coat colour:</b> Grey RAL 7016 / White RAL 9010 / Black RAL 9005
<b>Kerb:</b>	For fitting direct to existing Builders Upstand.
<b>Glazing Details:</b>	Standard: 4mm toughened outer – (90%) argon filled spacer – 4mm toughened inner <b>Tint (light transmission % / G-value):</b> Clear self-clean (77% / 0.69) / Blue solar control self-clean (32% / 0.28)  Enhanced overhead safety: 4mm toughened outer – (90%) Argon filled spacer – 6.8mm laminated inner <b>Tint (light transmission % / G-value):</b> Clear/Neutral solar control self-clean (44% / 0.42) / Blue solar control self-clean (32% / 0.28)  Glass is designated Class A to EN13501 part 1, as it is included in the list of CWFT (classified without further test) materials published in the Official Journal of the EU (see European Commission Decision 96/603/EC). These rooflights are glazed with a 4mm toughened outer pane and can therefore be regarded as having a B <sub>ROOF</sub> (t4) classification as per English building regulations.
<b>Other requirements:</b>	10 year commercial products warranty available.
<b>Fixing:</b>	In accordance with Brett Martin Daylight Systems' fixing recommendations. Fixings included to attach rooflight to builders upstand.

# Roof Lantern

This slim and elegant glass rooflight makes an architectural statement, and floods interior spaces with natural daylight. Designed for quick and easy installation, it makes a stunning addition to living and working spaces.



## Benefits

- Stylish and slender frame, with clean sight lines and neat junctions
- Available in a wide range of sizes, **standard sizes and specifications delivered in 3-5 days**
- Toughened inner pane as standard, with optional laminated inner pane for enhanced overhead safety as recommended by the Rooflight Association.
- 10 year warranty available
- **Quick and easy installation**
- Manufactured in the UK

## Features

9 standard sizes from 1500 x 1000 to 3000 x 2000

Bespoke sizes available

Self-clean glass as standard

Special **glass options** on request

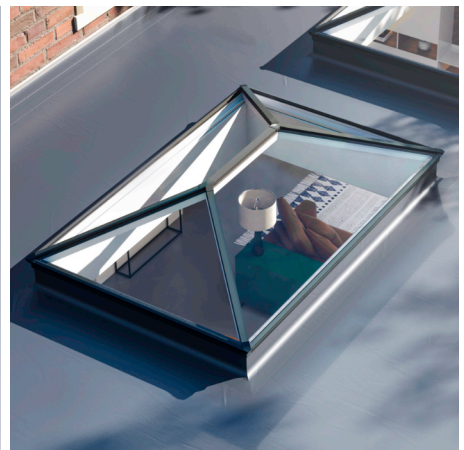
Contemporary **4 pane**, or more traditional looking **6 pane** option

### Powder coat options

External	Internal
RAL 7016 grey	RAL 9010 white
	RAL 7016 grey
RAL 9005 black	RAL 9010 white
	RAL 9005 black
RAL 9010 white	RAL 9010 white

### Glass options

Inner pane	Specification
Toughened	Clear
	Blue solar control
Laminated	Clear/Neutral solar control
	Blue solar control



**TECHNICAL SUPPORT:** For any technical information/queries please contact your supplier.

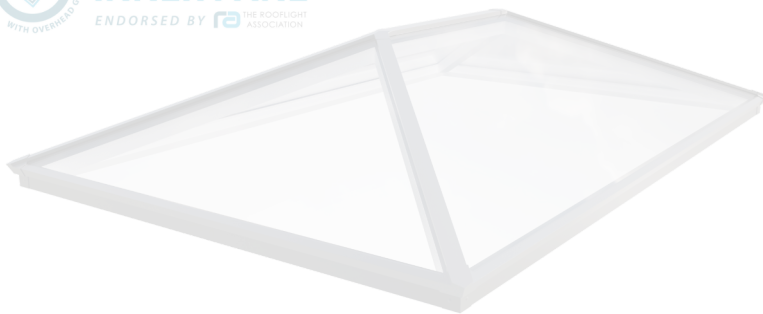
The manufacturer operates a policy of continuous product improvement, and reserves the right to alter specifications at any time without notice. Every effort has been taken to ensure all details contained in this document are correct at the time of going to press but this document should be used only as a guide and does not in any way form part of a contract or warranty. It is the customer's responsibility to ensure that the product is suitable for the actual conditions of use, which are beyond the control of the manufacturer.

# Roof Lantern

This slim and elegant glass rooflight makes an architectural statement, and floods interior spaces with natural daylight. Designed for quick and easy installation, it makes a stunning addition to living and working spaces.



**LAMINATED  
INNER PANE**  
ENDORSED BY  THE ROOFLIGHT  
ASSOCIATION



## Benefits

- Stylish and slender frame, with clean sight lines and neat junctions
- Available in a wide range of sizes, **standard sizes and specifications delivered in 3-5 days**
- Toughened inner pane as standard, with optional laminated inner pane for enhanced overhead safety as recommended by the Rooflight Association.
- 10 year warranty available
- **Quick and easy installation**
- Manufactured in the UK

## Features

9 standard sizes from 1500 x 1000 to 3000 x 2000

Bespoke sizes available

Self-clean glass as standard

Special **glass options** on request

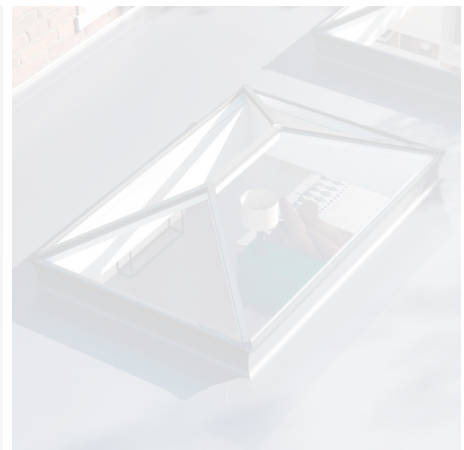
Contemporary **4 pane**, or more traditional looking **6 pane** option

### Powder coat options

External	Internal
RAL 7016 grey	RAL 9010 white
	RAL 7016 grey
RAL 9005 black	RAL 9010 white
	RAL 9005 black
RAL 9010 white	RAL 9010 white

### Glass options

Inner pane	Specification
Toughened	Clear
	Blue solar control
Laminated	Clear/Neutral solar control
	Blue solar control





# Roof Lantern Pyramid

This slim and elegant pyramid glass rooflight makes an architectural statement, and floods interior spaces with natural daylight. Designed for quick and easy installation, it makes a stunning addition to living and working spaces.



## Benefits

- Stylish and slender frame, with clean sight lines and neat junctions
- Available in a wide range of sizes, **standard sizes and specifications delivered in 3-5 days**
- Toughened inner pane as standard, with optional laminated inner pane for enhanced overhead safety as recommended by the Rooflight Association.
- 10 year warranty available
- **Quick and easy installation**
- Manufactured in the UK

## Features

4 standard sizes from 1000 x 1000 to 2500 x 2500

Bespoke sizes available

Self-clean glass as standard

Special **glass options** on request

Contemporary **4 pane glazing**

## Powder coat options

External	Internal
RAL 7016 grey	RAL 9010 white
	RAL 7016 grey
RAL 9005 black	RAL 9010 white
	RAL 9005 black
RAL 9010 white	RAL 9010 white

## Glass options

Inner pane	Specification
Toughened	Clear
	Blue solar control
Laminated	Clear/Neutral solar control
	Blue solar control



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# Roof Lantern Pyramid

This slim and elegant pyramid glass rooflight makes an architectural statement, and floods interior spaces with natural daylight. Designed for quick and easy installation, it makes a stunning addition to living and working spaces.



## Benefits

- Stylish and slender frame, with clean sight lines and neat junctions
- Available in a wide range of sizes, **standard sizes and specifications delivered in 3-5 days**
- Toughened inner pane as standard, with optional laminated inner pane for enhanced overhead safety as recommended by the Rooflight Association.
- 10 year warranty available
- **Quick and easy installation**
- Manufactured in the UK

## Features

4 standard sizes from 1000 x 1000 to 2500 x 2500

Bespoke sizes available

Self-clean glass as standard

Special **glass options** on request

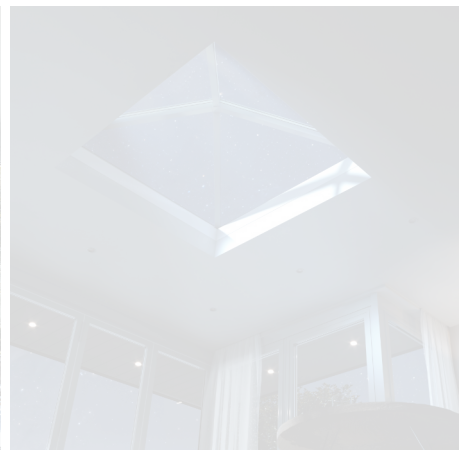
Contemporary **4 pane glazing**

## Powder coat options

External	Internal
RAL 7016 grey	RAL 9010 white
	RAL 7016 grey
RAL 9005 black	RAL 9010 white
	RAL 9005 black
RAL 9010 white	RAL 9010 white

## Glass options

Inner pane	Specification
Toughened	Clear
	Blue solar control
Laminated	Clear/Neutral solar control
	Blue solar control



# Roof Lantern      Roof Lantern Pyramid

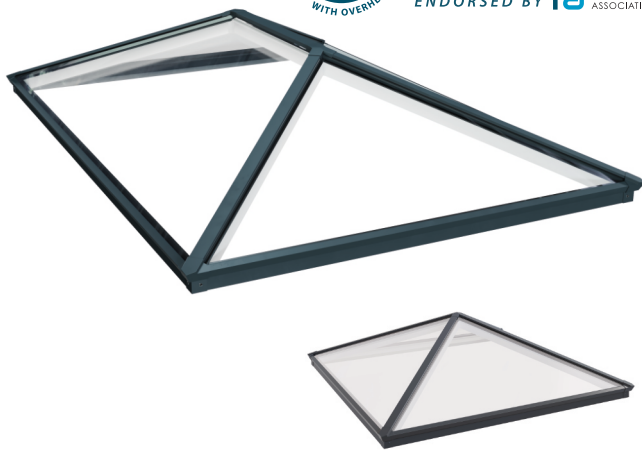
# TB432

Brett Martin Roof Lantern  
Datasheet

## Product Description

Brett Martin Roof Lantern is an elegant double-glazed glass rooflight, with a fully thermally broken and powder coated aluminium frame. It is intended for quick and easy installation on flat roofs of all modern building types to provide natural light, and is manufactured to ISO 9001 industry standards.

## Design Features



**LAMINATED  
INNER PANE**  
ENDORSED BY **ra** THE ROOFLIGHT  
ASSOCIATION

- Stylish glass rooflight with slender aluminium frame offering clean sight lines and neat junctions
- Designed for rapid installation with no silicone sealant other than to seal between roof and rooflight
- Toughened inner and outer pane as standard with optional laminated inner pane for enhanced overhead safety as recommended by the Rooflight Association.
- Highly thermally efficient with thermally broken frame and Low-E double glazing
- 10 year warranty available
- Choice of clear/clear neutral self-clean or blue solar-control self clean glass as standard
- Special glass options also available
- 4 panes of glass as standard for a contemporary look, with the option of 6 panes for a more traditional aesthetic or where site access is limited
- Aluminium frame powder coated internally and externally in combinations of RAL 7016 grey, RAL 9010 white and RAL 9005 black
- Designed for simple mounting direct to a weathered builder's upstand

## Composition

The double glazed glass panel is made up of: 4mm toughened outer, a 90% argon filled cavity, with either a 4mm toughened inner or optional 6.8mm laminated inner (including PVB interlayer). All double glazed units include a soft coat Low E coating.

The frame incorporates aluminium extrusions and castings, un-plasticised rigid PVC extrusions, ABS and rubber mouldings, and stainless steel fasteners.

All aluminium is powder coated internally and externally in combinations of RAL 7016 grey, RAL 9010 white and RAL 9005 black to provide a premium appearance and highly appealing finish.

The Glass, Aluminium, PVC, ABS, EPDM rubber and stainless steel which comprise the product can be recycled at the end of useful product life.

## Durability

Brett Martin Roof Lantern units are expected to remain fit for purpose in normal conditions for a period of 20 years (with a warranty available providing a 10 year guarantee) i.e. they will not become perforated, lose significant structural integrity, or distort to the extent of losing weather-tightness. The available warranty also guarantees insulated glass used in the construction of the rooflight for 5 years.

## Safety Requirements and CDM

These rooflights should be considered FRAGILE. It is the customer's responsibility to ensure a risk assessment has been carried out to define the measures required to prevent significant risk of falling through the rooflight, in compliance with the CDM regulations. For further information please see Rooflight Association NTD14.

Available with double glazing incorporating an inner pane that is either 1) annealed laminated or 2) toughened.



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# Roof Lantern      Roof Lantern Pyramid

## TB432

Brett Martin Roof Lantern  
Datasheet

### Safety Requirements and CDM continued

#### Annealed laminated inner pane

An annealed laminated inner pane prevents falling glass in the event of accidental breakage, for the safety of those below the rooflight. In some circumstances, annealed, laminated glass can be subject to thermal stress fracture in the event of uneven heat build-up directly under the glass. Installation of blinds, or any other alterations made to the lightwell below the rooflight, must be done so with consideration to the risk of thermal stress fracture. In the case of blinds, the risk of thermal stress fracture can never be fully removed, but it can be reduced by choosing light coloured blinds and positioning them as far away from the glass as possible. More detailed guidance can be obtained upon request.

#### Toughened inner pane

British Standards set out the circumstances and locations when a toughened inner pane can be used, subject to satisfactory risk assessment. The Rooflight Association recommends that the inner pane should always be laminated glass, unless a stringent risk assessment has been undertaken which shows that use of a toughened glass inner pane does not give any additional risk to those below rooflights. For further information please see Rooflight Association NTD14. By choosing a rooflight with a toughened inner pane, customers acknowledge and accept responsibility for the associated risks, including the need to carry out a satisfactory risk assessment, and are responsible for ensuring a rooflight with toughened inner pane is appropriate for the intended application, which is beyond the control of the rooflight manufacturer.

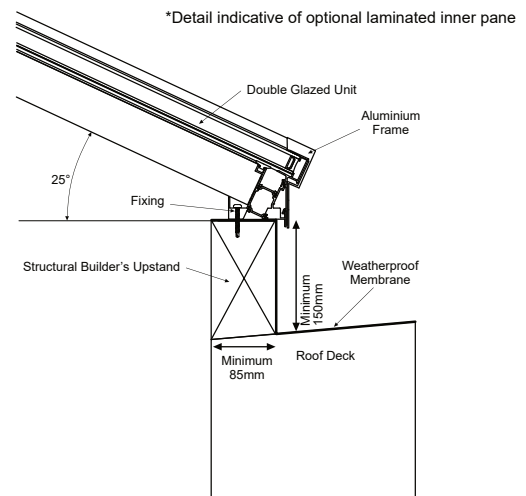
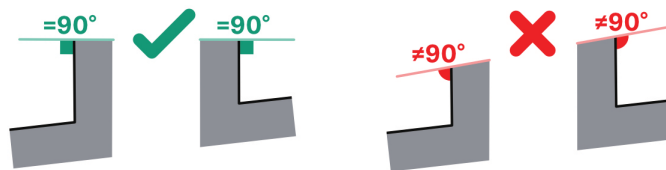
### Fire Performance

Glass is designated Class A to EN13501-1, as it is included in the list of CWFT (classified without further test) materials published in the Official Journal of the EU (see European Commission Decision 96/603/EC).

These rooflights are glazed with a 4mm toughened outer pane and can therefore be regarded as having a B<sub>ROOF</sub>(t4) classification as per English building regulations.

### Roof Applications

Brett Martin Roof Lantern rooflights are intended for installation onto a fully weathered and insulated builders upstand on flat and low pitch roofs. The surface of flat roofs normally require some degree of pitch to ensure adequate water runoff. For aesthetic reasons we recommend that the upstand is built with 0° pitch i.e. not parallel with the pitched roof surface. The rooflight can accommodate being installed on an upstand with a pitch of up to 5° but please note that this will likely result in a 'lopsided' appearance.



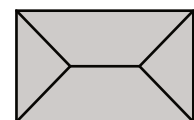
### Sizes and Configurations

Roof Lantern	Roof Lantern Pyramid
1500 x 1000mm	1000 x 1000mm
2000 x 1000mm	1500 x 1500mm
2000 x 1500mm	2000 x 2000mm
2500 x 1000mm	2500 x 2500mm
2500 x 1500mm	
2500 x 2000mm	
3000 x 1000mm	
3000 x 1500mm	
3000 x 2000mm	

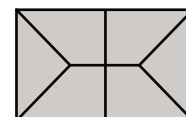
Standard stock units are supplied with 4 panes of glass as standard for a contemporary appearance.

An optional central rafter on the long side of the rooflight splits the larger glass pane in two, giving the rooflight a more traditional look. This option is also useful where site access is limited.

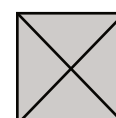
Bespoke sizes also available



4 pane option



6 pane option



4 pane pyramid



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## Roof Lantern

Roof Lantern  
Pyramid

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Brett Martin Roof Lantern  
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## Glazing Options and Performance

Available with clear/clear neutral self-clean or blue solar-control self-clean glass as standard. Other glazing options are available on request. If non-standard glass is used, glazing performance may differ from the table shown.

	Toughened Inner Pane		Laminated Inner Pane	
	Clear	Blue	Clear Neutral	Blue
Light Transmission (%)	77%	32%	44%	32%
Reflectance In / Out	16% / 16%	16% / 23%	21% / 25%	16% / 23%
G-Value	0.69	0.28	0.42	0.28
Shading Coefficient	0.79	0.33	0.48	0.32
Acoustic Performance (Rw) - Direct airborne sound insulation	33dB	33dB	37dB	37dB

## Thermal Performance (England, Scotland and Wales)

There is currently no method set out for assessing the thermal performance of lantern rooflights, so the method shown in Rooflight Association (formerly NARM) NTD2 has been adopted as the most appropriate. The thermal transmittance values (assessed horizontally) are shown in the table.

Thermal Performance (England, Scotland and Wales)			
Width (mm)	Length (mm)	Surface:area ratio	U <sub>a</sub> value (W/m <sup>2</sup> K)
1000	1000	2.49	1.88
1000	1500	1.93	2.03
1000	2000	1.82	2.00
1000	2500	1.76	1.97
1000	3000	1.72	1.96
1500	1500	1.95	1.84
1500	2000	1.63	1.96
1500	2500	1.57	1.93
1500	3000	1.54	1.91
2000	2000	1.72	1.81
2000	2500	1.49	1.91
2000	3000	1.45	1.89
2500	2500	1.60	1.80

\*The overall thermal performance of rooflights is still referred to as a U<sub>a</sub>-value in the building regulations, rather than U<sub>f</sub>/U<sub>g</sub> value as per the calculation method. Values stated are therefore equivalent to a U<sub>a</sub>-value assessed horizontally.

Thermal Performance  
(Republic of Ireland, Northern Ireland)

Width (mm)	Length (mm)	U <sub>a</sub> value (W/m <sup>2</sup> K)
1000	1000	1.62
1000	1500	1.72
1000	2000	1.67
1000	2500	1.64
1000	3000	1.61
1500	1500	1.51
1500	2000	1.59
1500	2500	1.55
1500	3000	1.53
2000	2000	1.44
2000	2500	1.51
2000	3000	1.49
2500	2500	1.40

## Thermal Performance (Republic of Ireland and Northern Ireland)

The thermal performance of Roof Lantern is assessed in the vertical plane and depending on configuration achieves a U<sub>a</sub> value as declared in the table shown. (The glazing used in Roof Lantern Glass achieves a centre pane U value of 1.2W/m<sup>2</sup>K).

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Wind and Snow Loads

Brett Martin Roof Lantern has been tested to show that, when correctly fitted in accordance with our instructions, will resist wind loads calculated in accordance with BS EN 1991-1-4: 2005, and imposed loads in accordance with BS EN 1873: 2005.

All sizes of Brett Martin Roof Lantern can resist a snow load of 1200N/m<sup>2</sup>.

Resistance to Wind Loads (upwards) N/m <sup>2</sup>									
Width (mm)	Length (mm)								
	1000	1250	1500	1750	2000	2250	2500	2750	3000
1000	2400	2400	2400	2400	2400	2400	2400	2400	2400
1250	-	2400	2400	2400	2400	2400	2400	2400	2400
1500	-	-	2400	2400	2400	2400	2400	2400	2400
1750	-	-	-	2400	2400	2400	2400	2400	2400
2000	-	-	-	-	2400	2400	2400	2400	2400
2250	-	-	-	-	-	1200	1200	-	-
2500	-	-	-	-	-	-	1200	-	-

Product Height & Weight

Product Overall Height & Weight						
Width (mm)	Length (mm)	Height (mm)	Laminated Inner Pane		Toughened Inner Pane	
			4 pane weight (kg)	6 pane weight (kg)	4 pane weight (kg)	6 pane weight (kg)
1000	1000	355	50	-	43	-
1000	1500	347	71	73	60	63
1000	2000	347	89	92	75	78
1000	2500	347	107	110	90	93
1000	3000	347	126	128	105	108
1500	1500	471	94	-	79	-
1500	2000	463	122	126	102	106
1500	2500	463	148	152	123	127
1500	3000	463	173	177	143	147
2000	2000	588	153	-	126	-
2000	2500	580	189	193	155	160
2000	3000	580	221	226	181	186
2500	2500	685	226	-	184	-

Bespoke sizes available on request.

Installation, Handling, Maintenance & Storage

Full installation details, maintenance and product care details are available on request.



# TB447

## Roof Lantern Glass Acceptance Criteria

### Toughened and Laminated Double-Glazed Units

Roof Lantern is glazed using a toughened outer pane with the option of either a toughened or laminated inner pane. The following is a guide to the quality that can be expected from the glazing panels.



Toughened glass is a very resilient product which has excellent safety advantages. When broken it will break into very small pieces known as "fragments". These fragments mean that the risk of severe injury is reduced. However, when used as the inner pane of a rooflight there is a risk of glass falling inwards. Toughened glass can spontaneously break if the edge of glass is caught due to movement in the framework or extreme weather. Whilst these failures are rare occurrences, there is still a risk.

Laminated glass prevents broken glass and small falling objects (for example roof tiles) falling inwards and potentially injuring anyone below. It is formed from two panes of (normally annealed) glass with a PVB interlayer separating the two panes. Designed for security, when used as an internally glazed pane overhead it becomes a safety product.

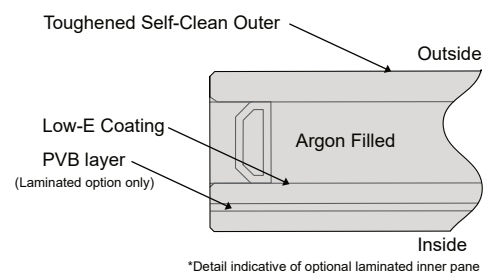
British Standards set out the circumstances and locations when a toughened inner pane can be used, subject to satisfactory risk assessment. The Rooflight Association recommends that the inner pane should always be laminated glass, unless a stringent risk assessment has been undertaken which shows that use of a toughened glass inner pane does not give any additional risk to those below rooflights. For further information please see Rooflight Association NTD14. By choosing a rooflight with a toughened inner pane, customers acknowledge and accept responsibility for the associated risks, including the need to carry out a satisfactory risk assessment, and are responsible for ensuring a rooflight with toughened inner pane is appropriate for the intended application, which is beyond the control of the rooflight manufacturer.

### Laminated and Toughened Glass Inspection

It must be understood that the glass used in double glazing is a processed glass, and therefore blemishes and imperfections are to be expected.

Toughened Glass may show slight visual distortions such as bow distortion and slight unevenness (known as roller wave) which is caused by the heating process used to toughen the glass. These features may be accentuated by reflections in sealed units. This is a natural phenomenon and not a fault with the glass.

Laminated Glass occasionally has blemishes between the panes due to the vacuum process used to sandwich two layers of glass with the PVB interlayer.



This product has a Low-E coating typically on the internal pane. Low-E glass types can produce transient visual effects such as haze or transparent film effect in certain lights - this is not a fault with the product.

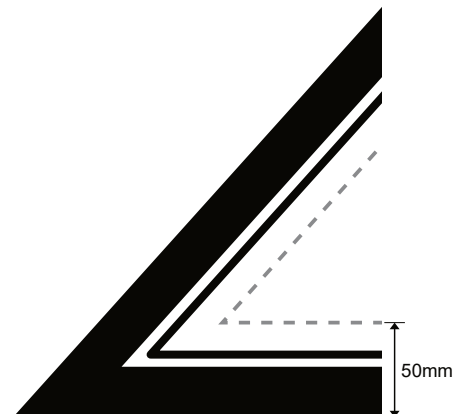
### How to conduct a visual inspection to accepted Industry & GGF standards

The visual quality of a window is assessed by looking through it from the room side, at right angles to the glass, standing at a fixed distance of 3m (or as close to 3m as practicably possible when glazed).

Inspections should be made under natural daylight and not direct sunlight, with no visible moisture on the surfaces of the glass. Magnifying devices and strong light sources such as torches are not permitted. The time limit for observation is 1 minute per m<sup>2</sup> of glass and occurs from the static 3m distance only.

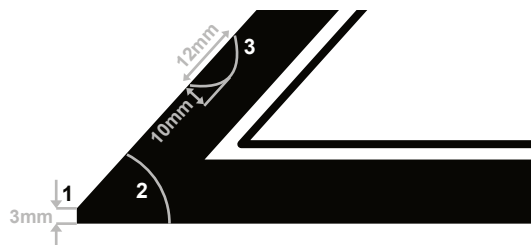
Provided your vision through the glass is not impeded under these conditions, for example, by scratches, bubbles, or distortion of external objects, your windows are of good visual quality.

The glass is encased by framework. A 50mm wide band around the edge of the glass is excluded from this inspection criteria.



**TB447****Roof Lantern Glass Acceptance Criteria**

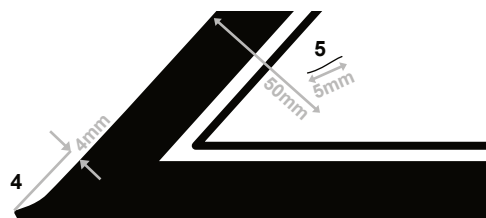
Below are some commonly seen manufacturing features and tolerances of processed laminate glass;

**ACCEPTABLE**

**1** - Laminate shapes are cut from a rectangular blank. The angle sides are hand cut via laser measure and camera. Tolerances allow for flat sections up to 3mm.

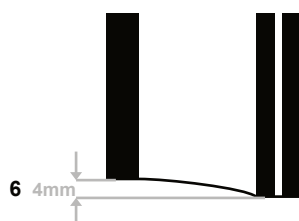
**2** - Small corner splits across corners within 10mm from edge of glass in bottom corners. Lower section of laminate remains intact with no breakages. The suppliers test all cracks to ensure they do not propagate. This does not affect the warranty of the glazing unit.

**3** - Small shells will occur during the manufacture of laminate glass DGU's. This is acceptable up to a size of 12mm long x 10mm wide x 3mm deep. Quantities of one shell per linear metre is acceptable.

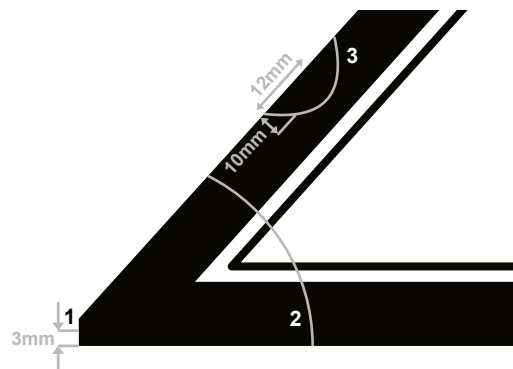


**4** - When glass cuts are removed there may be radius or feathered edge remaining. These are acceptable up to sizes of 4mm.

**5** - Small scratches can occur during manufacture. This is acceptable to industry standards at length under 5mm and within 50mm of the glass edge.



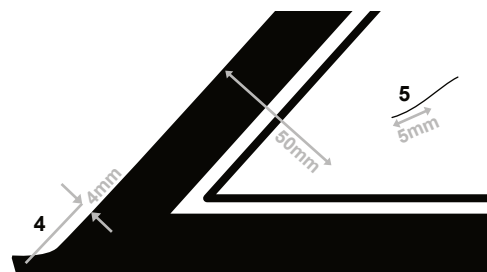
**6** - Due to the different manufacture methods between toughened and laminate glass, small size differences are expected between panes. Steps between the top and bottom pane of glass are acceptable up to a tolerance of 4mm.

**UNACCEPTABLE**

**1** - Shaping that exceeds 3mm flat sections on the angled corners.

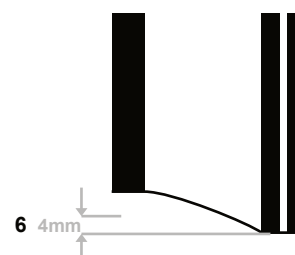
**2** - Large crack across corner. Any crack across visible sight line of rooflight. Any crack on the second pane of the laminate.

**3** - Glass shells larger than 12mm long x 10mm wide x 3mm deep. Quantities of more than one shell per linear metre.



**4** - Feathered edge sizes over 4mm.

**5** - Scratches over 5mm in length and over 50mm from glass edge.



**6** - Steps between the top and bottom pane of glass of more than 4mm.

©TECHNICAL SUPPORT: For any technical information/queries please contact your supplier.

The manufacturer operates a policy of continuous product improvement, and reserves the right to alter specifications at any time without notice. Every effort has been taken to ensure all details contained in this document are correct at the time of going to press but this document should be used only as a guide and does not in any way form part of a contract or warranty. It is the customer's responsibility to ensure that the product is suitable for the actual conditions of use, which are beyond the control of the manufacturer.

# TB451

## Glass Rooflight Inner Panes

### Introduction

Some Brett Martin glass rooflights are offered with either a toughened inner pane, or an optional annealed laminated inner pane as recommended by the Rooflight Association. This document provides a summary of the differences and considerations that should be made when choosing between these options.

### Safety risk and responsibilities

British Standards set out the circumstances and locations when a toughened inner pane can be used, subject to satisfactory risk assessment. The Rooflight Association recommends that the inner pane should always be laminated glass, unless a stringent risk assessment has been undertaken which shows that use of a toughened glass inner pane does not give any additional risk to those below rooflights. For further information please see Rooflight Association NTD14.

By choosing a rooflight with a toughened inner pane, customers acknowledge and accept responsibility for the associated risks, including the need to carry out a satisfactory risk assessment, and are responsible for ensuring a rooflight with toughened inner pane is appropriate for the intended application, which is beyond the control of the rooflight manufacturer.

#### Annealed laminated glass inner pane

- Formed from two piles of annealed glass (the initial product produced in glass making) which are bonded together by an interlayer which is most commonly polyvinyl butyral (PVB).
- When broken, it produces large shards of glass which are held by the interlayer, preventing injury to those immediately below the rooflight.
- Required for any rooflights classified as non-fragile, however a laminated inner pane does not automatically mean the rooflight is non-fragile as this must be proven via test.
- Blocks up to 99% of UV rays, helping to protect internal finishes from fading.
- Higher level of noise reduction than toughened glass, helping to reduce the effect of intrusive external noise.
- Less resistant to impact damage than toughened glass, so can be more easily damaged during transportation, installation, and from projectiles post installation.
- In some circumstances, annealed, laminated glass can be subject to thermal stress fracture in the event of uneven heat build-up directly under the glass. Installation of blinds, or any other alterations made to the lightwell below the rooflight, must be done so with consideration to the risk of thermal stress fracture. In the case of blinds, the risk of thermal stress fracture can never be fully removed, but it can be reduced by choosing light coloured blinds and positioning them as far away from the glass as possible.

#### Toughened glass inner pane

- Formed from a single ply of annealed glass that has been 'toughened' to increase its strength via a controlled heating and cooling process.
- When broken, it forms small, slightly rounded pieces of glass known as 'dice' which are free to fall, but which are less likely to cause injury; hence its classification as a 'safety glass'. However, on rare occasions, these dice can clump together and fall as larger sections of glass.
- Rooflights incorporating a toughened inner pane should be considered fragile.
- Typically blocks 60-70% of UV rays, so provides less protection to internal finishes from fading than laminated glass.
- Lower level of noise reduction than laminated glass.
- More resistant to impact damage than annealed glass hence why it is typically used for the outer pane of rooflights to protect from hail and other projectiles.
- Due to the presence of nickel sulphide (NiS) inclusions, toughened glass can on rare occasions spontaneously shatter. This risk can be greatly reduced by specifying heat-soaked toughened glass (available on request). Other types of inclusion can also occur in toughened glass and although they do not cause toughened glass to spontaneously shatter, they can weaken the glass increasing the risk of it shattering when subjected to higher stresses.



# TB451

## Glass Rooflight Inner Panes

### Summary

Characteristic	Annealed laminated inner pane	Toughened inner pane
Overhead Safety	<b>Better</b>	Worse
Resistance to spontaneous breakage from inclusions	<b>Better</b>	Worse
UV Protection	<b>Better</b>	Worse
Noise reduction	<b>Better</b>	Worse
Resistance to impact	Worse	<b>Better</b>
Resistance to breakage from thermal stress	Worse	<b>Better</b>

### Other options

Brett Martin is usually able to provide the other inner pane glass specifications below – price and lead time on request. Please note, choosing any of the options below will negate any non-fragile performance.

#### Laminated inner pane options

- **Heat strengthened annealed laminated** – reduces the risk of thermal stress fracture
- **Toughened laminated** - reduces the risk of thermal stress fracture and improves impact resistance
- **Heat soak toughened laminated** – same as toughened laminated, but with reduced risk of spontaneous breakage from nickel sulphide (NiS) inclusions

#### Toughened inner pane options

- **Heat soak toughened** – reduced risk of spontaneous breakage from nickel sulphide (NiS) inclusions