Industry Best Practice Guide to

The Glazing of IGUs

WG 46211.30-2026

Prepared: 29 July 2026
Version: 03

Table of Contents

1. Introduction

IGUMA (Insulated Glass Unit Manufacturers Association) is a group of Glass Processors who sit under the Window & Glass Association umbrella. As IGUMA members, each have agreed to an independently verified testing regime based on the EN 1279:2018 Standard.

Insulating Glass Units (IGUs) has effectively been a requirement of the NZ Building Code for more than a decade now. They are primarily used for their improved energy efficiency, but also for the other benefits that can be achieved through the assembly of two or more panes of glass. With the 2022 changes to Clause H1 of the Building Code and the requirement for higher performance, IGUs are an even more vital component of the building envelope. The correct glazing of them is equally vital to providing the anticipated service throughout their expected life.

It is well documented that most IGU failures occur as a result of incorrect glazing methods. NZS 4223.2:2016, AS/NZS 4666:2012 and NZBC Clause B2/AS1 provide principles to ensure the longevity of these units, in service. This Guide sets out requirements and guidelines for some of those principles.

IGUMA members offer a minimum 10-year warranty on their IGUs. However, it is important to understand the warranty conditions provided for your IGU's, as specific clauses within the warranty may vary between suppliers.

1.1. Disclaimer

The information contained in this IBP has been prepared by the Window and Glass Technical Committees of the Association and sourced from within its membership. The Window & Glass Association NZ makes no warranties or representations of any kind (express or implied) regarding the accuracy, adequacy, currency or completeness of the information.

Compliance with this IBP does not guarantee protection from infringement of any regulatory requirements, the New Zealand Building Code or relevant Standards. The final responsibility for the correct design and specification rests with the designers, suppliers, and/or installers of the glazing.

1.2. Scope

This Industry Best Practice provides requirements, information and guidance, to designers, suppliers, and/or glaziers of IGU's, in New Zealand.

The scope of this document refers to the glazing of IGU's and has been written based on agreed best trade practices used by the Associations members over many years.

The environment and wind categories vary throughout New Zealand and must be taken into account when establishing the requirements for each and every project to ensure compliance with the relevant clauses of the New Zealand Building Code.

1.3. Standards and Related Documents

The following Standards and Related Documents apply to the Glazing of IGU's.

NZBC Clause B1	Structure
NZBC Clause B2	Durability
NZBC Clause F2	Hazardous Building Materials
NZBC Clause F4	Safety from Falling
NZS 4223.1:2008	Glazing in buildings – Glass selection and glazing
NZS 4223.2:2016	Glazing in buildings – Insulating glass units
NZS 4223.3:2016	Glazing in buildings – Human impact safety requirements
NZS 4223.4:2008	Glazing in buildings – Wind, dead, snow, and live actions
Window & Glass Association	Industry Standard for Glazing Blocks - WG45102.14:2023
MBIE	Guide to tolerances, building materials and workmanship.

Whilst this IBP might make reference to the Documents, Standards, and Building Code Clauses noted above, or parts thereof, the Association does not claim the contents of this IBP constitute compliance with them.

2. Definitions

For the purposes of this guide the following definitions apply.

Annealed Glass	Float glass that has not been treated or reworked to become safety glass. If broken, it shatters into sharp, blade-like shards. Also known as plate glass.
Argon	A naturally occurring inert gas that can be sealed between two (or more) panes of glass to increase the insulating performance of the window. Argon is denser than air and acts as a greater barrier to heat loss and heat absorption in the home.
Durability	The New Zealand Building Code requires that products to be sufficiently durable, with normal maintenance, to ensure the building continues to satisfy the functional requirements of the Code throughout its specified intended life. Building products must meet minimum durability periods of 5, 15, or 50 years, depending on the product and how it is used.
Glazing Block	The term applies to blocks placed between a glass pane and the frame, to position the glass in the frame and prevent direct contact between the two. Glazing Blocks include Setting Blocks, Location Blocks and Distance Pieces.
IGU	Insulating Glass Unit – Two or more panes of glass spaced a part and factory hermetically sealed with dry air or special gas in the unit cavity. Use of two panes of glass is referred to as double glazing.
IGUMA	The Insulating Glass Unit Manufacturers Association.
Laminated Glass	A single pane of glass comprising a plastic interlayer sandwiched between two or more sheets of glass. If the glass breaks, the broken fragments adhere to the interlayer, to reduce the risk of injury.
Safety Glass	Glass designed to reduce the risk of injury if broken. Safety glass can be either toughened or laminated.
Tinted Glass	A pane of glass that has colourants added during its manufacturing process to change the basic properties of the glass. Most commonly in shades of bronze, grey, or green.
Toughened Glass	A pane of glass that is tempered through a heating and quenching process to increase its overall impact resistance. If broken, the pane is reduced to very small fragments.
Warranty	A warranty is provided by the product manufacturer / supplier / installer as a means to repair, replace, or compensate the customer if the product fails to meet the terms set out in the warranty.

3. Fundamental Principles

3.1. Life Expectancy

As with all manufactured products, IGUs have a foreseeable lifespan. If, under normal conditions, condensation or fogging occurs between the panes, the unit might be considered to have reached the end of its serviceable life.

In-service history both locally and internationally has shown a variety of IGU life expectancies, depending not only on environmental factors, but also on the design of the unit, its installation and how well it is maintained.

Regardless of the term of the warranty offered by the window / glass supplier, consumers can expect their glazing to last longer than the warranty period, but should not expect it will last indefinitely, even when well maintained.

Table 1: Durability Requirements of Nominated Building Elements (cont'd)

Building Element	Component	Situation/Function	Not less than 50 years	Not less than 15 years	Not less than 5 years
Windows (Continued)	Gaskets, glazing and glazing beads	Moderately difficult to access or replace		✓	

Table 1 from Clause B2/AS1 of the Building Code requires that glazing components, i.e. an IGU, have a durability of not less than 15 years.

Should there be a failure of the IGU within the 15-year period then the consumer should approach the supplier of the joinery. The supplier will in turn contact the glass supplier who will investigate the failure. If the cause of the failure is within the terms of the warranty, then the glass supplier will replace the failed IGU. If the failure occurred outside the warranty period, then the supplier may, at their discretion, choose to replace the IGU at full, partial, or no cost.

To ensure the highest probability of a long life for an IGU, it is important they are glazed correctly, in accordance with the manufacturer's guidelines and/or the content of this bulletin.

3.2. NZS 4223.2:2016 – Insulating Glass Units

As NZS 4223.2:2016 - Insulated Glass Units is the New Zealand standard that relates specifically to the design, glazing, and quality assurance of IGU's for glazing in buildings. It is specifically referred to in the NZ Building Code in Clause B1 - Structure, Section 7.2 of B1/AS1 and also in Clause B2 - Durability, Section 3.5 of B2/AS1.

3.5 Insulating Glass Units

3.5.1 NZS 4223.2 is an Acceptable Solution for meeting the durability requirements of insulating glass units, within its scope.

3.5.2 Modifications to NZS 4223.2

Delete clause 5.3.

Replace with

"5.3 Marking

Insulating glass units shall be permanently and clearly marked. As a minimum, marking shall include the following:

(a) The name or registered trademark of the manufacturer or supplier;

(b) The date of manufacture (use the year as the minimum), and

(c) Complies with NZS 4223.2:2016.

Marking shall be visible after the IGU has been installed, and must be legible and durable for the life of the unit.

Paragraph 3.5.2 of B2/AS1 modifies the standard to specifically nominate the marking requirements of an IGU.

As an important part of the Building Code the standard is available as a free download using the following link.

https://www.standards.govt.nz/search/doSearch?Search=4223.2&start=0&filterby=all

NZS 4223.2:2016, Section 4 refers to AS/NZS 4666 for information on glazing principles and methods, and IGUMA recommend these where manufacturers specific information is not available. That said, glaziers must always check and ensure they have followed the manufacturers' glazing recommendations!

4 GLAZING

Glazing shall be in accordance with AS/NZS 4666, section 3.

NOTE – Information is also provided in AS/NZS 4666 as follows:

(a) Appendix E – Principles of glazing;

(b) Appendix F – Glazing methods;

(c) Appendix G – Storage, handling, transport, and preservation.

3.3. Insulating Glass Units

An IGU consists of two or more panes of glass, separated by a spacer that are sealed to prevent moisture from entering the unit post manufacture.

To prevent condensation forming between the panes, the spacers are typically filled with, or contain, a desiccant to remove moisture trapped in the gas space between the panes during the manufacturing process.

The edge seal of an IGU is one of the most important components of its construction and is fundamental to its long-term performance and ultimately the life span of the IGU. The life of an

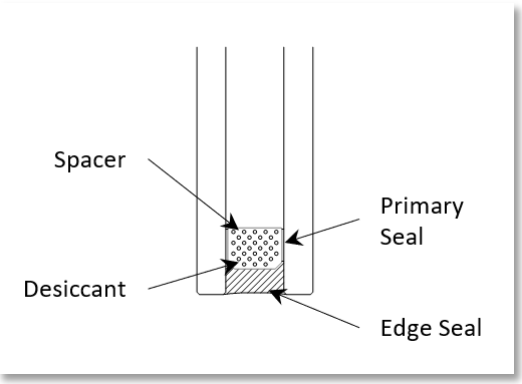

Figure 1 - IGU edge seal

IGU may be significantly reduced, and manufacturer's warranties may be invalidated if they are not glazed correctly.

There are three fundamental principles for the correct glazing of IGU's,

1) Installation of IGU's must prevent the edge seal of the unit being in prolonged contact with **moisture**.
2) The edge seal of the IGU must be protected from the adverse effects of UV **radiation**.
3) Materials used in the installation of IGU's must be **compatible** with the edge seal.

Note: *It is important that window and door suppliers specifically consider principles 1) and 2) as a part of their frame design, in order to satisfy the IGU manufacturer's warranty.*

Both the frame manufacturer and the glazier must ensure that principle 3) is considered during the glazing of the IGU. The Window & Glass Association's ***WG45102.14:2023*** *- Industry Standard for Glazing Blocks, assists with this part of the process.*

4. Moisture

The foundations of Glazing in New Zealand are generally covered under NZS4223.1:2008 - Glazing in Buildings, Glass Selection and Glazing, and referred to in Clause B1 & B2 of the NZ Building Code.

Fundamental principle 1) requires that the installation of an IGU must prevent the edge seal of the unit from being in prolonged contact with moisture. If water is trapped and/or held against the edge of the unit for an extended period it may result in failure of the adhesive bond between the sealant and the glass allowing moisture (water, water vapour, or both) to penetrate the edge seal leading to condensation on the glass surfaces within the cavity.

In most glazing systems, a small amount of moisture can penetrate into the rebate area, either through or around the glazing system, or through frame joints into the glazing system. Moisture can stem from a variety of sources, most typically from rainwater, window cleaning, or condensation.

Glazing methods for insulating glass units generally fall into two groups,

1) Drained methods, including pressure equalized systems, and
2) Non-drained or solid bedding methods.

4.1. Drained Methods - including pressure-equalised systems

The drained methods are the most commonly used, are preferred by IGUMA suppliers, and are based on the principle that some water may penetrate the glazing system, and accordingly a method of its removal is designed into the glazing system.

The importance of a functional drainage system cannot be underestimated. Window systems must provide protection to the IGU edge seal by ensuring adequate drainage of the glazing rebate/platform, so that water does not maintain prolonged contact with the edge seal.

Whilst water ingress into the glazing cavity is usually minimal, provision must be made in the design of the frame to ensure that any water entering the system is removed by drainage and ventilation. Figures 2 and 3 represent typical drainage systems.

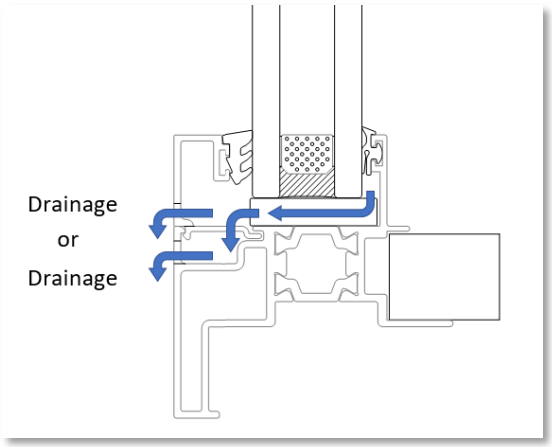

Figure 2 - Typical aluminium frame

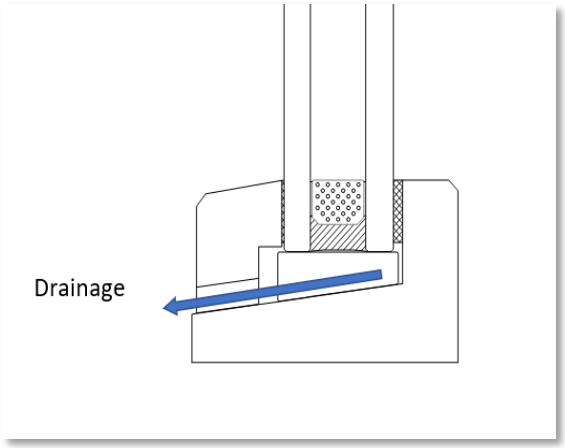

Figure 3 - Typical timber frame

Appendices E and F contained within AS/NZS 4666:2012 - Insulating glass units, includes some prescriptive drainage details, describing the quantity, location, and size of drainage holes. Whilst the principles are acceptable, they are based on traditional drainage methodologies. These appendices are included as “informative” and as such should not be treated as regulation.

The drainage of proprietary glazing systems varies between window and door suppliers.

The inference to be taken from Figure 4 (copied from AS/NZS 4666) is not that there must be three visible drainage holes, but instead it highlights the importance of ensuring the space between the setting blocks is drained. Visually, this may present itself as three separate drain holes or the glazing system may drain the space internally and appear as only two holes on the exterior of the window or door.

If you have concerns about the size, quantity, location, and/or existence of drainage holes contact the window supplier.

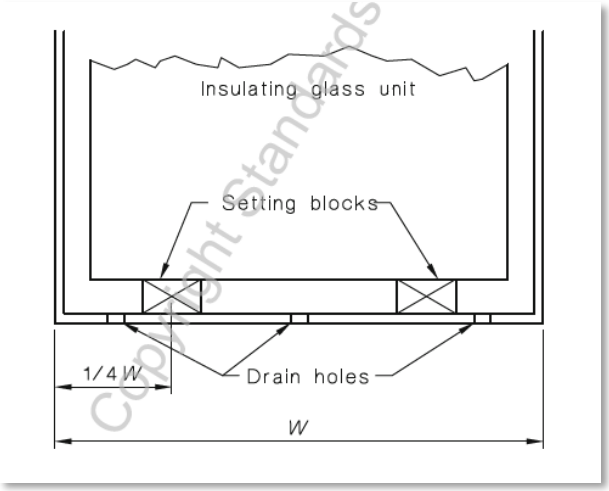

Figure 4 - Typical drainage detail

In order to ensure the ongoing function of the drainage system, window suppliers often have a maintenance program that includes the checking and clearing of drain holes throughout the life of the window system. Check with your window supplier regarding their specific system requirements. As these may form a part of the system warranty.

Even if a maintenance program is not provided with the window, it is good practice, when cleaning windows, to ensure the drain holes are clear and free of debris.

4.2. Non-drained Methods – or solid beading methods

Not Recommended

Non-drained, or solid bedding, methods protect the seal of the unit by embedding the edge in a compound or sealant to prevent ingress of moisture. It should be noted that these methods are heavily reliant on the workmanship of the application and the durability of the sealant to prevent the creation of cavities which may allow water to become trapped. Non drained systems must ensure the undersides of beads and rebates are sealed off from all moisture for the lifetime of the window, or at least the warranty period of the IGU which is a minimum of 10 years.

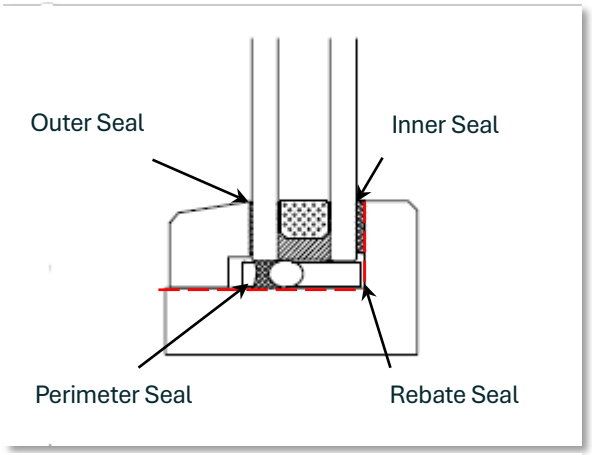

Figure 5 - Typical timber frame (sill shown)

Figure 5 represents typical non-drained method used with a timber window.

There are three points to consider when using non-drained methods.

1) To ensure good performance at all times, all external junctions of glass and frame must be effectively sealed against the penetration of water.
2) IGUs must be installed so that the entrapment of water in the frame in the proximity of the edge is prevented, by either ensuring the edge seal is completely embedded in a good quality, compatible sealant.
   It is important to check the current compatibility of all sealants to be used in contact with the IGU edge seals. Check with the IGU supplier regarding the type of edge seal being used and check with the proposed sealant supplier that it is compatible with the edge sealant.
3) For timber joinery, where in contact with glazing compounds, the glazing rebates must be well sealed with an appropriate primer/sealer, per Figure 5.

Note: *Contact your window or IGU supplier regarding warranties when non-drained methods are intended to be used.*

5. Solar Radiation

Fundamental principle 2) refers to the protection of the IGU's edge seal. Depending on the type used, the edge seal may degrade if exposed to the sun or ultra-violet light. It is important to ensure that rebates and frame systems fully cover and adequately protect the edge seal. The most common edge seal types are Polysulfide, Silicone, and Hot Melt Butyl. Polysulfide is used by most manufacturers but is vulnerable to breakdown if left exposed to UV light.

The IGU edge seal can be protected provided it sits adequately within the glazing rebate or alternatively through the use of a protective strip or edge banding.

In special applications a silicone edge seal can be used where they are exposed or unprotected, for example, structural glazing or frames with inadequate edge cover. In these cases, it is recommended that you discuss your IGU requirements with your window or IGU supplier.

Section 4 of NZS 4223.2:2016 refers to Appendix E of AS/NZS 4666:2012, which describes the **minimum** edge cover and clearances as follows,

Edge Clearance

Sill	**6**mm
Head and jamb with unit length < 2.0m	**3**mm
Head and jamb with unit length > 2.0m	**5**mm
Protrusions (e.g. screw heads, rivets)	**3**mm

Edge Cover **12**mm

Front and Back clearance (including protrusions) **2**mm

Figures 6 & 7 represent typical glazing rebate dimensions

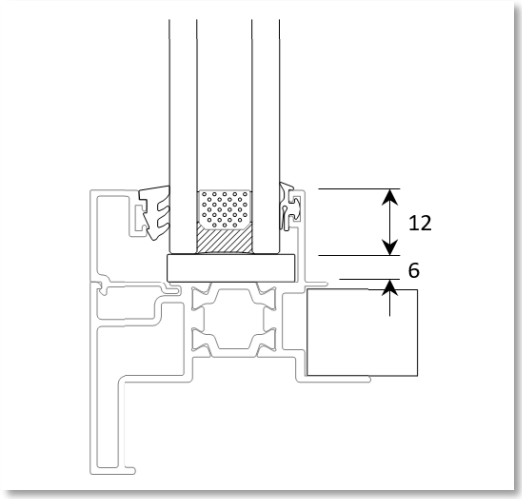

Figure 6 - Typical sill section

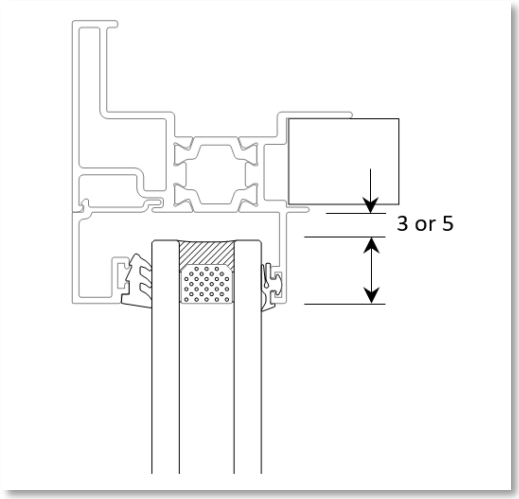

Figure 7 - Typical head /jamb section

6. Material Compatibility

Fundamental principle 3) requires the compatibility of materials and is essential to the long-term performance of any glazing installation.

Chemical reactions from physical contact, or proximity, and/or exposure to incompatible materials can occur.

Sealants and gaskets installed in glazing areas must be compatible with the fabricated product as well as with the other materials used in the glazing operation.

Check with your IGU supplier regarding compatibility.

Part A of **WG45102.14:2023** - Industry Standard for Glazing Blocks WGANZ Guide to Glazing Blocks provides guidance on the correct use of glazing blocks. Part B of the Guide discusses the material specification and compatibility of the blocks with IGU edge seals.

7. Responsibilities

To ensure the maximum possible life of an IGU, one must not only consider the body of this document, but there are a series of responsibilities that must also be addressed, as follows.

7.1. Storage

The storage of IGU's whilst they wait to be glazed is as important as the glazing itself. Again, Section 4 of NZS 4223.2:2016 refers to AS/NZS 4666:2012 on this matter, specifically Appendix G. The following is taken directly from the standard. Again, these are informative and individual business procedures may vary from these.

G1 - Transport and Storage

Units should be transported and stored so that panes of glass are equally supported on a 90o angle rack (see Figure 8).

Units should not be stacked more than six deep without intermediate support for each stack. For units of various sizes, the larger units should be stacked against the supports.

Additional consideration should be given to the clamping of an IGU when being loaded onto a vehicle for transportation purposes.

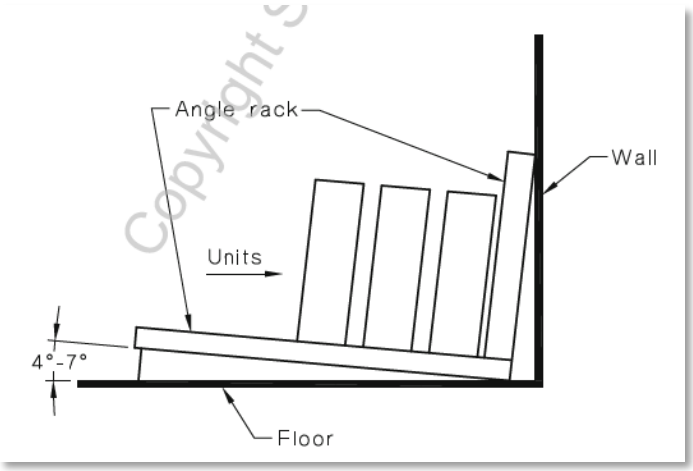

Figure 8 – Recommended transport & storage configuration

Care should be taken that both the position and pressure of the clamping devices does not apply excessive force onto unsupported areas of the IGU.

G2 - Handling and Preservation

Units should not be covered in plastic for weather protection, as this will allow condensation to accumulate, which may damage the edge seal. However, units stored outside must be protected from moisture and UV.

Units should be handled with care to prevent damage to the glass and edge seals. Extreme care should be taken when handling with suckers, as this can put undue stress on the edge seal.

G3 - Special Installation Consideration

Units intended for glazing or transportation more than 650m above sea level, or both, should be referred to the manufacture for consideration.

7.2. Manufacturers

IGUs

The IGU manufacturer has a number of responsibilities in the manufacture and supply of their IGUs.

1) Ensure all testing and QA systems are current, in compliance with Section 3.5 of NZBC Clause B2/AS1,
2) IGU's will be designed in accordance with Section 3 of NZS 4223.2:2016,
3) All IGUs shall be marked in accordance with NZBC B2/AS1,
4) IGUs are stored and transported as described in 4.1 above,
5) The IGU manufacturer shall provide their customers with a warranty for a period of at least 10 years from the date of manufacture.
6) The IGU manufacturer will ensure their customers are aware of any special warranty conditions.

Windows and Doors

It is the responsibility of the window and door manufacturer to:

1) Ensure their glazing rebate/system complies with the methods outlined above and to those being applied to the system being manufactured,
2) Their staff fully understand the requirements of, and the glazing of an IGU,
3) The IGUs are stored as described in 4.1 above,
4) Materials used in the glazing of the IGU are compatible with the IGU edge seal,
5) The warranty conditions provided by the IGU supplier are implemented.

7.3. Glaziers

Factory

Whilst glazing conditions are far easier to control in a factory environment, there are a number of considerations for the glazier.

1) Check the size of the IGU to ensure once installed it will have the correct cover and clearances,
2) Ensure the glazing blocks are suitable for the IGU in terms of depth, length, and material and that they are positioned correctly,
3) Where applicable, ensure the drainage systems are clear and that the glazing blocks will not interfere with its function,

Site

Due to size and/or weight issues many IGUs are transported to and glazed on site. The site glazier must ensure all of ***the same considerations as for factory glazing*** are applied during the glazing process, plus some additional considerations, providing a greater responsibility for the glazier.

1) Check if the IGUs have been transported more than 650m (800m?) in elevation from the place in which they were made. If so, check that the IGU manufacturer considered this during manufacture,
2) Ensure any units being stored on site are protected from dust, dirt, moisture, and UV,
3) Ensure both the glazing rebates and the IGU are clean and dry before installing the IGU,
4) Ensure conditions are suitable for any sealants being used.

7.4. Builders & Homeowners

There are responsibilities for the builder and/or homeowner during the construction phase of the building and on-going maintenance post construction.

1) Any dirt or debris must be immediately cleaned from the IGU and its glazing system, checking that drainage holes have not been blocked,
2) Cleaning and maintenance of the IGU and the glazing system it's been installed into must be in accordance with the manufacturers' recommendations.