



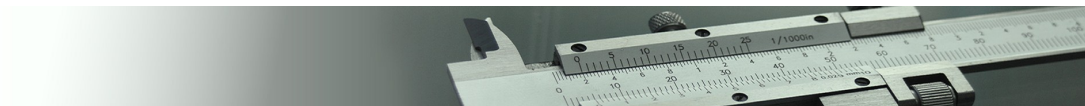
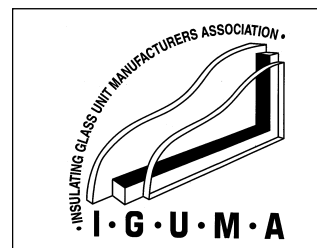
IGU BUTT JOINTING

● Introduction

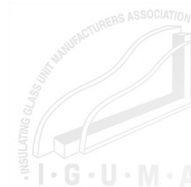
Butt jointing of IGUs is becoming more prevalent as designers seek to minimise framing size and obstructions. However, due to the nature of the IGU edge seals the true "frameless glass look" cannot be achieved, and additional design issues need to be considered to ensure unit longevity.

● Issues to consider when Butt Jointing an IGU

- The glass type and thickness for the outer and inner panes must be calculated to ensure it is fit for purpose for the application. Refer NZS 4223:Part 1 for guidance on design for wind pressure, NZS 4223:Part 3 for human impact safety, and GANZ Data Sheet for Glazing Safeguarding a Fall of 1 Metre or More.
- Most international glass standards do not deal well with two edge supported IGUs, so be careful with the methodology used.
- Excessive deflection in the glass may reduce the life of the edge seal and affect the warranty. Deflection in the centre of a unit should not exceed 1.5 times the spacer width and, at the edge, no more than $\text{span}/150$.
- The IGU seal size is normally about 12mm and, assuming a minimum 6mm joint seal, the total seal joint will be 30mm wide and visible in a conventional butt joint.
- The primary seals used in spacer bar sealants are butyl based and quite stable to UV but they can bleed in excessive temperature and/or pressure.



- The secondary sealants normally used in conventional dual seal spacer bar units, and some tape systems, must be protected from UV light.
- Edge protection is done using either a flashing/cover or a protective coating e.g. ceramic banding which effectively blocks the UV light.
- If flashings or covers are used, care is required in the fixing/sealing method to ensure they stay on and do not affect the long-term performance of the unit.
- Where edge protection is not possible, a special silicone secondary sealed IGU should be used. GANZ recommends these for all butt jointed IGUs.
- IGUs can have the glass panes stepped to provide a less obvious joint detail, but this process slows down production on automated equipment and is more expensive.
- In applications where the glass unit has been designed for an unsupported butt joint, a silicone weather seal sealant detail should be used.
- Care needs to be taken to ensure that sealants are compatible with the secondary sealant used in the IGU.
- A structural silicone sealant may be substituted for a weather seal (as silicone weather sealants are used for lower cost and ease of tooling) but not the reverse!
- For 90 degree corner joints, structural silicone should be used and the silicone bite calculated to hold the panes/unit in place.
- For angled corner joints, structural silicone should be used and the silicone bite calculated to hold the panes/unit in place, but this can be more complex.
- If the sealant joints are strong enough for corner and angle joints, the glass in the unit can be calculated as being four-edge supported.
- Refer to the IGUMA's recommended maximum sizes for IGU.



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● Example Details – Unsupported Joints

The following examples are non-supporting joints, in that they have no structural strength and are weather seals only.

Straight Butt Joint - with Flashing

A common form is a straight butt joint. Figure 1 shows a typical detail with a 23mm thick IGU and a flashing/cover.

1. Flashings must cover the spacer bar and sealant area fully from both sides. These must be adhered to the glass surface.
2. The weather seal is recommended to be 6 to 10mm in width and must be compatible with the sealants used in the IGU.
3. Normally a PEF rod or special tape is used in the joint to reduce the seal size/shape.

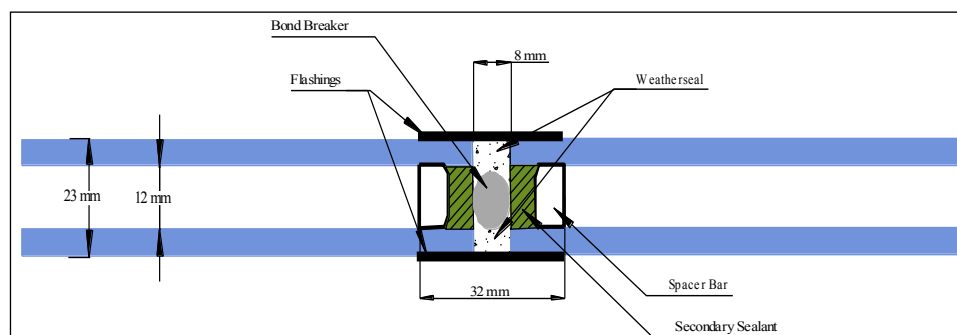


Figure 1

Straight Butt Joint - with Ceramic Band

A more complex and expensive form is a straight butt joint, like Figure 1, but with ceramic bands printed on the glass to protect the edge seals.

1. Ceramic banding should be applied to surface 2 and/or 3 of the unit.
2. The weather seal is recommended to be 6 to 10mm in width and must be compatible with the sealants used in the IGU.
3. Normally a PEF rod or a special tape is used in the joint to reduce the seal size/shape, and act as a bond breaker.

Straight Butt Joint – with Silicone IGU

A more advanced form is a straight butt joint, like Figure 1 without a flashing or ceramic band, but using a structural silicone IGU in which the silicone is stable under UV exposure.

1. The weather seal is recommended to be 6 to 10mm in width and must be silicone sealant compatible with the IGU silicone sealant.
2. Normally a PEF rod or a special tape is used in the joint to reduce the seal size/shape, and act as a bond breaker

Right Angled and other Butt Joints

Glass to glass IGU joints with included angles between 90 and 160 degrees may be considered as supported joints, and the glass strength may therefore be calculated as if that joint was fully framed. However, to do so, the structural silicone bite size must first be calculated and capable of bonding the glass in the corner. In addition, the IGU secondary seal must also be calculated to bond the outer glass.

For this type of joint a structural silicone secondary seal IGU must be used, and you should contact your IGUMA member supplier for details.

Care needs to be taken to ensure that all sealants are compatible.