Technical Note No. 62

Specification of insulating glass units

This Technical Note replaces TN12. It describes the construction of insulating glass units, their performance and the relevant standards.

This Technical Note is one of eight describing the use and performance of glass. They are:

TN61 Glass types
TN62 Specification of insulating glass units
TN63 Glass breakage
TN65 Thermal fracture of glass
TN66 Safety and fragility of glazed roofing: guidance on specification
TN67 Safety and fragility of glazed roofing: testing and assessment
TN68 Overhead glazing
TN69 Selection of glass to prevent falls from height

This Technical Note should also be read in conjunction with:

TN35 Assessing the appearance of glass
TN38 Acoustic performance of windows
TN48 U-values of windows
TN49 U-values of curtain walls

Introduction

An insulating glass unit (IGU) comprises two or more panes of glass spaced apart and sealed in a factory with dry air or gas between the glass panes. A range of gases may be used to improve thermal performance. The specification of insulating glass units is not always a straightforward matter; there are many issues in the design and manufacture of IGUs that are often overlooked or simply misunderstood. The appropriate British Standard is BS EN 1279 which is concerned with manufacturing and production control. It is not a guide to the Specifier in any meaningful way. This note lists the items that the Specifier might need to consider and possible alternatives.

Configuration

IGUs comprise the following components:

- Glass (any type may be used including wired and patterned);
- Spacer bar - maintains the space between the panes and contains desiccant to keep the air or other gas dry;
- Desiccant - absorbs any small amount of residual moisture from the air space;
- Seal(s) - prevents moisture from entering the unit cavity and holds the unit together;
- Dried air or other gas - lack of moisture vapour eliminates the risk of condensation in the cavity; dry gases are better insulators than moist ones.

Almost any combination of glass panes may be used to form an IGU.

Curved IGUs can be manufactured.
BS EN 1279 allows the manufacture of IGUs with radius greater than 1000mm without the need for further type testing. However, not all IGU manufacturers will give warranties on curved IGUs. It is not possible to give a safety classification to curved glass in accordance with BS EN 12600.

IGUs are available with cavity widths upwards of 3mm. Vacuum glazing units have narrower cavities with small glass pillars to hold the glass panes apart. For air or gas filled cavities there is an optimum cavity width depending on the construction and gas fill. Generally the optimum cavity width for thermal performance of an IGU with a single cavity lies in the range 15-20mm when assessed in accordance with BS EN 673. Other cavity widths may be required if there are multiple cavities or if the overall depth of the