Technical Note No. 12

SPECIFICATION OF HERMETICALLY-SEALED GLASS UNITS

Introduction

An insulating glass unit is two or more panes of glass spaced apart and sealed in a factory with dry air in the unit cavity. The air may then be flushed out and replaced with a range of other gases to improve thermal or acoustic performance. The specification of hermetically sealed glass units is not always a straightforward matter; there are many issues in the design and manufacture of these components that are often overlooked or simply misunderstood. The appropriate British Standard, BS 5713, fails to guide the specifier in any meaningful way. This note lists the items that the specifier might need to consider and possible alternatives.

Performance

Glass units are now used primarily to limit heat loss from a building - Approved document L of the Building Regulations, which limits glazed areas according to the thermal transmittance coefficient ('U' value) of the glazing, virtually necessitates their use.

The thermal performance varies with the width of cavity, whether the cavity is filled with air or gas and the type of glass. Table 1 shows approximate U values for a range of glazing units. Plain float glass is assumed except where indicated otherwise.

As well as reducing heat loss, double glazing:

- Reduces condensation, which can occur when warm, damp air inside a room comes into contact with a cold window pane;
- Reduces noise transmission, depending on, for example, the thickness and relative thicknesses of the panes, and cavity width.

Type of glazing	U value (W/m^2K)
Single	5.4
Double 6mm air cavity	3.2
Double 12mm air cavity	2.8
Double 16mm air cavity	2.65
Double 20mm air cavity	2.7
Double 12mm argon cavity	2.6
Double low E glass 12mm air cavity	1.9
Triple 12mm air cavities	1.85
Triple low E glass 12mm air cavities	1.15
Triple low E glass 12mm argon cavities	0.95

Table 1 U-values of different glazing units

Components

Glass units comprise the following elements:

1 Glass (any type can be used including wired and patterned);

2 Spacer bar - maintains the space between the panes and contains desiccant to keep the air or other gas dry;