

## Glass in buildings

SINGLE, DOUBLE OR EVEN TRIPLE GLAZING? A GUIDE TO THE TERMINOLOGY OF GLASS.



The majority of glass buildings are double glazed with sealed units in the roof, windows, and doors. This improves heat insulation and, to an extent, sound insulation. It also reduces condensation and downdrafts making the room more comfortable all year round.

### SINGLE, DOUBLE OR TRIPLE?

**Double-glazing** Has been gradually refined by manufacturers so that, at its best, it can out-perform the insulation of a solid brick wall. This means that secondary glazing, an extra panel fixed on the inside of windows and doors, is now rarely used.

**Triple glazing** Was commonly used until double-glazing improved to become the standard and has been restricted to situations where extra sound insulation is required, such as hospitals rather than glass buildings. However, as environmental pressure to save energy increases, triple glazing is beginning to reappear for situations requiring ultra-insulating glass.

**Single glazing** Remains the choice for cool greenhouses where the extra cost and weight of double-glazing is not usually justified and for architectural conservation where the appearance must match existing glazing. Single glazing is

thinner than double glazing, typically 4-6mm instead of 20-30mm, and has a more delicate appearance. The edges of double glazing must be masked to a width of approximately 15mm, which means the frame construction looks different as well: more 'solid' with double glazing.

### SAFETY & SECURITY GLASS

Building regulations for nearly all glazing requires safety glass. There are two types: tempered and laminated. Untreated non-safety-glass is referred to as 'annealed'.

**Tempered** The first type, tempered (also known as toughened), is made by heating the cut glass and cooling it rapidly, creating a tension within the pane that makes it springy and four or five times stronger than annealed glass. If it does break, tempered glass doesn't crack into sharp dangerous shards but falls in small, relatively safe granules.

**Laminated** If security is a priority then laminated glass is the answer. It is a sandwich of tough invisible plastic between two thin pieces of glass. It cracks more easily than tempered glass but the pane does not come apart, making burglary harder, and presents no risk of loose glass. A special extra-tough version with a stronger interlayer is available for storm or hurricane-risk areas.





### BETTER INSULATION

In the past, glass buildings devoured vast amounts of heat with steaming pipes and windows. But now, building for the future, that would be probably unaffordable and certainly unacceptable. Huge technical improvements have been made to insulation qualities of glass. Depending on the circumstance, Marston & Langer is now able to offer glazing with an insulation value as good as  $1\text{w/m}^2\text{K}$

**The gap** Double-glazing has an optimum spacing between the panes which M&L's naturally insulating hardwood frames are designed to accommodate.

**Gas-filled** The cavity between the glass in sealed units benefits by being filled with an inert gas, usually argon, which reduces the transmission of heat.

**Low-E** A barely visible treatment which prevents heat loss by reflecting radiant heat back into the building. It is produced by depositing minute metallic oxide particles in the surface of the glass.

These three features, combined in the best configuration, create a room with little or no condensation that is warm and easy to heat regardless of the climate.

### OTHER FEATURES

#### Self-cleaning glass

Is a surface treatment applied to the outer surface of roof glazing that reduces the tendency for dirt, especially organic compounds, to adhere to the surface. It is barely visible and does not wear off. Cleaning is still necessary but probably half as often, which helps - especially for a roof.

#### Solar control glass

Until recently this surface treatment caused a tint and often with an unacceptable metallic appearance. The clear version, now available from M&L, softens direct sunlight and screens UV light. It is useful in a sunny location, reduces fading of fabrics, and is safer for skin (though all double-glazing does this to extent).

#### Hurricane-resistant glass

If you live in an area with a risk of heavy storms, tougher glass maybe required. This is a version of laminated glass with an extra-tough plastic (barely visible) inter-layer. It complies with the standards applied in a number of Eastern Seaboard locations, and based on the Miami Dade County Hurricane Code.

*The technical features above, available in varying qualities, can be combined in different ways. Marston & Langer will advise on the right specifications for your project and ensure you have the best quality available.*

