Choosing Glass for Windows and Doors: the guide

When **choosing windows for your home**, it is important to consider both the qualities of the frame and the characteristics of the glass. This article suggests how to choose glass for your windows and how to recognise the different types of window glass.

How to choose glass for window frames

Window panes must provide **excellent insulation properties** to protect your home from cold, heat, wind and rain. They allow light to pass through, determining the brightness of rooms, and must also screen out sunlight and noise from outside. Considering the fact that they make up about 80% of the surface area of a window or door, they have an important value when **choosing the right window or door for your home**.

Triple glazing or double glazing for windows?

For some time now, window manufacturers have **abandoned the use of single glazing** because it does not provide adequate insulation performance.
When choosing windows, the options now fall between **double** and **triple glazing**. It is very important to understand the differences in order to make an informed decision.
The **double-glazed window** consists of **two panes of glass** positioned parallel to each other and spaced by a channel that forms a chamber typically filled with **argon**. The individual panes of glass vary in thickness between 4 and 22 millimetres.
The triple-glazing mechanism is the same, but involves three parallel layers of glass spaced by two channels.
Triple glazing is often preferred regardless, but it is not always and necessarily the best choice. It provides much **better thermal insulation** than double glazing, which is why it is preferred in areas with a particularly cold and harsh climate.
In all other cases, triple glazing can be considered an optional extra that sometimes proves to be completely superfluous. In fact, double glazing can be the ideal solution in geographic areas that are not too cold, especially if it is chosen in its low-emissivity and acoustic version (this is especially the case in large cities where noise from outside can be very loud).

The characteristics of window glass

The best glass panes to use for windows must have the following characteristics in order to ensure maximum performance.

Solar factor

The solar factor (FS or G) measures the amount of heat that passes through the window pane from outside. This measurement is of course influenced by several variables; you should rely on a professional to determine the right solar factor for your home, with the aim of creating a balanced microclimate in all seasons.

Light transmission

Light transmission (TL) is a physical quantity used to measure the amount of visible light passing through a pane of glass. This factor is also influenced by several variables, such as the type of glass or the number and thickness of the panes. It is a good idea to buy windows with glass panes that have a good TL in order to obtain very bright rooms and thus lower the consumption of artificial light.

Sound insulation

The acoustic insulation value (Rw) measures the perception of noise, evaluated in decibels, that passes from outside to inside through window. It is necessary to install windows and doors that allow the home to have a good soundproofing power In Italy we speak of at least 40 decibels. The higher the Rw value, the quieter and more comfortable the house will be.

Security Index

The ideal glass for a house’s windows must also protect against the risk of injury in the event of an accident or glass breakage. It is a good idea to ask the window fitter to fit laminated glass on the inside to increase the degree of safety offered.

Break-in resistance

The window must also make people in a flat feel safe. The burglar-resistant characteristic of glass ranges from a minimum of P1A to a maximum of P8B. The latter value is ideal for environments where extreme security is required, such as banks or police stations. In normal homes, classes around P4A or P5A are usually recommended.

Types of glazing for windows and doors

Today, you can find **a wide range of window panes** on the market with features that maximise their functionality.
The **choice of glass** for one's windows depends on one's needs and other factors related to the house, such as its orientation or the different rooms it consists of.
Here is a list of the main types of window glass.

Low-emissivity glazing

Thermal glass, low-emission glass, insulating glass are terms used to refer to a sheet of glass on which a film composed of metal oxides is placed. This film is able to counter heat loss by retaining up to 90 per cent of it, thus allowing the window glass **to increase its thermal insulation properties**. In other words, solar heat easily enters from the outside but does not escape from the inside: this also helps to keep heating costs down and increase the energy efficiency of the home.
It is important to point out that, in this as in many other cases, glass alone is not enough: excellent installation by professionals is required. The window frame also has a great influence: aluminium, the material chosen by Alumetals Engineering for its windows and doors, is a choice that guarantees excellent thermal insulation.

Selective glazing

Also called **solar control glass** or four-season glass, this is a second type of glass subjected to a treatment to improve its insulating performance. In this case, as the name suggests, the treatment allows the glass to select the sun's rays passing through it. In summer, selective glass does the excellent job of rejecting infrared and ultraviolet rays, thus preventing the house from overheating. In winter, this action tends to be less welcome, as it would be desirable to make use of all possible solar radiation.
For this reason, you should **talk to experts in the sector** and get advice on the type of thermal glass **best suited to your needs**; usually, you tend to choose low-emissivity if the sun's rays can be shielded by shutters, blinds or awnings. Selective glass, on the other hand, can be an excellent solution for windows facing south and, therefore, destined to receive intense solar radiation to avoid a sort of greenhouse effect inside the house.

Safety glass: tempered or laminated

In addition to **minimising the risk of break-ins**, when choosing glass for windows and doors it is also necessary to talk about security from other points of view. Since 2014, Italian legislation has obliged the installation of safety glass in every new home: this is glass that, in the event of breakage, is able to reduce the risk of accidents and injuries to people and pets.
In this respect, glass can be **laminated** or **tempered**; in the latter case, it is a sheet of glass that is heated to over 600°C and then cooled rapidly. In this way, a state of compression is created on the surface of the glass and a state of tension within it; this causes the glass to shatter into very small, non-cutting pieces, which are therefore absolutely not harmful.

Laminated glass, on the other hand, is so called because it is treated with a plastic film (PVB); in the event of breakage, the pieces of glass remain glued to the film and joined together, thus neutralising any risk; for windows, this is usually the safest and least impactful choice compared to tempered glass. Depending on their different characteristics, laminated glass can be anti-shatter and fall-proof, bullet-proof or even treated against burglary and vandalism; in the latter case, they are often also called armoured glass.

Noise-reducing glazing

Noise-absorbing (or soundproof) glass is **necessary** for those dwellings that are located **in very noisy contexts**, such as near train tracks, an airport or even in particularly busy urban neighbourhoods. The **sound-absorbing capacity** in this case consists of a laminated glass whose plastic film acts as a real acoustic attenuator, allowing the occupants to live, sleep and work in a peaceful and quiet environment. As with thermal insulation, the installation and frame material play an important role in counteracting noise from outside. **Aluminium is an excellent material for soundproofing homes**.

Tinted glass

This is glass treated with an obscuring film, or with special reflective filters. Their purpose is to prevent the view of the inside of the house from the outside; they are therefore useful in special conditions, such as in the case of **street-level windows**, to be able to defend oneself from prying eyes during the day and at night.

Self-cleaning glass

Self-cleaning glass is **a good choice** for those who live on the **upper floors of an apartment block** or, in any case, with windows that are very difficult to clean outside. These panes are treated with a special substance, photocatalytic titanium dioxide, which allows them to remain cleaner thanks to the action of the sun and water. In fact, first of all the sun decomposes the dirt accumulated on the surface of these panes; the rain then washes away the dirt without the drops leaving any traces or halos.

Extra-clear glass

The classic float glass used in various sectors is not completely transparent: its colour tends to light green due to the presence of iron oxide. When it comes to choosing glass for windows, it is possible to opt for glass that is free of this substance and, therefore, 100% transparent. This type of glass is called extra-clear and, in addition to having a better aesthetic appearance, it has a higher index of moisture transmission and ensures an extremely natural colour rendition.

What is the best glass for my windows?

It is always advisable to **rely on professionals** in the window and door sector, such as **Alumetals Engineering**, when choosing glass. Together with a trusted Alumetals Engineering consultant, you are able to analyse the different needs and characteristics of the individual rooms, thus selecting the best types for the different windows in your home. In general, the following factors should be considered when choosing glass for windows:

- Altitude and latitude;
- Climate zone;
- Exposure to sun and wind;
- Location of the house (isolated place, urban area, noisy neighbourhood…);
- Different room exposures (north, south, east, west);
- Different uses of rooms (bathroom, kitchen, study, etc.

Based on these factors, glazing for windows is then chosen according to their characteristics and types.

ALUMETALS COMPANY is a company that manufactures aluminium frames, a material that has **countless advantages over PVC** and wood.
Combined with the right type of glass, it provides excellent thermal and acoustic insulation, as well as adequate security. Being a ductile and very resistant material, it allows the creation of frames with very thin profiles, with the consequent possibility of increasing the glazed surface of the window for a brighter environment.

It is no coincidence that aluminium is actually the best material for making **curtain walls**.

Modernity and Brightness: Choosing Glass for Balconies

Glass is a durable and transparent material: two characteristics that also make it suitable for balconies, **especially for modern houses and flats**. In addition to balconies, the same applies to terraces, balconies, **partitions** and internal or external stair railings. Alumetals Engineering **combines glass with aluminium**, offering beautifully designed **balconies**. Aluminium is a minimal material that can be easily customised, by painting or oxidation, in an almost infinite range of colours. It provides security despite its lightweight appearance, and is **highly resistant** to weathering and the wear and tear of time.
Glass complements the characteristics of aluminium with its modern character and ability to bring **extreme brightness** to any environment. All Alumetals Engineering glass and aluminium balconies meet the strictest safety measures in the industry and are offered in numerous versions to suit every preference.

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