

Aluminium or PVC windows and doors: features and comparison

Whether for the construction or renovation of a house, the choice of **suitable windows and doors** must be taken with care because very important factors depend on it: first and foremost, the **security** and **insulation** of the house, but also **aesthetics** and **environmental impact**.

One of the first choices concerns the material: aluminium or PVC windows and doors? Here is an analysis of all the characteristics and a comparison between these two options.

Better Aluminium or PVC windows and doors?

The choice of an **aluminium or PVC window** depends very much on the budget, the style of the house and the individual customer's requirements regarding the various factors that characterize windows and doors.

Although it is not possible to give an unequivocal answer to the question 'Are Aluminium or PVC windows better?', it is possible to make a considered choice based on the characteristics of the two materials.

We have summarized the characteristics of Aluminium and PVC and made a comparison between the two materials to help those who have to make an aware choice.

Main features of Aluminium

In order to understand whether to choose Aluminium or PVC windows and doors, it is useful to start with the first of the two; a material that is a winner in any environment. It is indeed important to emphasize the **great versatility** of this material of natural origin. Aluminium is a metal characterized by a low specific weight: it is light, ductile and flexible, suitable for the construction of different types of elements. Thanks to its versatility, it can be worked and transformed as desired. Furthermore, we can say that it is practically eternal and can be **recycled indefinitely**.

Thanks to thermal break technology, aluminium windows and doors meet the strictest energy saving regulations.

Aluminium has many other advantages: it is easy to clean, requires no maintenance, and is highly resistant to sun, weather and atmospheric agents.

Main features of PVC

Polyvinyl chloride (PVC) is a **plastic material** derived from petroleum that is also used for the production of window and doors. It is quite durable and provides good thermal insulation. PVC is commonly used for window and doors, but at the expense of certain functionalities.

For example: it is not an extremely durable material, it **reduces the brightness** of rooms due to its bulk, and its synthetic quality may not meet aesthetic requirements.

Furthermore, PVC structures cannot be repaired when damaged because their profiles are welded.

With PVC, great care must be taken with the manufacturer and retailer. If you choose a poor-quality PVC, you will most likely have to live with windows and doors that are **subject to discoloring and dilatation** due to high temperatures. In other words, for a low investment it is possible to incur unpleasant situations in the long term.

When choosing to install PVC windows and doors, it is essential to ensure that you use a company that is able to guarantee certification in accordance with current regulations.

Aluminium or PVC windows: comparing the 10 main factors

Aluminium and PVC windows and doors each have different characteristics.

To further facilitate this delicate choice, a comparison of the 10 elements that usually correspond to the main customer requirements is proposed here.

- Thermal insulation
- Energy saving
- Acoustic insulation
- Aesthetic performance
- Window dimensions
- Material Durability
- Maintenance and Cleaning
- Safety & Security
- Environmental friendliness
- Cost

1. Comparing Aluminium and PVC: Thermal Insulation

When windows are to be installed/changed and the question arises as to whether aluminium or PVC is better, thermal insulation is naturally one of the first things to think about. Windows that **retain heat** and **avoid annoying condensation** on the glass are an absolute priority.

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Aluminium, thanks to thermal break windows, provides **great performance** in terms of insulation. This particular production technique consists of inserting a layer of insulating material inside the frame that neutralizes the metal's conduction capacity. This provides thermal insulation that is comparable or even better than PVC frames, while retaining all the advantages of aluminium. The cold remains outside, and consequently, the heat is kept inside. In this way, condensation on the glass does not occur.



2. Comparing Aluminium and PVC: Energy Savings

Aluminium is also fully capable of providing great thermal insulation. Based on this assumption, it can be said that Aluminium and PVC guarantee the same energy efficiency. As there is no heat loss, the energy bill for the house will be lowered.

In the long term, however, **Aluminium windows and doors perform better**, especially if its high mechanical capacity is added to the above-mentioned concepts. Being a very stable material, it does not tend to flex as low-quality PVC may do. This ensures that there are no draughts between frame and sash.

3. Comparing Aluminium and PVC: Sound Insulation

Even in terms of sound insulation there are small, but crucial differences.

Although they may have similar performance, **aluminium windows and doors** are suitable for inner-city homes. In fact, their **design and reduced thickness**, while having almost the same acoustic performance, makes them preferable. Noise from outside is only a distant memory in houses with thermal break aluminium frames.

4. Comparing Aluminium and PVC: Aesthetic Performance

Performance

When talking about windows and doors, it is right to focus first of all on their technical characteristics. At the same time, however, it should be remembered that windows and doors represent a real design and furnishing element in the home, so it is also worth considering their aesthetic performance.

With Aluminium, it is safe to say that every customer will be able to **fulfil any wish in terms of customization**. Ductile and flexible, Aluminium lends itself to being bent and cut to meet an infinite range of needs: even the most unusual window can be made of Aluminium, obtaining aesthetic shapes that are perfectly adaptable to any type of environment. Aluminium windows and doors can then be colored in any color, thanks to RAL colors of any shade or numerous wood effects, all obtained by painting or oxidation. A **winning feature** of aluminium is that it is a light and elegant metal: the slim profiles of its windows and doors are like frames for the windows, which become true pictures on the outside landscape. This aspect is even more evident in large windows: **slim and thin profiles** ensure that there is a **wonderful continuity between inside and outside**, a feature that is perfect not only in terms of aesthetics, but also in terms of bringing much more brightness to rooms. For all these reasons, aluminium windows and doors are perfect complements for homes or businesses with a minimal, modern and refined soul.

PVC windows and doors have a good aesthetic impact and adapt well to any type of environment, but do not provide the same level of modernity and minimalism. PVC windows can also exist in different colors and wood effects; the choice is more limited and, in addition, the colors are applied by means of films, making the frame less aesthetically natural and more prone to wear. Finally, PVC frames have **larger overall dimensions** than aluminium ones, resulting in less natural brightness in rooms.



5. Comparison Aluminium and PVC: window dimensions

Aluminium is ideal for any size of window, and becomes essential in the case of large windows.

For those who require **large windows and doors** of 250 cm or more in width and/or height, it is highly recommended to choose aluminium frames. This material has a high mechanical strength that allows it to support large panes of glass without any problems. This is why Aluminium is the only possible choice for large windows, casement doors or curtain walls.

PVC has a low mechanical resistance. If the choice should fall on PVC for large windows, then it should be reinforced with steel bars inside the frame, a compromise that is not advisable.

6. Comparing Aluminium and PVC: Material Durability

When it comes to aluminium and PVC windows, it is often thought that PVC is cheaper. This is only true if one considers the very short term. In reality, especially for important components such as the windows and doors of a house, one has to consider their durability and thus the durability of the material they are made of. A longer life corresponds to savings in the long run.

Over time, **PVC tends to deteriorate**. The process is accentuated if the window frame is exposed to sunlight and weather for a long time. In addition, those who want a colored PVC window frame (i.e. different from the white base) will have to apply colored films, which can lose yield and quality.

Aluminium, on the other hand, is a practically eternal and indestructible metal. Thanks to its **high resistance** to sunlight and weathering, it makes it possible to obtain **extremely high-quality** and **durable** window frames.

In practical terms, this means that Aluminium frames can last up to twice as long as PVC frames:

- Aluminium: 50-60 years.
- PVC: 25-30 years.

7. Comparing Aluminium and PVC: Maintenance and Cleaning

In contrast to wood, aluminium and PVC require virtually no maintenance and can be cleaned very quickly and conveniently with a sponge and a neutral detergent. In both cases, the use of an abrasive sponge is strongly discouraged as it could ruin the material.

8. Comparing Aluminium and PVC: Security

From a security point of view, PVC can be said to be less safe because, unlike aluminium, it can bend. In any case, the security of a window depends not only on the material, but also on other features that Alumetals Engineering incorporates in its windows.

In order to ensure **secure windows and doors**, one must rely on **burglar-resistant elements**, metal plates in front of the lock, reinforced locks and shatterproof glass. Apart from these additional pluses, aluminium is obviously a more secure material by nature than PVC, as it is more resistant.



9. Comparing Aluminium and PVC: Environmental friendliness

The demand for environmentally friendly materials and products is increasingly prominent in the market. In this case, the comparison between aluminium and PVC windows and doors are won by the former material.

Aluminium is a metal that can be recycled infinitely **without ever losing its qualities**. This is precisely what happens in the manufacturing phase. Once the life of an aluminium frame has come to an end, it is reworked to create new frames that guarantee the same performance, in a potentially infinite virtuous circle. Regarding eco-sustainability, it must be remembered that **PVC is a plastic material** that is derived from petroleum. It is recyclable, but the product obtained by recycling does not entirely retain the same qualities as the original. For this very reason, it is not a material that can be recycled indefinitely: it loses quality from time to time, to the point where it can no longer be reused.

10. Aluminium and PVC: cost

Cost is certainly an important factor when it comes to choosing Aluminium or PVC windows and doors. Beyond the budget that each customer wishes to respect, it must be said that, even in this case, giving an unequivocal answer is not possible.

Basically, it can be said that Aluminium windows and doors, due to their great qualities, are relatively more expensive than PVC windows and doors.

However, this is only a partial statement: the final costs of windows and doors have to be calculated on the basis of many variables, such as the size of the frames, the customization required, the number of insulating glass units installed and many other factors.

It is always necessary to remember that windows and doors are a 'long-term investment'. When you buy something of higher quality, this allows you to spend less over time because the duration is longer. Therefore, buying cheaper windows means potentially having to change them sooner with all that that entails in terms of costs.

Aluminium or PVC window: which one to choose?

When the question arises as to whether aluminium or PVC windows and doors are better, the final choice is influenced by individual needs.

Ultimately, this is how the comparison between aluminium and PVC thermal break windows and doors can be summarized.

	PVC	ALUMINIUM
Thermal insulation	Excellent	Excellent
Energy saving	Excellent	Excellent
Soundproofing	Excellent	Excellent
Window dimension	Small - medium	All dimensions
Material durability	25-30 years	50-60 years
Maintenance and cleaning	Minimum	Minimum
Security	Good	Excellent
Environmental friendliness	Medium-low	Excellent
Cost	Medium-low	Medium-high
Customisation	Medium	Maximum (and increased brightness)

Alumetals Engineering Aluminium windows and doors

Alumetals Engineering is proud to have chosen Aluminium as the primary material for its products. Aluminium windows and doors, in fact, represent an excellent solution to meet practically all needs: Aluminium is a material with multiple properties, has a modern design and guarantees durability and solidity.

Those who have opted for Aluminium at the end of this comparison between Aluminium or PVC windows and doors can turn to Alumetals Engineering to test the high quality of the material and to receive technical advice in terms of research, selection and installation of the most suitable windows for their needs.

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