

BONDING FAÇADE PANELS ON A HORIZONTAL PROFILE: IS IT POSSIBLE?

In modern façade engineering, architects and installers are constantly searching for new design possibilities and construction methods. One question that regularly arises is whether façade panels can also be bonded onto a horizontal support profile instead of the traditional vertical subframe.

At TWEHA®, we always recommend bonding façade panels onto vertical profiles. While bonding onto horizontal profiles is technically possible in certain situations, there are several important structural and aesthetic considerations that should not be overlooked.

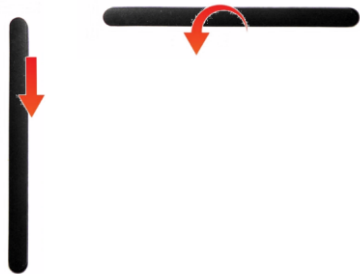
Tensile Strength Is Not the Main Concern

From the perspective of tensile strength alone, there is generally no objection to bonding façade panels with a horizontal adhesive bead onto a horizontal support profile.

The adhesive itself can create a strong connection. However, the real challenge lies elsewhere: the direction of the shear forces acting on the adhesive bead during the lifetime of the façade.

Understanding Shear Forces in Bonded Façades

In traditional bonded façade systems, panels are mounted onto a vertical subframe using vertical adhesive beads.



This means that the shear forces caused by the weight of the façade panel run parallel to the adhesive bead — along the strongest axis of the adhesive connection. In practice, the load is distributed across the full length of the adhesive bead, creating maximum stability and long-term reliability. When using a horizontal adhesive bead on a horizontal profile, the situation changes significantly.

The vertical load of the façade panel creates shear forces that act perpendicular to the adhesive bead. In other words, the force is transferred only across the width of the adhesive bead — typically just 12 mm wide — which is considered the weakest axis of the bonded connection.

Risk of Peeling Forces

Because the load acts across the narrow width of the adhesive bead, peeling forces cannot be completely excluded.

Even with a high-performance adhesive system, improper application or insufficient adhesive geometry may increase the risk of localized stress concentrations within the bonded joint.

For this reason, it is essential that:

- The adhesive bead is applied perfectly and consistently
- Correct bead dimensions are maintained
- Installation guidelines are strictly followed
- The façade system is carefully engineered and tested

Proper workmanship becomes even more critical when bonding onto horizontal profiles.

Moisture and Dirt Accumulation

Another important consideration is moisture management behind the façade.

When panels are mounted onto horizontal profiles — whether mechanically fixed or bonded — moisture and dirt can accumulate at the connection of the rear of the façade panel and the horizontal profile.

This occurs because horizontal profiles can create capillary zones where water and contamination remain trapped.

With more porous façade materials, such as fiber cement panels, this may eventually lead to visible staining or contamination on the front surface of the façade. This negatively affects the visual appearance and long-term aesthetics of the building envelope.

Using vertical adhesive beads on vertical profiles largely avoids this issue, because moisture can drain and ventilate more effectively within the cavity.

Why Vertical Subframes Remain the Preferred Solution

For decades, vertical subframes combined with vertical adhesive beads have proven to be the safest and most durable solution for bonded façade systems.

The advantages are clear:

- Optimal load transfer along the strongest axis
- Reduced risk of peeling forces
- Better drainage and ventilation
- Lower risk of façade contamination
- Proven long-term durability

That is why TWEHA® continues to recommend vertical support structures wherever possible.

The TWEHA® Recommendation

Can façade panels be bonded onto horizontal profiles?

Technically, yes.

But from both a structural and practical point of view, a vertical support structure remains the preferred and most reliable solution.

Unless there is truly no alternative, TWEHA® strongly recommends using a vertical subframe with vertical adhesive beads to ensure maximum façade performance, durability, and aesthetic quality.

With decades of experience in bonded façade technology, TWEHA® helps architects, façade engineers, and installers make the right choices for safe and sustainable façade construction