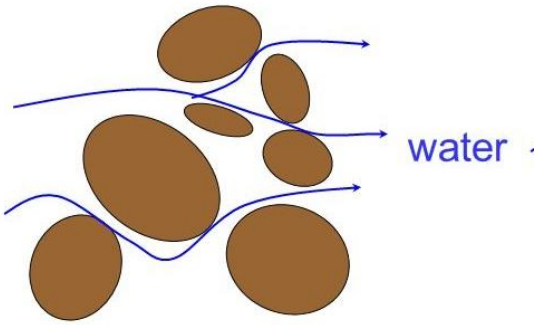
WHY DO YOU NEED A SURFACE IMPROVER ON POROUS MATERIALS SUCH AS FIBER CEMENT BOARD?

Preventing Adhesion Failure in Ventilated Façade Systems

In bonded façade constructions, achieving reliable long-term adhesion depends not only on the quality of the adhesive itself, but also on the behavior of the substrate material.
Porous façade materials such as fiber cement boards present unique challenges that require specialized surface treatment to guarantee durable and safe bonding performance.
That is why TWEHA®® recommends the use of **TWEHA® PreFix X-tra**, an advanced surface improver specifically developed to optimize adhesion on porous substrates.

Understanding Porous Materials



Porous materials contain countless microscopic pores and spaces between their internal particles or granules. These pores allow moisture and water to penetrate the material structure relatively easily.
Materials such as fiber cement boards naturally absorb moisture to varying degrees depending on:

- Material density
- Porosity level
- Environmental exposure
- Humidity and water absorption characteristics

Under normal circumstances, this moisture absorption may appear harmless. However, within bonded façade systems, it can significantly influence the long-term stability of the adhesive connection.

How Moisture Affects Bonding on Porous Substrates

Façade panels are continuously exposed to:

- Their own weight
- Wind loads
- Thermal movement
- Moisture variations

The resulting stress within the panel is partly absorbed by the internal grain structure of the material and partly by the water contained within the pores.
In porous materials, moisture creates a critical effect:

- The internal particles or granules begin to shift, slide, or even roll slightly against one another
- The pore volume between the granules increases
- More moisture can penetrate these spaces
- The process gradually repeats itself

This phenomenon can eventually lead to swelling of the material and progressive weakening of the adhesive interface.

The Formation of a Water Film

Unlike porous façade panels, the adhesive itself absorbs little or no moisture.
As moisture accumulates within the porous substrate, a thin water film can gradually develop between:

- The adhesive layer
- The porous façade panel

This water film dramatically reduces surface friction and adhesion strength.
Ultimately, the bond integrity may collapse.

A Simple Comparison: The Water Slide Effect

This phenomenon can easily be compared to a playground slide.
When you sit on a dry slide, the friction between your clothing and the slide surface prevents you from sliding easily.
However, once a thin layer of water forms between you and the slide, friction is drastically reduced — and suddenly you slide down effortlessly.
The same principle can occur between an adhesive layer and a porous façade panel when moisture penetrates the substrate surface.

Why TWEHA® PreFix X-tra Is Essential

To prevent this moisture-related adhesion failure, TWEHA®® developed **TWEHA® PreFix X-tra**.
This advanced surface improver is specifically engineered to:

- Seal the pores at the surface of the façade panel
- Reduce moisture penetration
- Stabilize the substrate surface
- Improve stress distribution across the bonded area
- Preventing formation of a water film
- Increase long-term adhesion reliability

By closing the surface pores, TWEHA® PreFix X-tra creates a more stable and controlled bonding surface for the adhesive system.

Improved Stress Distribution and Surface Friction

Surface friction plays an important role in preventing movement between bonded materials.
The coefficient of friction depends on several factors, including:

- Surface roughness
- Surface irregularities
- Pores and cavities
- Presence of moisture or water films

Without proper surface treatment, porous materials may lose internal cohesion underload and moisture exposure, allowing gradual movement within the substrate structure itself. TWEHA® PreFix X-tra significantly improves the surface condition, allowing stresses to be distributed more evenly over a larger bonded area while minimizing moisture-related risks.

Reliable Bonding for Long-Term Façade Safety

Modern ventilated façade systems demand long-term durability under challenging environmental conditions.

Using a surface improver on porous substrates such as fiber cement boards is therefore not an option — it is an essential part of creating a safe and reliable bonded façade system.

With TWEHA® PreFix X-tra, façade professionals' benefit from:

- Improved adhesion performance
- Reduced risk of bond failure
- Enhanced moisture resistance
- Increased façade durability
- Greater long-term structural reliability

TWEHA®®: Expertise in Professional Façade Bonding

At TWEHA®®, we combine advanced bonding technologies with practical façade expertise developed through years of international façade consultancy experience.

Our tested and approved bonding systems are engineered specifically for demanding façade applications where safety, durability, and long-term performance are critical.

Would you like to know more about bonding on porous substrates or the use of TWEHA® PreFix X-tra in ventilated façade systems?

Our specialists are ready to help you achieve safe, durable, and high-performance façade bonding solutions.

TWEHA®, 2026