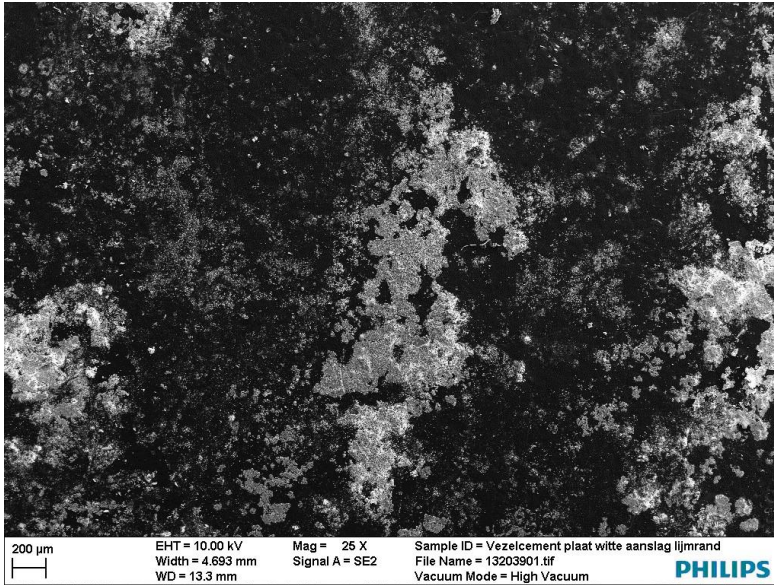


CARBONATION OF FIBER CEMENT BOARDS

What you need to know to prevent damage and ensure performance



Fiber cement panels are a durable and aesthetic choice for façade cladding. However, an important process takes place in the background that directly affects the performance of your façade: **carbonation**.

What is carbonation?

After installation, fiber cement boards continue to cure. Under the influence of carbon dioxide (CO_2), calcium hydroxide in the cement is converted into

calcium carbonate. This process is accompanied by the release of moisture and shrinkage of the board. The more exposure to CO_2 , the faster this reaction occurs.

The problem: insufficient ventilation

In a well-designed façade, the air behind the panels is continuously refreshed. However, when ventilation is restricted, a different situation arises:

- The air in the cavity contains less CO_2 than the outside air
- As a result, carbonation occurs unevenly on both sides of the panel
- This phenomenon is known as **differential carbonation**

Consequences for the façade

This imbalance has a direct impact on the shape and internal stresses of the panel:

- The exposed (front) side shrinks more than the cavity (rear) side
- The panel begins to **warp**
- Differences in humidity further amplify this effect
- Uneven drying leads to additional shrinkage on the exposed side

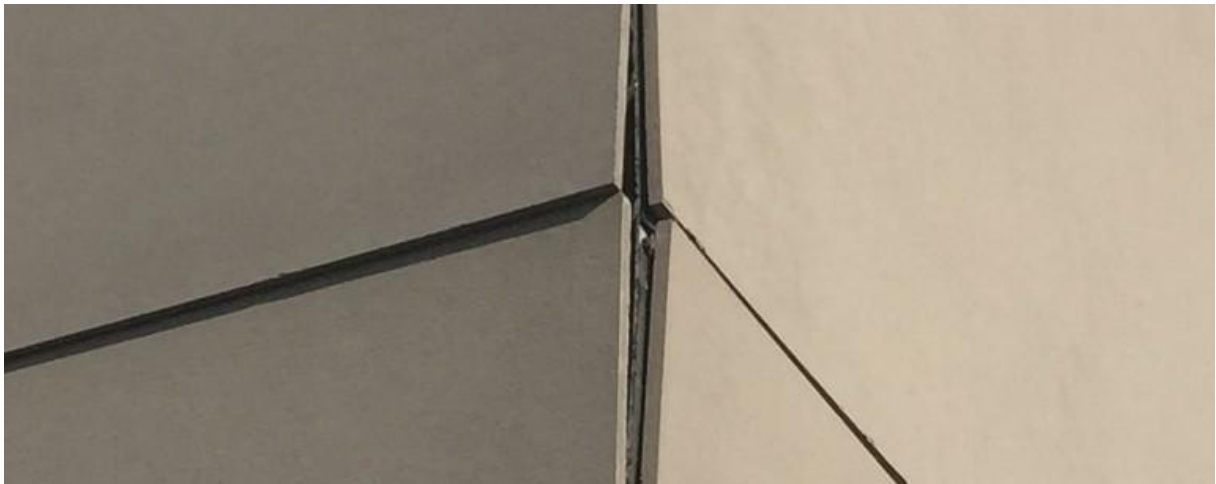
The result?

- Permanent deformation of the panels (in both height and width)
- Curling at the edges (“curling”)
- High tension (stress) on the adhesive bond

Risks for bonded systems

The resulting stresses can ultimately lead to:

- Failure of the adhesive bond
- Delamination of the bonded substrate
- Reduced service life of the façade



The solution: proper preparation and attention to detail

The good news: these risks can be managed.

- ✓ Proper cavity ventilation is essential
- ✓ Balanced climate conditions on both sides of the panel
- ✓ Professional bonding with appropriate pre-treatment

The use of a primer such as **TWEHA® Prefix X-tra** ensures reliable adhesion, even with fiber cement panels.

Important: moisture and surface condition

When panels are not fully dry, a thin layer of calcium carbonate may form on the back side of the panel.

This creates a **brittle, poorly adhesive surface**, making bonding more difficult.

Conclusion

Carbonation is a natural process, but without proper attention it can lead to serious façade issues.

The key to success?

A combination of proper ventilation, correct installation, and the right products.

This ensures you get the maximum performance from your fiber cement façade — durable, stable, and problem-free.

TWEHA®, 2026