

POSSIBLE FIRE-RISK-TAKING MOVEMENTS VIA THE FAÇADE

Fire Safety in Façade Construction: A Critical Responsibility

In modern architecture, façades are no longer merely aesthetic outer shells. They are high-performance building envelopes that must combine design freedom, thermal efficiency, durability, and above all: fire safety. As buildings continue to grow taller and more complex, the façade becomes one of the most critical elements in controlling fire spread.

At TWEHA®, fire safety is not treated as an afterthought. It is integrated into the entire façade philosophy — from engineering and detailing to installation and inspection.

How Fire Spreads Through a Façade

Fire propagation through façade systems generally occurs in three main ways:

1. Fire Spread Along the Surface of the Façade

Flames can rapidly travel across the external cladding surface. The speed of propagation depends heavily on the reaction-to-fire performance of the façade materials used.

To reduce this risk, façade systems must be designed with materials that meet strict European fire classifications and demonstrate limited combustibility.

2. Fire Spread Between Compartments

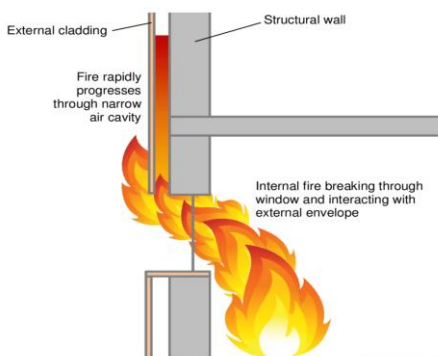
A second major risk occurs when fire moves from one compartment to another — for example between superimposed floors.

This type of spread can only be prevented through:

- Proper fire stopping
- Fire-resistant slab edge detailing
- Correct connection between floor slabs and façade systems
- Compartmentation continuity throughout the façade construction

Without these measures, even a small fire can rapidly escalate vertically through a building.

3. Fire Spread Behind the Façade (Chimney Effect)



One of the most dangerous and underestimated risks in ventilated façade systems is fire propagation inside the ventilated cavity behind the cladding.

When fire enters the cavity, hot gases rise rapidly due to pressure and temperature differences between warm and cold air. This creates a powerful chimney effect, dramatically accelerating vertical fire spread.

To minimize this danger, façade systems should:

- Use non-combustible or limited-combustible components
- Interrupt combustible insulation layers
- Integrate cavity barriers and fire stops
- Compartmentalize the ventilated air cavity

A properly engineered façade system can significantly slow down smoke and flame development, giving occupants and emergency services valuable extra time.

European Fire Safety Requirements

European fire regulations focus on two key aspects:

- The fire classification of the façade system
- The prevention of fire spread along and within the façade

Importantly, European standards assess the façade as a complete construction system — not as separate individual materials.

This means that true fire safety can only be achieved when all façade components work together as one integrated assembly.

For this reason, façade inspection and evaluation must take place during both:

- The design and engineering phase
- The execution and installation phase

Fire Performance Requirements According to EN 13501-1

The European standard EN 13501-1 defines the fire classification requirements for façade constructions.

The required fire resistance depends mainly on the building's height:

Building Height	Minimum Fire Resistance
Medium-rise buildings (10–25 m)	60 minutes
High-rise buildings (>25 m)	120 minutes
Basement applications	120 minutes

For many façade applications, the façade assembly must achieve at least Fire Class B according to EN 13501-1.

The standard also emphasizes that testing must simulate the actual end-use application as accurately as possible. Fire behavior is influenced not only by the materials themselves, but also by:

- Installation method
- Mounting system
- Ventilation cavity configuration
- Connection details
- Thermal load conditions

This is why façade fire safety cannot be judged solely on individual product certificates.

TWEHA®'s Contribution to Fire-Safe Façade Systems

Practical testing and real-world experience demonstrate that TWEHA® products can contribute positively to façade fire safety performance when correctly integrated within the façade assembly.

In many applications, the fire reaction of TWEHA® products does not need to be considered separately when:

- They are protected by building elements with adequate fire resistance
- They are shielded from fire exposure on both sides
- Their mass per surface area remains limited
- Their thickness or proportion within the total façade assembly stays within regulatory limits

This makes TWEHA® solutions particularly suitable for modern façade systems where safety, lightweight construction, and design flexibility must coexist.

Fire Safety Starts with Smart Façade Engineering

A façade is far more than a visual element. It is an active safety barrier that can either slow down or accelerate a fire.

Choosing the right façade partner therefore means choosing expertise, engineering precision, and full-system thinking.

At TWEHA®, we help architects, contractors, and façade specialists create façade systems that combine:

- Architectural freedom
- High technical performance
- Compliance with European fire regulations
- Long-term safety and reliability

Because when it comes to façades, fire safety is never optional — it is essential.

TWEHA®, 2026