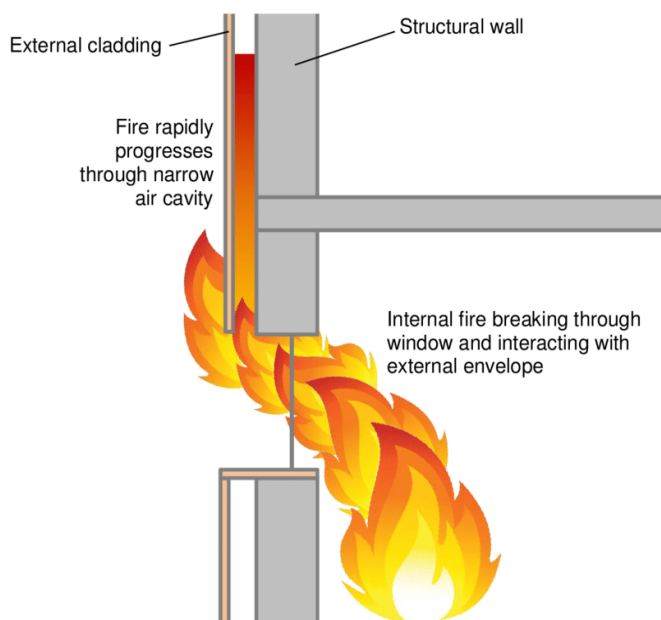


## 2. POSSIBLE FIRE-RISK-TAKING MOVEMENTS VIA THE FAÇADE

TWEHA, 2020

Fire spread through the facade mainly takes place along one of the following three ways:

- via the surface of the facade cladding. To slow down this method of spreading, certain measures must be taken that are related to the reaction to fire of the facade cladding.
- between two compartments (eg between two superimposed building layers). To counter this risk, it is necessary to ensure the fire resistance of the connection between the floor slab and the facade and of the facade element at the level of the floor slab.



- over the façade system due to the flammable parts (eg the insulation) or the ventilated air cavity behind the façade cladding (chimney effect). With regard to the ventilated façade, a fire like this causes an acceleration in the vertical air flow in the air cavity as a result of the difference in density of warm and cold air. This accelerated transport of smoke and fire must be frustrated. To avoid this type of fire spread, one can:

- use non-flammable or slightly flammable parts
- interrupt the flammable insulation layers
- interrupt the ventilated air cavity.

The fire safety requirements relate to:

- the fire class of the facade and
- fire extension paths along the facade.

The requirements of European standards apply to the whole facade construction and not to the individual materials in the facade. It is therefore necessary to consider fire safety at the construction level. Inspection and assessment of the facade should be carried out in both the preparation (d+e) as at the execution itself.

### FIRE PERFORMANCE REQUIREMENT

The minimum required fire resistance of a facade construction mainly depends on the height of the building. Broadly speaking, for the facade cladding construction for high buildings ( $h \leq 25$  m: fire resistance 120 minutes) and medium-high buildings ( $10 \text{ m} \leq h \leq 25$  m): fire resistance 60 minutes; 120 minutes for cellars) that the façade cladding must at least comply with fire reaction class B (EN-13501-1).

This fire performance requirement for the facade applies to the entire construction part and not to the individual building products of which it is composed.

In the aforementioned only currently available European Standard 13501-1, the requirement is set that the construction part must be tested in such a way that the specific application is simulated as well as possible, because the fire behavior does not only depend on the (composite) properties of the test building products themselves and the thermal load caused by the fire, but also to a large extent of that specific application ('end use application') or the manner of placing and mounting the construction part.

#### FIRE RESISTANCE

The requirement according to EN 13501-1 regarding the limitation of fire propagation over the facade components on the outside of the facade that can be reached by fire indicates that for facade parts up to 2.5 meters and > 13 meters with respect to the measurement level for new construction, it meets fire class B must comply.

A point of attention for the fire brigade and escape route is that the heated façade panels above the flames and gases from the seat of the fire, just like the glass in the window frames, can burst if they suddenly cool down due to extinguishing water.



Practice and testing shows that the fire reaction of TWEHA products does not need to be taken into account when assessing the fire reaction of the facade construction as underlying layers.

- where they are protected by a building element which has an adequate fire protection capacity or a minimum fire resistance.
- if it is shielded from fire, both inside and outside.
- when the mass per unit of area is  $1,0 \text{ kg/m}^2$ ; or if the thickness is 1,0 mm; or if it is less than 5% of the whole facade assembly.

read more:

**'LINK FIRE PREVENTION TO FAÇADE CLADDING'**

**'AVOIDING FIRE MOVEMENTS VIA THE AIR CAVITY BY USING CAVITY-CLOSERS'**

**'IMPLEMENTATION OF FAÇADE CONSTRUCTION'**