



Every second
counts

Fire safety

Every second counts



Nowadays buildings have to meet a whole range of rules and regulations on fire safety. This makes the choice of the right building materials quite a challenge at times. But it is crucial, nonetheless, that your decisions are well informed, because the safety of the building and its residents depend on this.

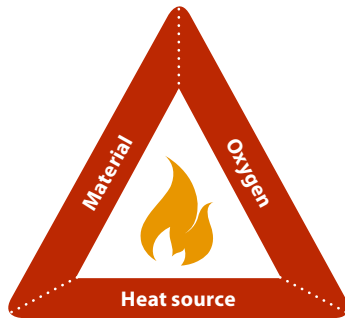
This is why UNILIN, division panels, has supplied fire safe products for more than 40 years. We test our fire

retardant wood panels in a number of countries and are proud of our thorough knowledge of local regulations and procedures.

Not only does this brochure take you through the maze of guidelines and regulations, but it guides you through our extensive range of innovative, fire retardant products.

How does a fire start?

Start and spread



Fuel, oxygen and heat source

A fire starts if three elements (the 'fire triangle') are present to a sufficient extent:

- **fuel or combustible material**
- **oxygen**
- **heat source**

We have little control over the levels of oxygen and heat. Therefore, appropriate (fire retardant) material is often the only choice available to bring about a considerable improvement in fire safety.



How does a fire spread?

The 4 stages of a fire

Stage I The incipient stage

A fire is ignited. The temperature gradually rises. At this stage the material's reaction to the fire is decisive.

Stage II The growth stage

There is a very rapid increase in the temperature and size of the fire. A flash-over may occur.

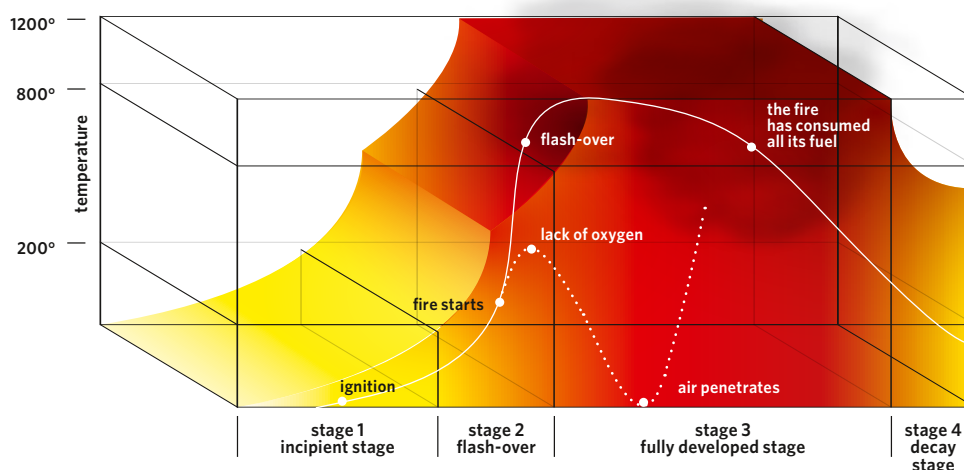
Stage III The fully developed stage

The fire rages at its hottest. Here the fire resistance of the construction element is crucial in preventing the fire from spreading to adjacent rooms or buildings and guaranteeing the building's stability.

Stage IV The decay stage

The fire loses intensity because the fuel has been consumed and the temperature drops.

The development of a fire



Safe design

Not a day goes by without a fire breaking out, and when it does, every second counts. The more slowly a fire spreads and the less smoke it gives off, the more time we have to limit the damage and evacuate the area.

This is why architects, interior decorators and government authorities opt for fire retardant materials. UNILIN, division panels, supplies a broad range of fire retardant panels.

The 'reaction to fire' of building materials: a classification guide

There are legal regulations covering a construction material's reaction to fire. These regulations are designed to win time in case of fire. Fire retardant materials save lives, because they can stop the growth and spread of a small fire. This gives anyone who is in the building more valuable time to escape when a fire starts and reduces the risk of becoming trapped or dying from asphyxiation.

Three factors are taken into account when deciding a material's minimum 'reaction to fire' requirements: the function of the building, the number of floors, and the kind of room in which the material is used. For example, the walls of an emergency staircase in a five-story hospital are subject to stricter requirements than the walls of a living room in a two-story apartment building.

European classification

The new European fire classification standard (EN 13501-1) determines reaction to fire by means of an SBI ('single burning item') or a 'room corner' test. In this test, panels of the test material are placed in the corner of a room and a fire is simulated (such as a burning waste basket). The heat release, smoke emission and formation of (molten) droplets are then tested.

Contribution to the spread of fire

The reaction to fire determines how quickly a building material begins to burn and to what extent it contributes to the further spread of the fire. Temperature and heat release are used to calculate the extent to which a building material contributes to the fire spread and to categorise the material.

Materials in category A are non-combustible and do not contribute to the spread of fire. On the other hand, materials in category F are very high risk and make an appreciable contribution to the spread of fire.

Euroclass	Contribution to flame spread	Contribution to flashover
A1	None (non-combustible)	No
A2	None (non-combustible)	No
B	Very limited	No
C	Limited	Yes
D	Elevated	Yes
E	Very elevated	Yes
F	Extremely elevated	Yes

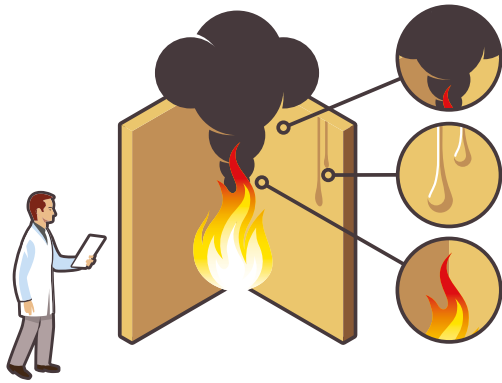
European classification system

Smoke Emission

Most of the people killed in a fire, die of asphyxiation. This is why the limitation of smoke emission is another important aspect of fire safety. Materials are therefore labelled in terms of their smoke emission as s1, s2 or s3, where s1 stands for the lowest smoke emission and s3 the highest.

Flaming droplets

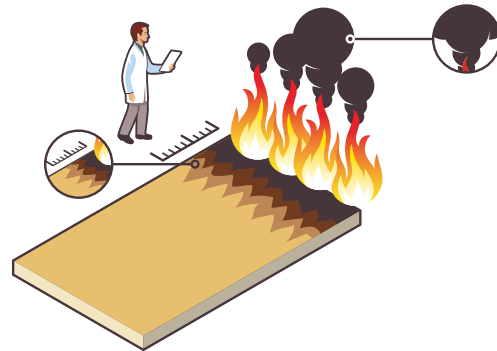
Flaming droplets can cause burns and hamper the evacuation of the building. The degree to which a material forms flaming droplets is categorised as d0, d1 or d2. Materials categorised as d0 do not form droplets, whereas materials categorised as d3 form droplets, which burn in excess of 10 seconds.



Combustibility of walls and ceilings

Floors and mezzanines

Floors are also subdivided into Euroclass ratings (EN 13501-1), based on the way they react to fire. Each floor type is attributed a letter, from A to F, followed by 'fl' in subscript and an indication of the smoke class. The way floors react to fire is tested during the 'radiant panel floor' test. This test checks to see how the flooring material reacts when a fire starts in an adjoining room. For example, the Mezzanine U7 Antislip 38 mm board from UNILIN belongs in the B_{fl}-s1 class.



Combustibility of floors

7 main classes (contribution to fire) according to the European classification:

A1 None (non-combustible)	B Very limited	D Elevated	F Extremely elevated
A2 None (non-combustible)	C Limited	E Very elevated	



2 additional aspects:

Smoke intensity

s1	Slight production of smoke
s2	Moderate production of smoke
s3	Big plumes of smoke

Burning drops/burning particles

d0	No formation of droplets
d1	Droplets burn for less than 10s
d2	Droplets burn for more than 10s

The fire resistance of the construction elements

Fire resistance refers to a construction element's ability during a fire to retain its load bearing function, flame resistance and/or thermal insulation over a given time. Fire resistance is determined by means of the so-called fire resistance test: the construction element is exposed to the levels of heat and pressure that would be expected during a fire.

Fire resistance is a property of a structural element, such as a dividing wall, door or floor, rather than of a given material. The higher the fire resistance, the better a construction element is at preventing the spread of fire to other areas.

European criteria

Today the general requirements for fire resistance tests – EN 1363 – are the same across Europe. There are three criteria:

- **R – load bearing capacity:**
the construction's load bearing stability is guaranteed in the event of a fire.
- **E – integrity:**
the construction protects against flash-over and permeation of gas on the side of the fire.
- **I – insulation:**
the construction ensures that the temperature on the non-fire side remains below a given value.

By way of illustration: a load bearing dividing wall which satisfies these criteria for 60 minutes has a fire resistance of 1 hour and is in the **REI 60** class.

The terms R, E and I can only be used in the context of a European classification drafted in accordance with the relevant European classification standard **EN13501 – Part 2**.















Fire resistance of structural elements



Walls - ClicWall EI60 - Soft White

Fire retardant products manufactured by UNILIN



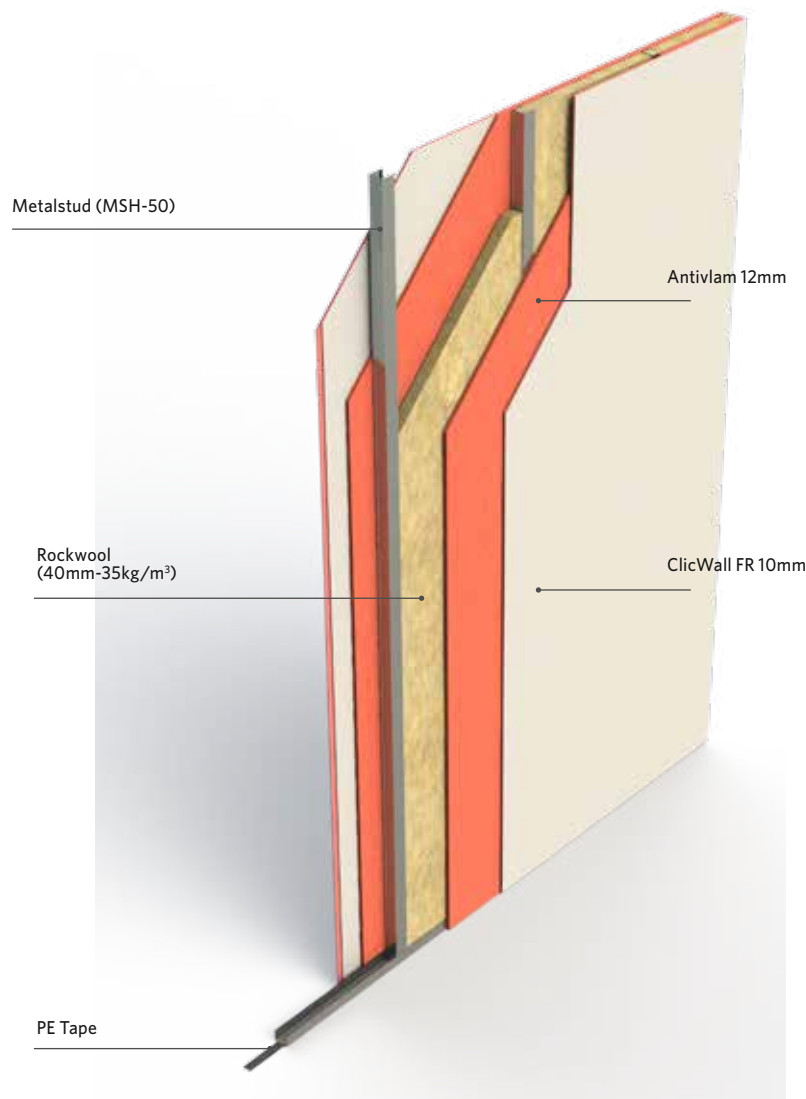
		Europe				
		Class B-s1,d0 walls and ceilings	Class B-s2,d0 walls and ceilings	Class B _{fl} -s1 floors	Class C _{fl} -s1 floors	Class D-s2,d0
Antivlam		10 - 25 mm				
Melamine faced Antivlam		10 - 25 mm				
Melamine faced MDF		12 - 19 mm				
ClicWall FR		12 mm	10 mm			
HydroFlam (TG)			10 - 12 mm			
Antivlam Wheelmark			10 - 25 mm			
Mezzanine U7 Anti slip				38 mm		
Mezzanine U7 standard (white)		12 - 30 mm	6 - 11,9 mm		38 mm	
Mezzanine U7 Deluxe					38 mm	
Systemfloor U7					38 mm	
Systemfloor U8					38 mm	
Standard chipboard						✓

Certified solutions in function of fire resistance

ClicWall: EI60

ClicWall is UNILIN's revolutionary wall-cladding system using patented Uniclic® technology. The panels swiftly and easily click into each other, making ClicWall up to 5 times faster than more traditional wall-cladding systems.

ClicWall can be used for partition walls and when the recommended wall construction is adhered to, fire resistance of 1 hour (EI60) can be guaranteed. This specific construction, with brand-retardant ClicWall panels (ClicWall FR), has European certification and meets the most common requirements for fire safety. The fire reaction of separate ClicWall FR panels has a B-s2, d0 Euroclass rating. This same construction guarantees an acoustic value of 52 dB.

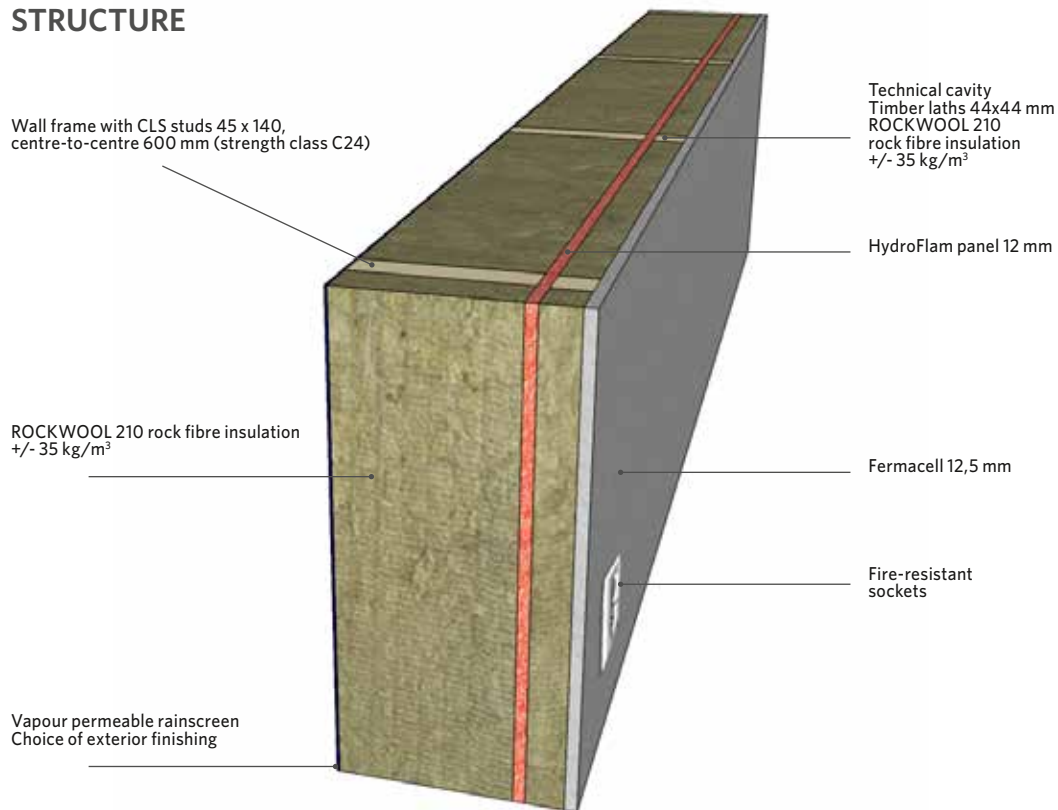


HydroFlam: load-bearing wall solution REI60

Fermacell, ROCKWOOL and UNILIN division panels together provide a solution for load-bearing walls. This wall solution has REI 60 certification.

This means that the stability (R), integrity (E) and insulating capacity (I) of the structural element can be maintained for 60 minutes. Hydroflam is one of the products in this wall structure.

STRUCTURE



BENEFITS

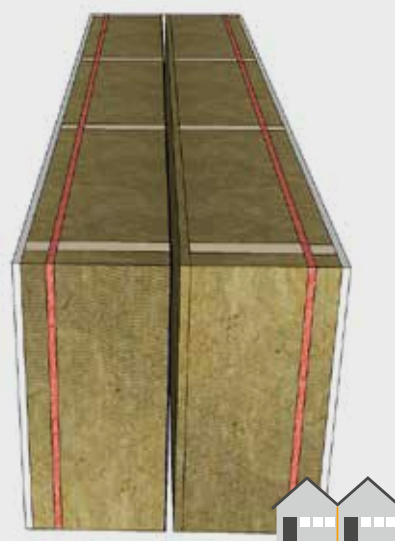
- Very light construction: wall structure 35 kg/m²
- Very compact: only 210 mm wide
- High loads possible on wall: 3 to 5 storeys or floors
- Choice of exterior finishing and cladding
- Airtight structure
- Optional integrated vapour barrier (HydroFlam VapourBlock)
- High acoustic comfort for common walls > 62 dB
- Light rock fibre insulation +/- 35 kg/m³ in frame and technical cavity
- Impact-resistant, smooth finished interior panelling
- High thermal insulation value: $U = 0.22$ to 0.24 W/m²K

POSSIBLE APPLICATIONS

Load-bearing exterior wall,
choice of finishing possible



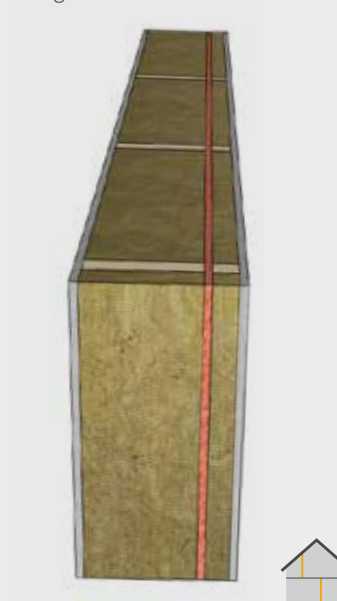
Party (common) load-bearing wall



Façade element



Load-bearing interior wall



Certificates and institutions: your quality guarantee

UNILIN, division panels is a longstanding manufacturer of fire retardant panels.

They have been subject to detailed and extensive testing by a number of international institutions:

- Certifire
- Bodycote Warringtonfire (United Kingdom)
- Instituut voor brandveiligheid – ISIB (Belgium)
- Warringtonfire Ghent (Belgium)
- Stichting Keuringsbureau Hout (the Netherlands)
- TNO (the Netherlands)
- Centre Scientifique et Technique du Bâtiment – CSTB (France)
- Laboratorio Studi E Ricerche Sul Fuoco – LSF (Italy)
- Danish Institute of Fire Technology (Denmark)
- Innenministerium Baden-Württemberg (Germany)
- Deutsches Institut für Bautechnik (Germany)
- Forschungs- und Materialprüfungsanstalt Otto-Graf-Institut (Germany)
- Eidgenössische Materialprüfungs- und Forschungsanstalt Empa (Switzerland)
- Yarsley Technical Centre (United Kingdom)
- FMPA Otto Graf-Institut (Germany)
- FR Build List Structural Timber Association – STA (United Kingdom)

The certificates can be sent to you on request.

Please contact info.panels@unilin.com for more detailed information.

Sustainable forest management

UNILIN, division panels is actively committed to sustainable forest management. Our fire products can also be supplied with PEFC™ and FSC® labels.

Stock program: speed and flexibility

To help guarantee fast delivery we keep extensive stocks of fire retardant materials in various sizes and thicknesses. Not only that, but our high capacity saws allow us to cut to all sizes within the machine parameters. Please feel free to contact our sales team or email info.panels@unilin.com if you have any questions about non-standard sizes.

Discover the stock program of UNILIN, division panels on www.unilinpanels.com.



References

You will find our panels, including our fire retardant panels, in commercial buildings and housing projects. Visit www.unilinpanels.com and discover our many glowing references.







UNILIN, division panels

UNILIN, division panels – part of the UNILIN group – has been supplying innovative wood based solutions for building and interior design projects since 1960. Our chipboard, medium density fibreboard (MDF), High-Density fibreboard (HDF), High Pressure Laminate (HPL) and melamine-faced chipboards find their way to merchants in building materials and timber, industrial processors and DIY-chains worldwide.

We develop solutions tailored to your specific needs with creativity and innovation as the key drivers of our business. We continuously invest in product design and new technologies. Hence, we're recognized as a leading international player and a reliable partner in in our niche sector.

Our 1,300 employees give their all, day after day, at our production units in Belgium and France. Altogether we produce 2.1 million m³ of panels per year.