

THE REQUIRED REACTION TO FIRE CLASS FOR WOOD  
IN PROJECT BUILDING



## WHAT DO YOU NEED TO KNOW?

When it comes to cladding, one speaks of fire rating.

The legislator determines the required fire rating which is also included in the scope statement by the architect. This depends on the nature, application and size of the building.

A fire rating can be required (D or B) or cannot be required (F), for instance when it comes to single family housing.

D-s3, d0 = for low buildings (lower than 10 m)

B-s3, d0 = for medium and bigger sized buildings (from 10 m until 25 m) or specific applications

F = no rating



## REACTION TO FIRE CLASS D

When fire rating D is required, no fire-retarding treatment is needed when below terms are met:

*Closed cladding profiles with a minimum thickness of 18mm made from wood species with a minimum mean density of 390kg/m<sup>3</sup>*

It is important that these cladding profiles are positioned at a back wall/substrate with fire rating A1 or A2 = non-flammable. This must be mentioned in the scope statement of the architect.

### Additional explanation (info WTCB)

Decision 2006/213/EG specifies the fire rating that –under certain conditions – applies for solid wood cladding without further tests (see table). We would like to point out that according to test and classification reports, cladding made from strips of cedar (WCR) with a thickness of 18 mm and a mean density of more than 390 kg/m<sup>3</sup> has fire rating D-s2, d0. The installation conditions are identical to those from the table. Wooden cladding that satisfies the conditions from the decision (see table) and cedar cladding meeting above conditions, do comply with the requirements for low buildings as their fire rating (D-s2, d0) is more favourable than the required rating (D-s3, d1).

Extract from decision 2006/213/EG

Minimum mean density	Minimum thicknesses	Installation conditions (total/minimum)	Fire rating
390 kg/m <sup>3</sup>	18/12 mm	With an open air gap at the back side (*)	D-s2, d0

(\*) The underground behind the air gap requires a fire rating from at least A2-s1, d0 and a minimum density of 10kg/m<sup>3</sup>.

Other types of timber cladding also need to meet the requirements for low buildings. In case these claddings do not comply with a decision from the European Commission, a test and classification report will be conclusive. We would like to point out that the installation conditions from the test report must be strictly followed.

### - FOR YOUR INFORMATION

Thermo Ayous from LDCwood has a mean density of +/- 330 kg/m<sup>3</sup> and does therefore not meet above-mentioned requirements. LDCwood is currently working on a procedure in order to obtain a certificate of fire rating D. We have already achieved positive results during a first preliminary test.

## REACTION TO FIRE CLASS B

### - closed cladding

Where fire rating B is imposed, a fire retardant treatment is needed and it is necessary to obtain a certificate by the means of tests.

Fire rating B is obtained when it covers all details mentioned in your certificate (wood species, minimum thickness, application, setup...).

It is important that these cladding profiles are positioned at a back wall/substrate with fire rating A1 or A2. Mind the minimum density of +/- 550kg/m<sup>3</sup>.

According to the legislation, isolation does not comply in theory but is often used as first substrate-level. It is recommended to install a panel with fire rating A1-A2 and the necessary density in front of the isolation. This all must be mentioned in the scope statement by the architect.

Lemahieu FireProtection® only possesses certificates for closed cladding where the ulterior framework does not need to be treated (same as for fire rating D).

### - open cladding **! for 'reaction to fire class' D and B**

Open cladding is mostly executed with a 10mm gap between the profiles. At this moment, no one possesses a certificate for open cladding.


Soon, Lemahieu Group will invest in tests with a 10mm joint. Results are expected during the course of 2020. It goes without saying that when it comes to open cladding, the ulterior framework also needs a fire-retardant treatment.

In order to obtain an approval for an open cladding project, there are currently 2 options:


1. You need to conduct a SBI test for your specific project in that setting. This happens often but takes time and money.
2. You change the concept and use closed cladding, our profile FARO for instance:




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Spruce  
fire retardant  
B-s1,d0




Thermo Pine  
fire retardant  
B-s1,d0



Thermo Pine  
fire retardant  
B-s1,d0



Thermo Ayous  
fire retardant  
B-s1,d0



Cedar shingles  
fire retardant  
B-s2,d0



## BRAND

Lemahieu FireProtection® with Burnblock®

## PRODUCT CHARACTERISTIQUES

- 100% natural et 100% biologiquement dégradable<sup>1</sup>
- extrêmement low VOC contents<sup>1</sup>
- all ingredients used in Burnblock® also appear in our nutrition or our body<sup>1</sup>
- energy efficient<sup>1</sup>
- not a single ingredient is listed on the EU REACH list<sup>1</sup>
- pH neutral – no corrosion<sup>1</sup>
- effective for all absorbing materials, such as timber, panels, textile, paper etc. <sup>1</sup>

## PRODUCTION DETAILS

- minimum volume required: 1,3m<sup>3</sup>
- sticking included:
  - profile thickness up to 28mm = per 2 profiles (no marks at the visible surface)
  - profile thickness from 28mm = per profile (marks possible at the visible surface)
- When drying, the profiles can be covered by a white film on the surface of the wood as a logical result of the process. The white film can easily be removed by the means of a brush, a cloth or by water.
- Production and delivery lead time: +/- 5 weeks

<sup>1</sup> Certificates are available on request

During the testing process, the protocol for fire tests and classification of the GNB/CPD position paper NB-CPD/SH02/12/096 (published on 21 December 2012) of the group of registered institutes for the Directive Construction Products were applied.

In accordance with classification: EN 13823 (SBI) and EN 14135:2004. In accordance with fire tests: EN 13501-1:2007+A1:2009 and EN 13501-2:2007+A1:2009

**Certificates & tests**  
Independent 3rd party institute:

**BRE UK**  
Building science centre

**DBI**  
Fire and security

**RISE**  
The Swedish Research Institute

**MPA Eberswalde**  
Materialprüfanstalt  
Brandenburg

**AIDIMME**  
Instituto Tecnológico

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Wood types	Density	Min. thickness	Reaction to fire classification
Birch plywood	650-700	12 mm	B-s1,d0
Pine plywood	450-600	12 mm	B-s1,d0
Spruce	350-600	21 mm	B-s1,d0
LVL	350-600	20mm	B-s1,d0
Pinewood	350-600	20 mm	B-s1,d0
Oak	500-750	20 mm	B-s1,d0
Thermo-ash	590-650	21,5 mm	B-s1,d0
Thermo-pine	450-500	19 mm	B-s1,d0
Cedar	350-450	12,5 mm	B-s2,d0
Siberian Larch	650-750	22 mm	B-s1,d0
Accoya	550-550	19 mm	B-s1,d0
Ayous	400-700	15 mm	B-s1,d0
Thermo-Ayous	400-700	15 mm	B-s1,d0
Thermo-Fraké			in testing phase
Padouk			in testing phase

Determination method in accordance with EN 13823 (SBI)  
One test indicates the classification B-s1,d0 in accordance with EN 13501-1

Wood types	Density	Min. thickness	Reaction to fire classification
Bamboo	600-700	26 mm	B-s1,d0

EN45545-2:2013 Burning behaviour of materials and components in rail vehicles

Wood types	Density	Min. thickness	Reaction to fire classification
Birch plywood	650-750	12 mm	R10; HL1/HL2/HL3 (floor covering)
Birch plywood	650-750	12 mm	R1; HL1/HL2 (walls)
Birch plywood	650-750	12 mm	R7; HL1/HL2 (exterior walls)

We have more wood types available and are continuously expanding our certification. Please contact us for more information.