

Classification Report n ° 020008B

According to the amended decree of 22 March 2004 of the Ministry of the Interior

FIRE RESISTANCE of a non-loadbearing hempcrete wall with wood frame

Applicant: Construire en chanvre

140 Chevaleret Street

75013 PARIS

Period of validity: This classification report and its possible extensions are valid until November 20, 2024

Document reference: Laboratory assessment n ° 020007B

Date: 06/16/2020

"This test report only attests to the characteristics of the sample submitted for testing and does not not prejudice the characteristics of similar products. It does not therefore constitute a certification of products meaning of Article L115-27 of the Consumer Code and of the Law of August 4, 2008 ".

The conclusions of these minutes relate only to the fire resistance performance of the element subject of this classification report. They do not prejudice, in any case, other related performances when it is incorporated into a work.

Ranking extensions may relate to this report. They are not cumulative among themselves only after consulting the laboratory.

This report comprises 8 pages including 2 appendices. Its reproduction is only authorised in its complete form.



Christophe TESSIER
Directeur du
Centre d'Essais au Feu



Baptiste HAINAULT
Responsable Équipe Essais
Centre d'Essais au Feu



Study center of concrete industry
/ 1 rue des Longs Péages _ CS 10010_23233 EPERNON CEDEX_ France
Phone +33(0)2 37 18 48 00 / email cerib@cerib.com / www.cerib.com
Industrial technical center (22 July 1948 law) SIRET 775 784 00027 - NAF 7219Z
Agreed by the Ministry of Interior for fire resistance test of building material. Product certificatory (Art.L115_27 Consumption code mandated by AFNOR Certification. Notified by the State for CE branding (n°1164). National Education Ministry research operator, of Superior Education and Research, R&D works can pretend for CIR.

Revision Index	Date	Subject revision	Writing	Checking
A	20/11/2019	Initial version	CDL	BHT/CTR
B	16/06/2020	Cancel and replace in B version- modification §3.1.3 and 3.1.4 and update index 1	BHT	CTR

Summary

1	Subject	3
2	Textes and reference documents	3
3	Description and elements implementation.....	3
3.1	Wall description.....	3
3.1.1	Wood structure.....	3
3.1.2	Sealing band.....	3
3.1.3	Hempcrete.....	3
3.1.4	Indoor finish.....	4
3.1.5	Outdoor finish.....	4
3.2	Wall implementation.....	4
4.	Element representativity	5
5	Classification and area of direct application.....	5
6	Fire resistance classification durability.....	6
	Index 1 - Aggregate binder couple validated on June the 16th 2021.....	7
	Index 2 - Wall layout plan.....	8

1 SUBJECT

These minutes, drawn up in accordance with article 13 of the amended Order of 22 March 2004, relate to the resistance to fire of a non-load-bearing hemp concrete wall with a wooden frame.

2 REFERENT TEXTS AND DOCUMENTS

This classification report is drawn up according to the following reference texts:

- Order of March 22, 2004 amended;
- OJ EC 2000/367 / EC of May 2000 and OJ EC 2003/629 / EC;
- Standard NF EN 1363-1, March 2013 "Fire resistance tests - Part 1: General requirements";
- Standard NF EN 1364-1, January 2015, "Fire resistance tests of load-bearing elements - Part 1: Walls";
- "Professional rules for the execution of hemp concrete works - hemp concrete walls" - 2012 version;
- "Professional Rules for the execution of Hemp Concrete works - Mortar plasters" - Version 2012.

This classification report is also based on laboratory assessment No. 020007B.

3 ELEMENTS IMPLEMENTATION AND DESCRIPTION

3.1 Wall description

3.1.1 Wood structure

The frame is composed of planed wood of class 2 (for uprights, spacers and top rail) and 4 (for the bottom rail), with sections 45 x 145 mm². The essence of the wood is spruce and the density is 450 kg / m³

The framework is assembled using screws 90 mm long.

3.1.2 Sealing band

The lower edge is treated with a 300 mm wide COMPRIMOB PE strip, positioned under the beam low.

3.1.3 Hempcrete

The compositions of the "wall" type hempcrete concerned by this report are meet the following criteria:

- Binder / aggregate pair in accordance with the Professional Rules for the execution of concrete structures

hemp 2012 - Hemp concrete walls;

- Binder dosage between 180 kg / m³ and 330 kg / m³
- Binder based on lime or natural prompt cement;
- Hemp concrete deemed to justify a reaction to fire classification B, s1-d0 or higher.

See the binder / aggregate pairs accepted on November 20, 2019 in appendix 1.

Other binder / aggregate pairs may be accepted, subject to compliance with the above criteria.

3.1.4 Indoor finish

The interior finishes accepted are as follows:

- Lime / hemp plasters provided that:

- o The binder / aggregate pair complies with the Professional Rules for the execution of works in hemp concrete from 2012 - Mortar plasters;
- o The binder dosage is between 400 kg / m³ and 880 kg / m³
- o The thickness of the plaster used is at least 32 mm.

- Lime / sand renderings provided that:
 - o The binder dosage is at least 250 kg / m³;
 - o The thickness of the plaster used is 18 mm minimum.
- The application of an interior finish is not mandatory.

3.1.5 Outdoor finish

The exterior finishes accepted are lime / sand plasters, provided that:

- The binder dosage is at least 250 kg / m³;
- The thickness of the plaster used is at least 18 mm.

The application of an exterior finish is not mandatory.

3.2 Implementation of the wall

Implementation type of hempcrete	By projection	By formwork
Structure building	After application of the COMPRIMOB PE leveling strip, the bottom rail is attached to the lower beam of the frame. 1 st upright is fixed to the fixed edge of the frame by 3 anchor studs. The other vertical uprights as well as the spacers are mounted in advance and fixed to the bottom rail by 2 wood screws of length 90mm. A strip of mineral wool is interposed between the last upright and the frame test. The top rail is then slid between the frame closing beam and the top of the vertical uprights before being fixed to them by 2 wood screws of length 90 mm. The residual space between the upper face of the top rail and the face bottom of the closing beam is caulked with mortar. The assembly of the wooden frame is carried out in accordance with NF DTU 31.1 standards and NF DTU 31.2.	
Implementation of the provisional formwork	OSB panels covered with film polyane are mounted on the face exposed to fire in order to support the projection of hemp concrete. In one 1 first time, a first series of screws are distributed over the wooden frame in order to guarantee the coating of 75 mm, then the panels are mounted and fixed on the framework by another series of screws (which flatten the panels on the first series).	OSB panels covered with film polyane are mounted on the face exposed to fire. First, a first series of screws are distributed over the framework wood in order to guarantee the coating of 75 mm, then the panels are mounted and fixed to the framework by another series of screws (which flatten the panels on the first series). The other side of wall is shuttered by successive heights 70 cm.
Binder/water mixing fabrication	The binder "milk" is mixed in the concrete mixer integrated into the spraying machine before being poured into a tank with agitator from which it will be pumped towards the spear.	

Implementation type of hempcrete	By projection	By formwork
Implementation of hempcrete	The hempcrete is implemented by projection against the OSB boards using a spraying machine. The hemp aggregates are coated with the water / binder couple leaving the projection lance. This is done from the side not exposed to the fire, starting at the bottom of the wall all the way its width and until you get the thickness desired. The face of the wall is made of just once. Adjusting the flatness of the opposite wall not exposed to fire is then done using flat rulers until a thickness is obtained hemp constant of 295 mm.	The hempcrete is placed by successive layers of 10 cm maximum (the material is distributed manually but not packed). The material is then lightly packed along the frames and formwork so that the surfaces of walls are homogeneous.
Formwork removal	The OSB boards used as support are removed by sliding sideways on the day after the installation of the concrete. Areas to the right of the studs are eventually cured and re-projected.	
Wall dimensions	3 960 x 3 000 x 295 mm ³ (L x H x e)	
Plan	Check the wall plan on Index 2	

4 ELEMENT REPRESENTATION

By its materials from current manufacturing and by its in-situ assembly principle, the element implemented under the conditions observed by the laboratory which carried out the tests, can be considered as representative of the current current achievement. It gives rise to a confirmed report.

5 CLASSIFICATION AND AREA OF DIRECT APPLICATION

The conclusions of these minutes relate only to the fire resistance performance of the element subject of this classification report. They do not prejudice, in any case, other performances linked to its incorporation into a work.

CLASSIFICATION	
The elements, which are the subject of this classification report, are classified according to the following combination of performance parameters. No other classification is allowed	
EI	240

CONDITION OF VALIDITY OF CLASSIFICATIONS

During manufacture and installation, the elements and their assembly must comply with the description detailed given in laboratory assessment No. 020007B, which can be requested without obligation to transfer the document in the event of a dispute over the identity of the object.

AREA OF APPLICATION

The results of the fire test are directly applicable to similar constructions when one or several of the changes below have been made and construction continues to conform to corresponding design rules, from the point of view of its rigidity and stability.

HEIGHT DECREASE	Wall height \leq 4 m
WALL THICKNESS INCREASE	Wall thickness \geq 295 mm
MATERIALS CONSTITUTIVES THICKNESS INCREASE	Section of wooden uprights \geq 45 x 145 mm ² subject to keep a 75 mm hemp concrete cover opposite exposed to fire
DECREASE IN THE SPACING BETWEEN THE UPRIGHTS	Spacing between uprights \leq 600 mm
INCREASE IN WIDTH	It is allowed to increase the width of a construction identical.

6 FIRE RESISTANCE CLASSIFICATION DURABILITY

This classification report is valid for 5 years from the date of issue of the laboratory assessment, i.e. until November 20, 2024.

After that date, these minutes are no longer valid, except if accompanied by a renewal issued by the laboratory.

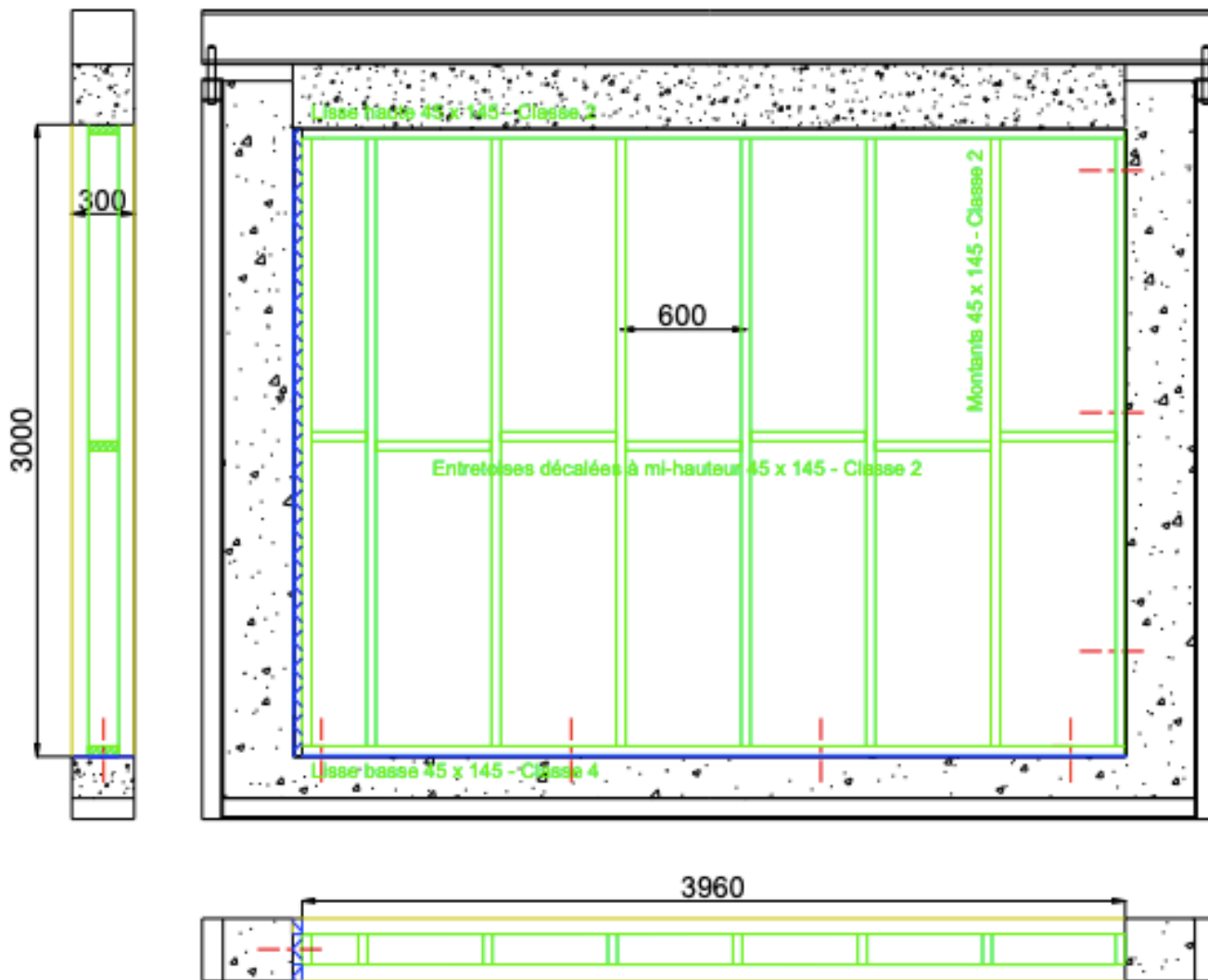
WARNING

These minutes do not represent Type approval or certification of the item.

INDEX 1 - AGGREGATE BINDER COUPLE VALIDATED ON JUNE THE 16TH 2021N

LIANT	GRANULAT LABELLISE
Tradical® PF 70 (BCB)	CANA-GRANULA® Label n° 001/003/001 (Origine EUROCHANVRE)
BATICHANVRE® (CESA)	Biofibat' chènevotte Label n° 001/002/001 (CAVAC)
Tradical® THERMO FLA 3,5 CE (BCB)	Chanvribat® (BCB)
Tradical® PF 70 (BCB)	Chanvribat® (BCB)
Tradical® PF 70 (BCB)	Origine La Chanvrière Label n° 001/001/001
BATICHANVRE® (CESA)	KANABAT Label n° 001/001/001 (La Chanvrière)
BATICHANVRE® (CESA)	Origine Planète Chanvre Label n° 001/004/001
BATICHANVRE® (CESA)	CANA-GRANULA® Label n° 001/003/001 (Origine EUROCHANVRE)
i.pro CALIX HL 5 CE (SOCLI)	Biofibat' chènevotte Label n° 001/002/001 (CAVAC)
Nathural® NHL 3,5 CE (LAFARGE)	Origine La Chanvrière Label n° 001/001/001
Tradibat® 85 HL5CE(LAFARGE)	Biofibat' chènevotte Label n° 001/002/001 (CAVAC)
Nathural® NHL 3,5 CE (LAFARGE)	Biofibat' chènevotte Label n° 001/002/001 (CAVAC)
Ciment naturel prompt (VICAT)	KANABAT Label n° 001/001/001 (La Chanvrière)
Tradical® THERMO FLA 3,5 CE (BCB)	Origine Planète Chanvre Label n° 001/004/001
Tradibat® 85 HL5CE(LAFARGE)	KANABAT Label n° 001/001/001 (La Chanvrière)
BATICHANVRE® (CESA)	AGROCHANVRE CHENEVOTTE BATIMENT Label n° 001/005/001 (Origine AGROCHANVRE)
Tradical® THERMO FLA 3,5 CE (BCB)	AGROCHANVRE CHENEVOTTE BATIMENT Label n° 001/005/001 (Origine AGROCHANVRE)
Tradical® THERMO FLA 3,5 CE (BCB)	Biofibat' chènevotte Label n° 001/002/001 (CAVAC)
BATICHANVRE ISOL' ® HL 5 CE (CESA)	ISOCANNA® Label n° 001/001/001 (CESA)
Ciment naturel Prompt CNP PM NF (VICAT)	CANA-GRANULA® Label n° 001/003/001 (EUROCHANVRE)
BATICHANVRE ISOL' ® HL 5 CE (CESA)	ISOCANNA® Label n° 001/003/001 (CESA)
BATICHANVRE ISOL' ® HL 5 CE (CESA)	AGROCHANVRE CHENEVOTTE BATIMENT Label n° 001/005/001 (Origine AGROCHANVRE)

INDEX 2 - WALL LAYOUT PLA



-  Fixation SPIT FIX3 8X100/50-40
-  Laine minérale 50 mm comprimée à 40 mm
-  Béton de chanvre
-  Ossature bois