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CLASSIFICATION OF FIRE RESISTANCE
FIRES-CR-174-24-AUPE

Loadbearing wall composed of EcoCocon v02 twin-stud timber frame panels with straw insulation infill covered from external face with vapour barrier

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SNAS
Reg. No. 041/S-159

CLASSIFICATION OF FIRE RESISTANCE IN ACCORDANCE WITH EN 13501-2: 2023

with direct field of application

FIRES-CR-174-24-AUPE

Name of the product: Loadbearing wall composed of EcoCocon v02 twin-stud timber frame panels with straw insulation infill covered from external face with vapour barrier

Sponsor:
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1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to element loadbearing wall composed of EcoCocon v02 twin-stud timber frame panels with straw insulation infill covered from external face with vapour barrier in accordance with the procedures given in EN 13501-2: 2023.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, loadbearing wall composed of EcoCocon v02 twin-stud timber frame panels with straw insulation infill covered from external face with vapour barrier, is defined as a load-bearing wall with fire separating function.

2.2 PRODUCT DESCRIPTION

Dimensions

Overall dimensions of the tested product	3000 x 3000 x 250 mm (height x width x thickness)
Modules dimensions	2900 x 850 x 250 mm (height x width x thickness)
	2900 x 450 x 250 mm (height x width x thickness)

Construction of the module

The double front frame construction of each module consists of studs and transoms made from C24 spruce profiles 45 x 95 mm. The top and bottom edges of the modules are covered with 12,0 mm thick plywood. Each stud is fixed to the plywood with two 8,0 x 100 mm TX40 washer head screws. The transoms at the top and bottom of the module edge are fixed to the plywood with 4,5 x 50 mm TX20 countersunk head screws 65 mm from the edges and at maximum 240 mm centres. The transoms within the module are positioned 970 mm from the top and bottom edges of the module and are fixed between the studs with two 4,5 x 50 mm TX20 countersunk head screws.

The opposing transoms within the module are joined together with two 150 mm wide by 12,0 mm thick plywood strips positioned 80 mm from the studs and fixed to the transoms with a 4,5 x 50 mm TX20 countersunk head screw. In the case of the 450 mm wide module, the transoms within the module are joined together with only one plywood strip positioned at the mid-width of the transoms.

The core of the module is compressed straw with a nominal bulk density of 100 kg.m^{-3}.

A 0,45 mm thick SOLITEX MENTO 3000 diffusion-open membrane (manufacturer: Pro Clima) is fixed to the external surface with 45 mm wide and 6 mm thick plywood strips and 4,5 x 50 mm TX20 countersunk head screws at maximum 280 mm centres on the horizontal edges of the module and 400 mm centres on the vertical edges of the module.

Joining of the modules

The modules are fixed together along the vertical edges with 8,0 x 120 mm TX40 washer head screws positioned just above/below the top and bottom transoms and next at maximum 476 mm centres.

Two 100 x 100 mm C24 timber profiles are placed at the top of the wall along the front and rear edges and fixed to the modules with 8,0 x 120 mm TX40 washer head screws at maximum 400 mm centres.

More detailed information about product construction is shown in the drawings.

3. TEST REPORTS IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

No.	Name of laboratory	Name of sponsor	Test report No.	Date of the test	Test method	Type of the test
[1]	FIRES, s.r.o., Batizovce, SR	UAB EcoCocon, Vilnius, LT	FIRES-FR-257-24-AUNE	30. 10. 2024	EN 1365-1: 2012/ AC:2013	Accredited

3.2 TEST SPECIMENS

Test report No.	Samples information	Conditioning	Pre-fire tests
[1]	-	The test specimen was stored in the hall of the testing laboratory and was conditioned according to EN 1363-1.	-

3.3 TEST RESULTS

No./ Test method	Parameter		Results
[1] EN 1365-1: 2012/AC: 2013	applied load		axial load 83,0 kN/m
	temperature curve		standard temperature/time curve
	loadbearing capacity (R)	vertical contraction [mm]	49 minutes
		rate of vertical contraction [mm/min]	49 minutes
	integrity (E)	cotton pad	49 minutes
		gap gauges	49 minutes
		sustained flaming	49 minutes
	thermal insulation (I)	average temperature (140 K)	49 minutes
		maximal temperature (180 K)	49 minutes
	thermal radiation (W) - 15 $kW.m^{-2}$		49 minutes
	mechanical action		-
	specimen orientation		Internal face of the wall exposed to fire - SOLITEX MENTO 3000 diffusion-open membrane on the external wall face

The performance criteria of insulation (I) and integrity (E) shall automatically be assumed not to be satisfied when the loadbearing capacity (R) criterion ceases to be satisfied (according to cl. 11.4.1 of EN 1363-1: 2020).

[1] The test was discontinued in 50th minute because of the specimen collapse.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with clause 7.3.2 of EN 13501-2: 2023.

4.2 CLASSIFICATION

The element, **Loadbearing wall composed of EcoCocon v02 twin-stud timber frame panels with straw insulation infill covered from external face with vapour barrier**, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:

Note: valid only for fire action on the internal face of the wall – SOLITEX MENTO 3000 diffusion-open membrane on the external wall face.

RE 45 / REI 45 / REW 45

4.3 FIELD OF APPLICATION

This classification is valid according to EN 1365-1: 2012/AC: 2013 for the following end use applications:

Height	– increase in the height above 3000 mm is not allowed, – decrease in the height is allowed,
Width	– change in the wall width is allowed, – extension in the width of wall is allowed only as a replication of modules as tested, – decrease in the module width is allowed, but not increase, – maximum width of module is 850 mm,
Thickness of wall and materials	– increase in the thickness of the wall and individual component materials is allowed,
Fixation of materials	– decrease in distance of fixing centres is allowed,
Size and method of loading	– maximum load 83,0 kN/m,
	– decrease in the applied load is allowed,
	– method of loading - axial loading is not allowed to be change for eccentric loading.

5. LIMITATIONS

This classification document does not represent type approval or certification of the product.

The classification is valid provided that the product, field of application and standards and regulations are not changed.

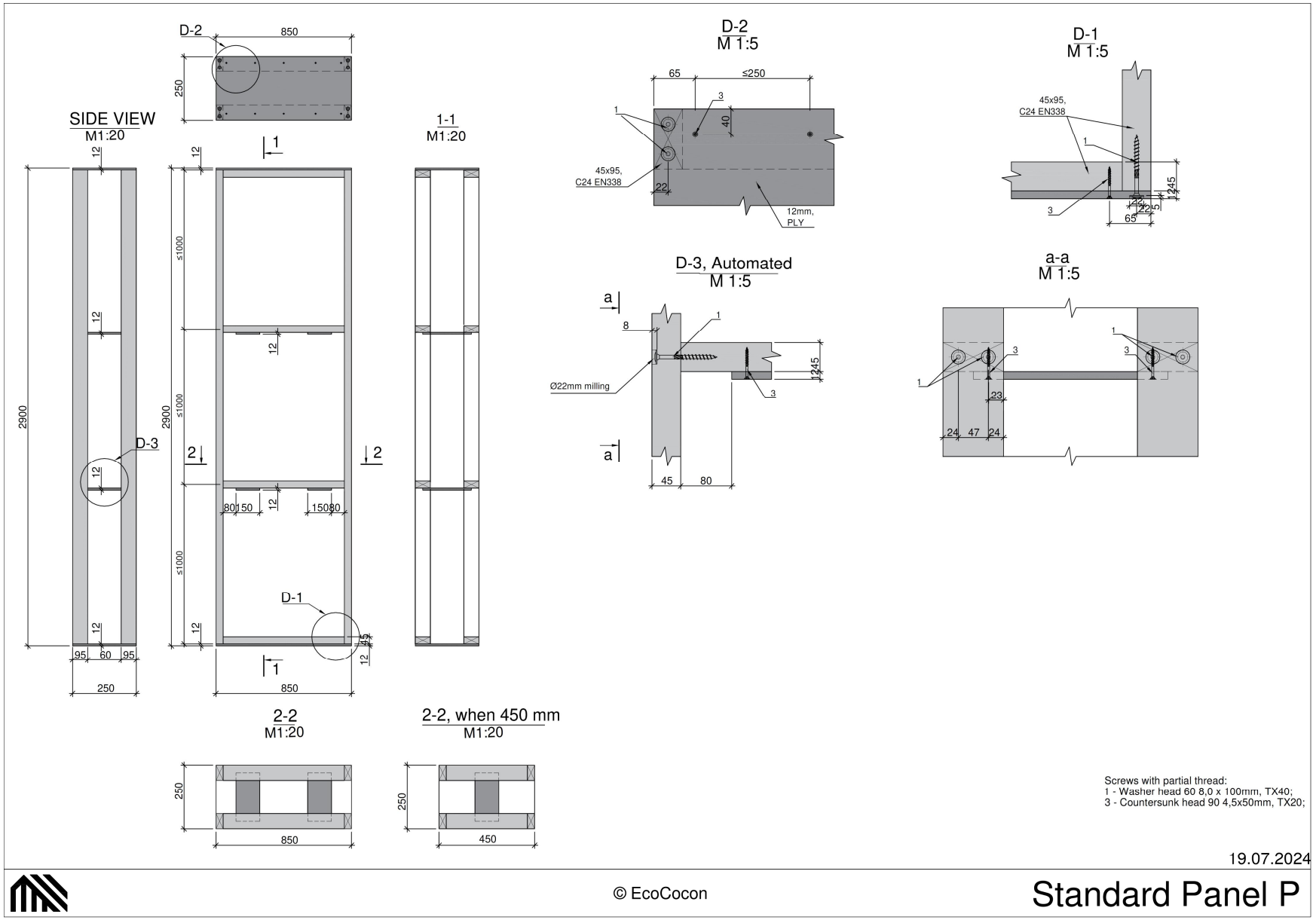
Approved by:

Ing. Marek Gorlický
Head of the Testing Laboratory

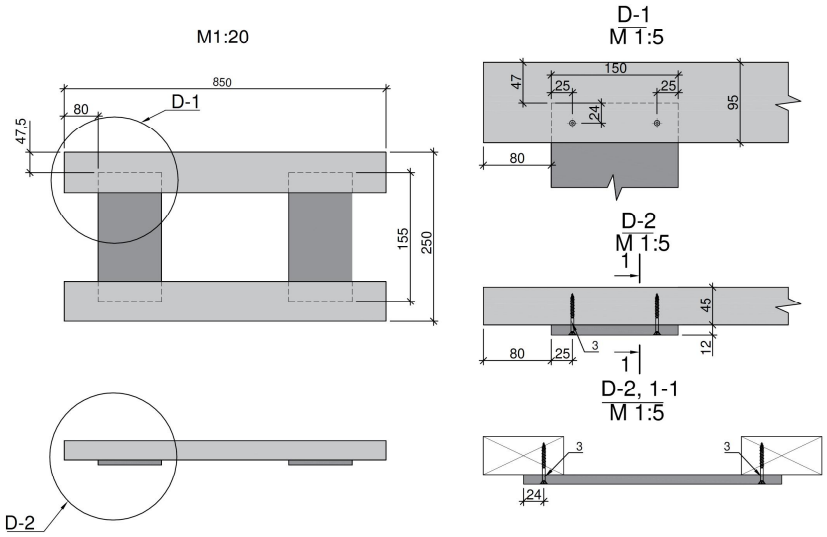
Prepared by:

Dávid Šubert
Technician of the Testing Laboratory

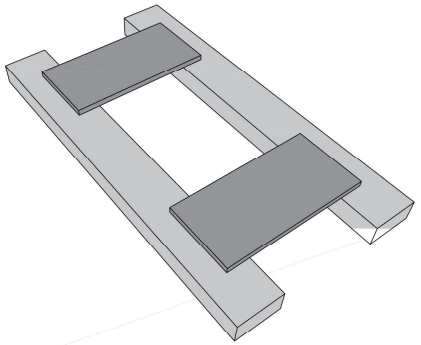
APPENDIX 1: DRAWINGS OF THE PRODUCT CONSTRUCTION



APPENDIX 1: DRAWINGS OF THE PRODUCT CONSTRUCTION



EcoCocon Panel's Cross upside down
M1:20

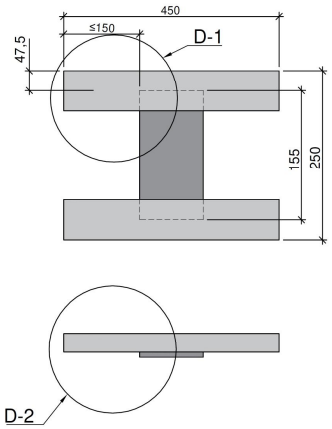


19.07.2024

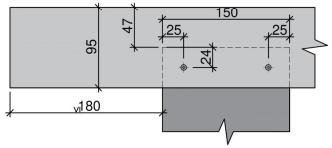
EcoCocon Cross for Panels 850mm

APPENDIX 1: DRAWINGS OF THE PRODUCT CONSTRUCTION

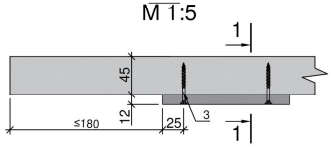
M1:20



D-1
M 1:5

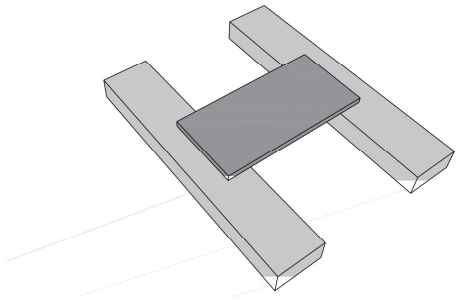


D-2
M 1:5



D-2, 1-1
M 1:5

EcoCocon Panel's Cross upside down
M1:20



19.07.2024

EcoCocon Cross for Panels 450 mm