

CLASSIFICATION REPORT OF FIRE RESISTANCE

IN ACCORDANCE WITH ÖNORM EN 13501-2:2016

28th of March 2022
TRP/FÜI

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Subject: Load-bearing solid timber walls planked with gypsum
plasterboards

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1. Introduction

This classification report of fire resistance defines the classification of load-bearing solid timber wall components of the company KLH Massivholz GmbH in compliance with the process according to the standard ÖNORM EN 13501-2:2016.

2. Details on the classified product

2.1. General

The components belong to the product type of load-bearing, space-enclosing and insulating solid timber constructions as detailed in table 1.

2.2. Description

Table 1: components to be classified

short name	exposed side to fire [mm] „o“	cross-laminated timber element dimension (lamellae) [mm]	non-exposed side to fire „i“
KLH® - CLT: Wall REI 90 (100 5s DQ)	15 GKF ¹	100 (20 20 20 20 20)	without planking
KLH® - CLT: Wall REI 120 (100 5s DQ)	2 x 15 GKF ¹	100 (20 20 20 20 20)	without planking
KLH® - CLT: Wall REI-M 90 (90 3s DQ)	2 x 18 GKF ¹	90 (30 30 30)	without planking

¹⁾ GKF (gypsum plasterboard) according to ÖNORM B 3410 or type DF according to ÖNORM EN 520; density $\geq 800 \text{ kg/m}^3$ or GF (gypsum fibre board) according to ÖNORM EN 15283-2; density $\geq 1000 \text{ kg/m}^3$

The planking and the mechanical fastening of the gypsum boards takes place in accordance with the “KLH installation guidelines for fire rated plasterboard type F (GtF)” see also https://files.klhdesigner.at/KLH_VRL_EN.pdf.

3. Test reports and test results supporting this classification

3.1. Description of tested components

Table 2: tested solid timber walls

reference number of the test report	exposed side to fire [mm] „b“	cross-laminated timber element dimension (lamellae) [mm]	non-exposed side to fire „a“
MA 39 – VFA 2011-1748.01	15 GKF ¹	95 (19 19 19 19 19) ²	without planking
MA 39 – VFA 2011-1747.01	2 x 15 GKF ¹	95 (19 19 19 19 19) ³	without planking
MA 39 – VFA 2011-0339.01	2 x 18 GKF ¹	94 (30 34 30) ⁴	without planking

¹) GKF according to ÖNORM B 3410 or type DF according to ÖNORM EN 520; density $\geq 800 \text{ kg/m}^3$.

The 15 mm gypsum plasterboards were fastened using drywall screws 3.5 x 55 mm at a distance of 250 mm (board-circumferential and three rows per gypsum plasterboard).

The 2 x 15 mm gypsum plasterboards were fastened using drywall screws 3.5 x 75 mm at a distance of 250 mm (board-circumferential and three rows per gypsum plasterboard).

The 2 x 18 mm gypsum plasterboards were fastened using drywall screws 3.5 x 75 mm at a distance of 250 mm (board-circumferential and three rows per gypsum plasterboard).

²) The cross-laminated timber elements were connected together with a stepped rebate joint with a width of 50 mm. The stepped rebate was screwed from the outside (non-exposed side to fire) with screws 8 x 80 mm at a distance of 300 mm. A socket (position: 300 mm from the side edge of the panel and 1100 mm from the lower edge of the panel) with empty ducting was installed on the exposed side to fire. The empty piping had a diameter of 20 mm. The 20 x 20 mm milling for the empty piping was in the first lamella. The milling took place from the bottom edge, vertically over a length of 1100 mm to the socket.

³) The cross-laminated timber elements were connected together with a stepped rebate joint with a width of 50 mm. The stepped rebate was screwed from the outside (non-exposed side to fire) with screws 8 x 80 mm at a distance of 300 mm. A double socket (position: 300 mm from the side edge of the panel and 1100 mm from the lower edge of the panel) with two empty pipes were installed on the exposed side to fire. The empty piping had a diameter of 20 mm. The 50 x 20 mm milling for the empty piping was in the first lamella. The milling was carried out from the bottom edge, vertically over a length of 1100 mm to the socket.

⁴) The test specimen was tested as one cross-laminated timber element (2,950 mm x 3,000 mm) without any joint.

3.2. Test reports and results

Table 3: test reports and results

name of the test laboratory	name of the customer	reference number of the report	testing standard and issue date	type of product/ test specimen	parameter	results
MA 39 ¹⁾	Holzforchung Austria	MA 39 – VFA 2011-1748.01 on 28.11.2011	ÖNORM EN 1365-1: 2000-04 ÖNORM EN 1363-1: 2000-01	Test report on the fire resistance of a load-bearing, multi-layer wall element made of cross-laminated timber with the designation "KLH 5s 95 DL NSI" planked on one side with a layer of gypsum plasterboard fire protection panels (test from 09/15/2011)	applied load on supporting structure load-bearing capacity integrity thermal insulation	35 kN/m 90 min 90 min 90 min
MA 39 ¹⁾	Holzforchung Austria	MA 39 – VFA 2011-1747.01 on 14.12.2011	ÖNORM EN 1365-1: 2000-04 ÖNORM EN 1363-1: 2000-01	Test report on the fire resistance of a load-bearing, multi-layer wall element made of cross-laminated timber with the designation "KLH 5s 95 DL NSI" planked on one side with two layers of gypsum plasterboard fire protection panels (test from 09/28/2011)	applied load on supporting structure load-bearing capacity integrity thermal insulation	35 kN/m 130 min 130 min 130 min
MA 39 ¹⁾	Holzforchung Austria	MA 39 – VFA 2011-0339.01 on 28.03.2011	ÖNORM EN 1365-1: 2000-04 ÖNORM EN 1363-1: 2000-01 ÖNORM EN 1363-2: 2000-01	Test report on the fire resistance of a load-bearing, multi-layer wall element made of cross-laminated timber with a thickness of 130 mm (test from 20/01/2011)	applied load on supporting structure load-bearing capacity integrity thermal insulation mechanical resistance	35 kN/m 94 min 94 min 94 min passed

¹⁾ MA 39 – Magistrat der Stadt Wien, Magistratsabteilung 39, Prüf-, Überwachungs- und Zertifizierungsstelle der Stadt Wien

The tests specified in section 3.2 were carried out in accordance with ÖNORM EN 1363-1 and ÖNORM EN 1365-1 respectively and thus were partly carried out in accordance with older standards (see information in table 3). The current standards ÖNORM EN 1363-1:2013-07 and ÖNORM EN 1365-1:2020-04 show significant changes in terms, new definitions and specifications compared to the older versions. According to information from the test laboratory, those changes have no effect on the results in the test reports and can therefore still be used for fire resistance classification.

4. Classification and field of application

4.1. Classification reference

This classification has been carried out in compliance with ÖNORM EN 13501-2:2016-11, Section 7.3.2.

4.2. Classification

The load-bearing solid timber walls are classified according to the following combinations of performance parameters and classes.

Tested wall height: ≤ 3 m

Table 4: classification of the components

short name	R	E	I	M	exposed side to fire	load [kN/m]	test report
KLH® - CLT: Wall REI 90 (100 5s DQ)	90	90	90	-	o → i	35	MA 39 – VFA 2011-1748.01
	classification of fire resistance: REI 90						
KLH® - CLT: Wall REI 120 (100 5s DQ)	120	120	120	-	o → i	35	MA 39 – VFA 2011-1747.01
	classification of fire resistance: REI 120						
KLH® - CLT: Wall REI-M 90 (90 3s DQ)	90	90	90	passed	o → i	35	MA 39 – VFA 2011-0339.01
	classification of fire resistance: REI-M 90						

4.3. Direct field of application

This classification is valid for the following practical applications:

The classification results can be applied directly to similar wall structures on which one or several of the changes described below are carried out and whose construction still meets the requirements of the respective design standard with regard to its stiffness and strength:

- Reducing the height of the wall
- Increasing the width of the wall
- Increasing the thickness of the wall
- Reducing the length of boards or panels but not the thickness
- Reducing the applied load
- Reducing the distance between fastenings
- Additional facades and claddings on the non-exposed side of fire

5. Restrictions

5.1. General

If one of the basic test and evaluation criteria changes or if the customer makes inadmissible technical changes to the product the validity of this classification report will expire.

5.2. Warning notice

The classification document does not constitute a type approval or certification of the product.


HOLZFORSCHUNG AUSTRIA

DI (FH) Philipp Trimmel
Authorised signatory and technical consultant

DI Sylvia Polleres
Head of Unit

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