MFPA Leipzig GmbH
Testing, inspection and certification body for
building materials, building products and building systems

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Classification report no. KB 3.2/19-469-2

from 11 February 2020
1st copy

Classification of fire resistance acc. to
DIN EN 13501-2:2016-12

Subject matter:	Classification in accordance with DIN EN 13501-2:2016-12 of a load-bearing, space-enclosing and thermally-insulating wall construction in a timber-frame design with symmetrical lining/panelling on both sides and compartment insulation under exposure to fire from one side for classification of both sides of the wall in the fire resistance class REI 90.
Applicant:	STEICO SE Otto-Lilienthal-Ring 30 D-85622 Feldkirchen Germany
Person in charge:	Dipl. Ing. (FH) E. Dorn

This classification report is valid for an unlimited period.

This document consists of 5 pages.

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Testing laboratory accredited by DAkkS GmbH in accordance with DIN EN ISO/IEC 17025. The accreditation only applies to the test procedures listed in the certificate (marked with * in this document). The certificate can be viewed at www.mfpa-leipzig.de.

Approved test centre according to the Landesbauordnung [state building code] (SAC 02) and notified testing laboratory, inspection body and certification body (PÜZ-Stelle) according to the Construction Products Regulation (NB 0800).

Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH (MFPA Leipzig GmbH)

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1 Introduction

This classification report defines the classifications assigned to the load-bearing, space-enclosing and thermally insulating wall construction in a timber-frame design with symmetrical lining/panelling on both sides and compartment insulation in accordance with the procedures set out in DIN EN 13501-2:2016-12.

2 Details of the classified products

2.1 Type of function

The wall construction in a timber-frame design to be classified is defined as a load-bearing, space-enclosing and thermally-insulating wall construction. It is classified as a load-bearing wall construction in accordance with DIN EN 1365-1:2013-08 in conjunction with DIN EN 13501-2:2016-12, section 7.3.2. Its function in each case is to resist fire according to the characteristic reaction to fire as per section 5.2.1 to 5.2.3 of DIN EN 13501-2:2016-12.

2.2 Description of the constructions

The tested wall construction consists of a load-bearing timber framework construction, compartment insulation and symmetrical lining/panelling on both sides as specified in table 1.

Table 1: List of structural details of the tested wall constructions

Overall dimensions of the tested constructions: Width: w = 2950 mm; height: h = 3045 mm; thickness: t ~ 238 mm		
Item	**Material/ dimensions**	**Comments**
Supporting structure:	Sill and top plate: Solid wood for load-bearing purposes, C24, according to DIN EN 338:2010-02, w x t x l = 120 mm x 60 mm x 2950 mm Posts: Solid wood for load-bearing purposes, C24, according to DIN EN 338:2010-02, w x t x l = 120 mm x 60 mm x 2925 mm Standard centre distance: a = 625mm Centre distance of last compartment on the left: a = 625 mm Centre distance of last compartment on the right: a = 410 mm	Fastening: Top plate and sill in the post screwed with Würth Ecofast Assy II Ø 6.0 x 140 mm Quantity: 2 per connection
Insulation	STEICOflex 038 wood fibre insulation boards in accordance with DIN EN 13171:2015-04 t = 120 mm, Board dimensions l x w = 1220 mm x 575 mm	Boards were clamped tightly into the compartments with 1% allowance; joints butt-jointed and tight

Table continued on the next page

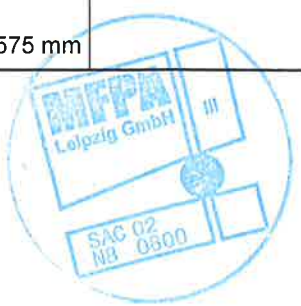

Table 1, continued: List of structural details of the tested wall constructions

Item	Material/ dimensions	Comments
Sheathing/panelling Side facing the fire = side facing away from the fire, starting at the supporting structure	1st layer (inner board layer): Kronoply OSB/3 tongue+groove acc. to DIN EN 300:2006-09 t = 15 mm Board size: w x l = 675 mm x 2500 mm Board alignment: horizontal	Fastening of 1st layer: Clips Haubold type KG 745 C NK hardened Length: 30 mm Clip spacing all around and on the posts = 150 mm Note: The vertical board joints were jointed on the timber posts
	2nd layer (outer board layer = cover layer): STEICOprotect-H groove+tongue [2] wood fibre insulation board according to DIN EN 13171:2015-04 and DIN EN 14964:2007-01 t = 35 mm Board size: w x l = 600 mm x 1325 mm Board alignment: horizontal	Fastening of 2nd layer: Clips Haubold type BS 29075 C NK hardened Length: 75 mm Clip spacing all around and on the posts = 150 mm Note: The vertical board joints were jointed on the timber posts
	Application of the rendering: INTHERMO reinforcement mass HFD Gbia: [1] Z-33.47-668 Application thickness: 4 mm	Note: Embedding of INTHERMO reinforcement fabric glass fibre fabric (mesh width 5 mm) into the plaster layer
Details of the electrical installations box installation		
In the wall construction, on the side facing the fire and the one facing away from the fire, one electrical installation box was installed each. The electrical installation boxes were inserted into a gypsum bed, approx. 40 mm thick. The electrical installation boxes were arranged 300 mm from the end of the wall construction exposed to the flames.		

[1] Gbia = General building inspectorate approval

[2] In the test with test report PB III/B-06-112, the wood fibre insulating board STEICOuniversal was used. Since the tested version of STEICOuniversal in an element thickness of 40 mm does not exist any longer, the wood fibre insulating board STEICOprotect-H can be used. STEICOuniversal and STEICOprotect-H are produced from the same base material and differ only concerning grinding process and board format.

Further structural details as well as the materials used and their building material characteristic values can be found in the test report PB III/B-06-112, dated 08 July 2006, by the Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH (MFPA Leipzig GmbH).

3 Test reports and test results supporting this classification

3.1 Test reports

Organisation that performed the test	Applicant	Number of the test report
Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH (MFPA Leipzig GmbH) Hans-Weigel-Straße 2b 04319 Leipzig	STEICO SE Otto-Lilienthal-Ring 30 D-85622 Feldkirchen Germany	PB III/B-06-112 from 08 July 2006

3.2 Suitability for fire protection on both wall sides

Table 2: Performance characteristics of the load-bearing, space-enclosing and thermally-insulating wall in timber frame design – according to test report PB III/B-06-112

Test method	Parameter	Test results Criterion exceeded acc. to:
DIN EN 1365-1:2013-08 in conjunction with DIN EN 1363-1:2012-10	**Strength (R)**	
	Applied load	**25.4 kN/m** (tension of σ = 2.5 N/mm² for a wall width of w = 2.95 m)
	Vertical compression C = h/100 [mm]	Limit not exceeded in the test time of 90 minutes
	Speed of vertical compression dC/dt = 3 h/1000 [mm/min]	Limit not exceeded in the test time of 90 minutes
	Integrity (E)	
	Combustion of the cotton ball	No combustion
	Appearance of gaps	Did not appear
	Appearance of flames on the opposite side	Did not occur in the test time of 90 minutes
	Thermal insulation (I)	
	Rise in temperature above the initial temperature on the side facing away from the fire after the 90th minute of test	
	Mean value > 140 K	1 K
	max. single value > 180 K	2 K

4 Classification and direct field of application

4.1 Classification of the REI 90 constructions on both sides of the wall

This classification has been carried out in compliance with section 7.3.2 of DIN EN 13501-2:2016-12.

The load-bearing, space-enclosing and thermally insulating wall constructions in timber frame design with symmetrical lining/panelling on both sides and compartment insulation in accordance with section 2.2 is classified based on the performed fire resistance test from both sides of the wall (sheathing/panelling of the construction with plastered STEICO universal wood fibre insulating board, t = 40 mm, as the outer board layer and Kronoply OSB/3, t = 15 mm, as the inner board layer). The following combinations of performance parameters and classes are allowed. Other classifications are not allowed.

R	E	I	W		t	-	M	P	C	IncSlow	sn	ef	r
R	E	I	-		90		-	-	-	-	-	-	-

Fire resistance classification: REI 90[1)]

[1)] **The classification up to REI 90 (lower classification times included) applies to <u>both sides of the wall</u>.**

4.2 Direct field of application

This classification is valid for the following application conditions:

- The maximum permissible height of the wall constructions is 3045 mm,
- The minimum wall thickness of the wall constructions is t ≥ 238 mm,
- The width of the wall constructions may be increased,
- The classification in the quoted fire-resistance ratings is not affected by additional and common coats of paint or coatings up to a thickness of 0.5 mm,
- The number of horizontal joints of the sheathing/panelling layers may be increased since the horizontal joint positioned in the outer board layer on the construction side facing away from the fire was in a measure of (500 ± 150) mm to the upper end,
- The joints must be designed according to the tested type,
- The thickness of the materials used may be increased,
- The fastening distances may be reduced,
- The spacing of the posts may be reduced,
- The applied load may be reduced,
- Electrical installation boxes or junction boxes with housing can be installed into the construction according to the tested application in section 2.2.

5 Limits

This classification report is not a type approval or certification of the product. It does no replace any building authority certificate that may be necessary according to German building laws (state building code) and is only valid in conjunction with the corresponding test report.

It is the responsibility of the certification body to check whether the relevant test and classification standards are valid and/or that no significant changes have been made that may have an effect on the safety level.

The results of the tests refer exclusively to the test items described herein. This document does not replace any certificate of conformity or usability as defined by the building regulations (national/European).

Leipzig, 11 February 2020

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