



Austrian Institute of Construction Engineering
Schenkenstrasse 4 | T+43 1 533 65 50
1010 Vienna | Austria | F+43 1 533 64 23
www.oib.or.at | mail@oib.or.at



European Technical Assessment

ETA-08/0147
of 18.06.2020

General part

**Technical Assessment Body issuing the
European Technical Assessment**

Österreichisches Institut für Bautechnik (OIB)
Austrian Institute of Construction Engineering

Trade name of the construction product

RIGIDUR H

**Product family to which the construction
product belongs**

Gypsum boards with fibrous reinforcement for
lining of building elements

Manufacturer

Saint-Gobain Rigips GmbH
Schanzenstraße 84
40549 Düsseldorf
Germany

Manufacturing plant

Saint-Gobain Rigips GmbH
Rühler Straße 50
37619 Bodenwerder
Germany

**This European Technical Assessment
contains**

18 pages including 5 Annexes, which form an
integral part of this assessment.

**This European Technical Assessment
is issued in accordance with Regulation
(EU) No 305/2011, on the basis of**

European Assessment Document (EAD)
070006-00-0504 "Gypsum and expanded glass
boards with fibrous reinforcement for sheathing
and lining of building elements".

**This European Technical Assessment
replaces**

European Technical Assessment ETA-08/0147 of
22.06.2018.



Remarks

Translations of the European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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Specific parts

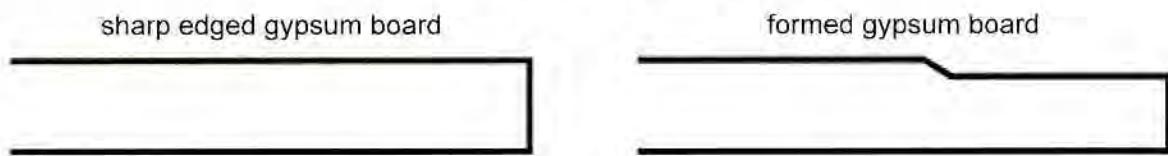
1 Technical description of the product

This European Technical Assessment (ETA)¹ applies to the gypsum board with fibrous reinforcement for lining of building elements with trade name RIGIDUR H. RIGIDUR H is a flat rectangular board composed of gypsum ($\geq 80\%$) and reinforced by cellulose fibres ($\leq 20\%$) in the core. Board type according to EN 15283-2 is GF-C2-I-W2 or better.

RIGIDUR H_s has a brown coloured organic finish made of polymer dispersion, which leads to a reduced water vapour diffusion as specified in Annex 1.

The edges of the board can be produced sharp edged or formed, see Figure 1.

Figure 1: Possible board configurations



The nominal thickness of the gypsum board is between 12.5 mm and 15 mm. The length of the board varies between 400 mm and 6 080 mm and the width between 400 mm and 2 540 mm. The density amounts to at least 1 000 kg/m³ up to a maximum of 1350 kg/m³.

The gypsum board corresponds to the specifications given in Annex 1. The material characteristics, dimensions and tolerances of RIGIDUR H, not indicated in these Annex, are given in the technical file² of the European Technical Assessment.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document

2.1 Intended use

The gypsum boards are used as load-bearing and non load-bearing building components. They may be used as load-bearing as well as stiffening boards in drywall constructions. In ceilings they may be used as non load-bearing boards only.

The gypsum boards may also be used for load-bearing and bracing applications under seismic action.

The gypsum boards are intended to be used in service classes 1 and 2 according to EN 1995-1-1³.

The substructure is not part of this European Technical Assessment.

¹ The ETA-08/0147 was firstly issued in 2008 as European technical approval with validity from 30.06.2008, extended in 2013 with validity from 30.06.2013, amended and converted in 2018 to the European Technical Assessment ETA-08/0147 of 22.06.2018 and amended in 2020 to the European Technical Assessment ETA-08/0147 of 18.06.2020.

² The technical file of the European Technical Assessment is deposited at Österreichisches Institut für Bautechnik and, in so far as is relevant to the tasks of the notified product certification body involved in the assessment and verification of constancy of performance procedure, is handed over to the notified product certification body.

³ Reference documents are listed in Annex 5.

2.2 General assumptions

The gypsum boards are manufactured in accordance with the provisions of the European Technical Assessment using the manufacturing process as identified in the inspection of the manufacturing plant by Österreichisches Institut für Bautechnik and laid down in the technical file.

The manufacturer shall ensure that the requirements in accordance with the Clauses 1, 2 and 3 as well as with the Annexes of the European Technical Assessment are made known to those who are concerned with design and execution of the works.

Design

The European Technical Assessment only applies to the manufacture and use of the gypsum boards. Verification of stability of the works including application of loads on the products is not subject to the European Technical Assessment.

The following conditions shall be observed:

- Design of the gypsum boards is carried under the responsibility of an engineer experienced in such products.
- Design of the works shall account for the protection of the gypsum boards.
- The gypsum boards are installed correctly.

Design of the gypsum boards may be according to EN 1995-1-1, EN 1993-1-1 and EN 1998-1, taking into account of Annex 1 and Annex 2 of the European Technical Assessment.

Standards and regulations in force at the place of use shall be considered.

Packaging, transport, storage, maintenance, replacement and repair

Concerning product packaging, transport, storage, maintenance, replacement and repair: It is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

Installation

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

2.3 Working life/Durability

The provisions made in the European Technical Assessment (ETA) are based on an assumed intended working life of RIGIDUR H of 50 years, when installed in the works, provided that the gypsum boards are subject to appropriate installation, use and maintenance (see Clause 2.2). These provisions are based upon the current state of the art and the available knowledge and experience⁴.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA nor by the Technical Assessment Body, but are regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

⁴ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product can also be shorter than the assumed working life.

3 Performance of the product and reference to the methods used for its assessment

3.1 Essential characteristics of the product

Table 1: Essential characteristics of the product and product performance

No	Essential characteristic	Product performance
Basic requirement for construction works 1: Mechanical resistance and stability ¹⁾		
1	Bending strength ^{2) 3)}	Annex 1
2	Shear strength ^{2) 3)}	Annex 1
3	Compression strength ³⁾	Annex 1
4	Tension strength ³⁾	Annex 1
5	Mechanical characteristics at increased moisture content	Annex 1
6	Racking strength and stiffness	Annex 1
7	Density	Annex 1
8	Creep and duration of the load	Annex 1
9	Dimensions	Annex 1
10	Dimensional stability	Annex 1
11	Surface hardness	Annex 1
12	Embedment strength of dowel-type fasteners (staples, nails, screws) in boards	Annex 1
13	Head pull-through resistance of dowel-type fasteners in boards	Annex 1
14	Structure and cohesion of the core at high temperature	No performance assessed.
15	Static ductility of dowel-type fasteners in boards	Annex 1
Basic requirement for construction works 2: Safety in case of fire		
16	Reaction to fire	Annex 1
Basic requirement for construction works 3: Hygiene, health and the environment		
17	Water vapour permeability – Water vapour transmission	Annex 1
18	Water absorption of board surface	Annex 1
19	Water absorption of board	Annex 1
Basic requirement for construction works 4: Safety and accessibility in use		
20	Hard body impact resistance	Annex 1

No	Essential characteristic	Product performance
Basic requirement for construction works 6: Energy economy and heat retention		
21	Thermal conductivity	Annex 1
1)	This characteristic also relates to basic requirement for construction works 4.	
2)	Load bearing capacity and stiffness regarding mechanical actions perpendicular to the gypsum board.	
3)	Load bearing capacity and stiffness regarding mechanical actions in plane of the gypsum board.	

3.2 Assessment methods

3.2.1 General

The assessment of the essential characteristics in Clause 3.1 of the gypsum boards for the intended use, and in relation to the requirements for mechanical resistance and stability, for safety in case of fire, for hygiene, health and the environment, for safety and accessibility in use and for energy economy and heat retention in use in the sense of the basic requirements for construction works № 1, 2, 3, 4 and 6 of Regulation (EU) № 305/2011 has been made in accordance with the European Assessment Document EAD 070006-00-0504, "Gypsum and expanded glass boards with fibrous reinforcement for sheathing and lining of building elements".

3.2.2 Identification

The European Technical Assessment for the gypsum boards is issued on the basis of agreed data that identify the assessed product. Changes to materials, to composition, to characteristics of the product, or to the production process could result in these deposited data being incorrect. Österreichisches Institut für Bautechnik should be notified before the changes are implemented, as an amendment of the European Technical Assessment is possibly necessary.

4 Assessment and verification of constancy of performance (thereinafter AVCP) system applied, with reference to its legal base

4.1 System of assessment and verification of constancy of performance

According to Commission Decision 95/467/EC the system of assessment and verification of constancy of performance to be applied to "RIGIDUR H" is System 3. System 3 is detailed in Commission Delegated Regulation (EU) № 568/2014 of 18 February 2014, Annex, 1.4., and provides for the following items

- The manufacturer shall carry out factory production control.
- The notified laboratory shall assess the performance on the basis of testing (based on sampling carried out by the manufacturer), calculation, tabulated values or descriptive documentation of the construction product.

4.2 AVCP for construction products for which a European Technical Assessment has been issued

Notified bodies undertaking tasks under System 3 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 4.1 (b).

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

5.1 Tasks for the manufacturer

5.1.1 Factory production control

In the manufacturing plant the manufacturer shall establish and continuously maintain a factory production control. All procedures and specifications adopted by the manufacturer shall be documented in a systematic manner. The factory production control shall ensure the constancy of performances of the gypsum boards with regard to the essential characteristics.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials shall be subject to controls by the manufacturer before acceptance. Check of incoming materials shall include control of inspection documents presented by the manufacturer of the raw materials.

The frequencies of controls conducted during manufacturing and on the finalised product are defined by taking account of the manufacturing process of the product and are laid down in the control plan.

The results of factory production control are recorded and evaluated. The records include at least the following data:

- Designation of the product, basic materials and components
- Type of control or test
- Date of manufacture of the product and date of testing of the product or basic materials or components
- Results of controls and tests and, if appropriate, comparison with requirements
- Name and signature of person responsible for factory production control

The records shall be kept at least for ten years time after the construction product has been placed on the market. On request they shall be presented to Österreichisches Institut für Bautechnik.

5.1.2 Declaration of performance

The manufacturer is responsible for preparing the declaration of performance. When all the criteria of the assessment and verification of constancy of performance are met, the manufacturer shall issue a declaration of performance.

Issued in Vienna on 18.06.2020
by Österreichisches Institut für Bautechnik

The original document is signed by:

Rainer Mikulits
Managing Director

BWR	Essential characteristic	Assessment method	Level / Class / Description	
1	Mechanical resistance and stability			
	1. Mechanical actions perpendicular to the gypsum board			
	Thickness		12.5 mm	15 mm
	Bending strength			
	– in transverse direction $f_{m,90,k}$	EAD 070006-00-0504 2.2.1	5.5 MPa	5.0 MPa
	– in longitudinal direction $f_{m,0,k}$	EAD 070006-00-0504 2.2.1	5.5 MPa	5.0 MPa
	Bending modulus of elasticity			
– in transverse direction $E_{m,90,mean}$	EAD 070006-00-0504 2.2.1	4 500 MPa	4 500 MPa	
– in longitudinal direction $E_{m,0,mean}$	EAD 070006-00-0504 2.2.1	4 500 MPa	4 500 MPa	

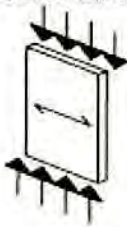
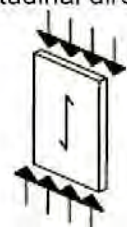
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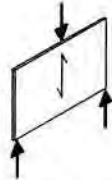
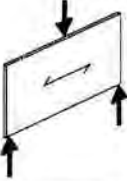
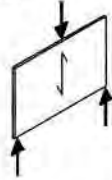
1 MPa = 1 N/mm²

longitudinal direction = direction of manufacturing procedure

transverse direction = direction perpendicular to manufacturing procedure

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Product characteristics	of European Technical Assessment ETA-08/0147 of 18.06.2020

BWR	Essential characteristic	Assessment method	Level / Class / Description	
	Thickness		12.5 mm	15 mm
	Shear strength – in transverse direction $f_{r,k}$ 	EAD 070006-00-0504 2.2.2	1.2 MPa	1.2 MPa
	– in longitudinal direction $f_{p,k}$ 	EAD 070006-00-0504 2.2.2	1.2 MPa	1.2 MPa
	Shear modulus – in transverse direction $G_{r,mean}$ 	EAD 070006-00-0504 2.2.2	650 MPa	650 MPa
	– in longitudinal direction $G_{p,mean}$ 	EAD 070006-00-0504 2.2.2	650 MPa	650 MPa
RIGIDUR H		Annex 1		
Product characteristics		of European Technical Assessment ETA-08/0147 of 18.06.2020		

BWR	Essential characteristic	Assessment method	Level / Class / Description	
2. Mechanical actions in plane of the gypsum board				
Thickness			12.5 mm	15 mm
Bending strength				
— in transverse direction $f_{m,90,k}$ 		EAD 070006-00-0504 2.2.1	4.5 MPa	4.3 MPa
— in longitudinal direction $f_{m,0,k}$ 		EAD 070006-00-0504 2.2.1	4.5 MPa	4.3 MPa
Bending modulus of elasticity				
— in transverse direction $E_{m,90,mean}$ 		EAD 070006-00-0504 2.2.1	3 500 MPa	3 500 MPa
— in longitudinal direction $E_{m,0,mean}$ 		EAD 070006-00-0504 2.2.1	3 500 MPa	3 500 MPa

NOTE

1 MPa = 1 N/mm²

longitudinal direction = direction of manufacturing procedure

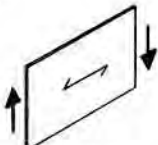
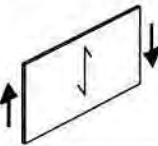
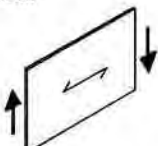
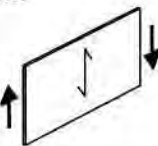
transverse direction = direction perpendicular to manufacturing procedure

RIGIDUR H

Annex 1

Product characteristics

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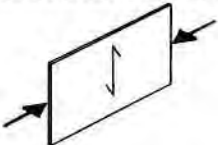
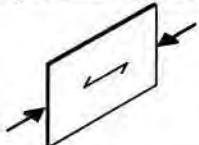
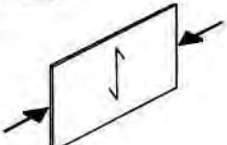
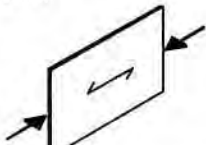
BWR	Essential characteristic	Assessment method	Level / Class / Description	
	Thickness		12,5 mm	15 mm
	Shear strength – in transverse direction $f_{v, 90, k}$ 	EAD 070006-00-0504 2.2.2	2.3 MPa	2.3 MPa
	– in longitudinal direction $f_{v, 0, k}$ 	EAD 070006-00-0504 2.2.2	2.3 MPa	2.3 MPa
	Shear modulus – in transverse direction $G_{v, 90, mean}$ 	EAD 070006-00-0504 2.2.2	1 300 MPa	1 200 MPa
	– in longitudinal direction $G_{v, 0, mean}$ 	EAD 070006-00-0504 2.2.2	1 300 MPa	1 200 MPa

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Product characteristics

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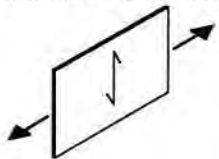
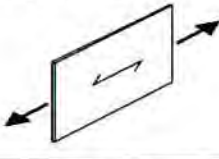
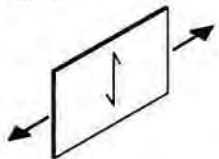
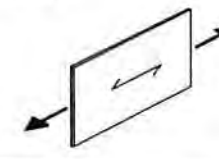
BWR	Essential characteristic	Assessment method	Level / Class / Description	
	Thickness		12.5 mm	15 mm
	Compression strength – in transverse direction $f_{c,90,k}$ 	EAD 070006-00-0504 2.2.3	9.0 MPa	7.2 MPa
	– in longitudinal direction $f_{c,0,k}$ 	EAD 070006-00-0504 2.2.3	9.0 MPa	7.2 MPa
	Compression modulus of elasticity – in transverse direction $E_{c,90,mean}$ 	EAD 070006-00-0504 2.2.3	4 500 MPa	3 000 MPa
	– in longitudinal direction $E_{c,0,mean}$ 	EAD 070006-00-0504 2.2.3	4 500 MPa	3 000 MPa

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BWR	Essential characteristic	Assessment method	Level / Class / Description	
	Thickness		12.5 mm	15 mm
	Tensile strength – in transverse direction $f_{t,90,k}$ 	EAD 070006-00-0504 2.2.4	2.2 MPa	2.0 MPa
	– in longitudinal direction $f_{t,0,k}$ 	EAD 070006-00-0504 2.2.4	2.2 MPa	2.0 MPa
	Tensile modulus of elasticity – in transverse direction $E_{t,90,mean}$ 	EAD 070006-00-0504 2.2.4	4 500 MPa	2 500 MPa
	– in longitudinal direction $E_{t,0,mean}$ 	EAD 070006-00-0504 2.2.4	4 500 MPa	2 500 MPa

RIGIDUR H

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BWR	Essential characteristic	Assessment method	Level / Class / Description
3. Other mechanical actions			
	Mechanical characteristics at increased moisture content	EAD 070006-00-0504 2.2.5	Reduction factor for loss of racking strength and stiffness: $k_{red} = 0.65$
	Racking strength and stiffness	EN 594	Calculation acc. to EN 1995-1-1
	Density	EN 15283-2	$1\,000\text{ kg/m}^3 \leq \rho \leq 1\,350\text{ kg/m}^3$ Nominal density $1\,200\text{ kg/m}^3$
	Creep and duration of load	EAD 070006-01-0504 2.2.8	Annex 2
	Dimensions	EN 15283-2	board thickness $\leq 15\text{ mm}$: t: $\pm 0.5\text{ mm}$ b: $+0/-4\text{ mm}$ l: $+0/-5\text{ mm}$ squareness: $\leq 2.5\text{ mm/m}$
	Dimensional stability		
	Shrinkage and swelling	EN 318	per 30 % variation in rel. humidity: $\leq 0.45\text{ mm/m}$
	Moisture content during service shall not change to such an extent that adverse deformation will occur.		
	Surface hardness	EN 15283-2	Pass for board type GF-I
	Fasteners	EN 1995-1-1	
	– Embedment strength $f_{h,k}$	EAD 070006-00-0504 2.2.12	Annex 3
	– Head pull-through parameter $f_{head,k}$	EAD 070006-00-0504 2.2.13	Annex 3
	Static ductility of dowel-type fasteners in boards	EAD 070006-00-0504 2.2.15	Annex 4

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Annex 1

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BWR	Essential characteristic	Assessment method	Level / Class / Description	
2	Reaction to fire			
	RIGIDUR H, RIGIDUR Hs _d $\rho \geq 1200 \text{ kg/m}^3$	EN 13501-1	Euroclass A2-s1, d0	
3	Hygiene, health and environment			
	Water vapour permeability – water vapour transmission		water vapour resistance factor, μ	water vapour diffusion- equivalent air layer thickness s_d in m
	– RIGIDUR H 12.5 mm $\rho = 1237 \text{ kg/m}^3$	EN ISO 12572	19	0.24
	– RIGIDUR H 15 mm $\rho = 1253 \text{ kg/m}^3$	EN ISO 12572	19	0.29
	– RIGIDUR H SD 12.5 mm $\rho = 1237 \text{ kg/m}^3$	EN ISO 12572	1423	4.6
	Water absorption			
6	Energy economy and heat retention			
	Thermal conductivity, $\lambda_{10, \text{trocken}}$	EN 12664	0.202 W/(m·K)	

RIGIDUR H

Annex 1

Product characteristics

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k_{def}	
Service class	
1	2
4.4	8.0

k_{mod}					
Service class	Load duration class				
	Permanent action	Long action	Medium action	Short action	Very short action
1	0.6	0.65	0.7	0.8	1.0
2	0.45	0.5	0.55	0.65	0.9

RIGIDUR H	Annex 2
Creep and duration of load – k_{def} and k_{mod} values	of European Technical Assessment ETA-08/0147 of 18.06.2020

Fasteners

Fasteners for the connection of the gypsum boards with the substructure shall be nails, screws or staples with a zinc coating or made of stainless steel with a diameter $1.5 \text{ mm} \leq d \leq 4.0 \text{ mm}$.

Head diameter of the nails shall be $d_{\text{head}} \geq 1.68 d$ and back width of staples $b_R > 5.88 d$. The distance of the fasteners from the unstressed edge of the gypsum board shall be at least $5 d$ and from the stressed edge at least $7 d$.

Embedment strength $f_{h,k}$

The embedment strength of the fasteners in gypsum boards of thickness 12.5 and 15 mm and for $\rho \geq 1100 \text{ kg/m}^3$ can be calculated by

$$f_{h,k} = 127 d^{-0.7}$$

with

d ... diameter of the fastener and for $d \leq 4.0 \text{ mm}$

Head pull-through parameter $f_{\text{head},k}$

The head pull-through parameter $f_{\text{head},k}$ for selected tested fasteners are given in Table A.3.

Table A.3 Head pull-through parameter for tested fasteners

Fastener	Dimensions	Head pull-through parameter $f_{\text{head},k}$
Staple	$d = 1.53 \text{ mm}$, $b_R = 11.25 \text{ mm}$	30.1 N/mm^2
Staple	$d = 2.0 \text{ mm}$, $b_R = 11.76 \text{ mm}$	16.3 N/mm^2
Nail	$d = 2.1 \text{ mm}$, $d_{\text{head}} = 4.6 \text{ mm}$	25.9 N/mm^2
Nail	$d = 2.8 \text{ mm}$, $d_{\text{head}} = 6.7 \text{ mm}$	14.2 N/mm^2
Screw	$d = 3.5 \text{ mm}$, $d_{\text{head}} = 5.9 \text{ mm}$	19.8 N/mm^2

RIGIDUR H	Annex 3
Fasteners	of European Technical Assessment ETA-08/0147 of 18.06.2020

Table A.4 Ductility factor μ for different board thicknesses, fastener types and minimum edge distances

Board thickness	Type of fastener	edge distance	ductility factor μ
12.5 mm	staples $d = 1.53 \text{ mm}$, $l = 45 \text{ mm}$	$a_{4,c} = 5 d$	5.9
12.5 mm	profiled nails $d = 2.5 \text{ mm}$, $l = 45 \text{ mm}$	$a_{4,c} = 5 d$	11.7
15 mm	staples $d = 1.53 \text{ mm}$, $l = 50 \text{ mm}$	$a_{4,c} = 5 d$	2.0
15 mm	profiled nails $d = 2.5 \text{ mm}$, $l = 45 \text{ mm}$	$a_{4,c} = 5 d$	10.9

RIGIDUR H

Annex 4

Static ductility of dowel-type fasteners in boards

of European Technical Assessment
ETA-08/0147 of 18.06.2020

European Assessment Document EAD 070006-00-0504 "Gypsum and expanded glass boards with fibrous reinforcement for sheathing and lining of building elements", Edition August 2019

EN 594 (06.2011): Timber structures – Test methods – Racking strength and stiffness of timber frame wall panels

EN 1128 (10.1995): Cement-bonded particleboards – Determination of hard body impact resistance

EN 1993-1-1 (05.2005), + AC (02.2006), +AC (04.2009), + AC (05.2014): Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings

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RIGIDUR H	Annex 5
Reference documents	of European Technical Assessment ETA-08/0147 of 18.06.2020