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European Technical Assessment

**ETA 16/0652– version 01
of 01/08/2018**

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: Technický a skúšobný ústav stavebný, n. o.

Trade name of the construction product

Structural insulated panels H-Block and H-Block_{plus}

Product family to which the construction product belongs

Product area code: 34
Building Kits, Units and Prefabricated elements

Manufacturer

Solcraft Sp. z o.o.
Bogdanka 7F
95-060 Brzeziny
Poland
www.solcraft.pl

Manufacturing plant

Solcraft Sp. z o.o.
Bogdanka 7F
95-060 Brzeziny
Poland

This European Technical Assessment contains

37 pages including 4 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

ETAG 019, edition 2004, used as European Assessment Document (EAD).

This version replaces

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

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body – Technický a skúšobný ústav stavebný, n. o. (TSÚS). Any partial reproduction has to be identified as such.

Specific part

1 Technical description of the product

Panels are manufactured with nominal thicknesses of 130 mm, 170 mm and 230 mm. Skins of panels are made of 15 mm thick OSB/3 oriented strand boards. Internal ribs of the panels are made of 15 mm thick OSB/3 or 18 mm thick softwood plywood. The core of the panels is made of rigid polyurethane. The panels are manufactured in widths ranging from 200 mm to a maximum of 1 250 mm. Length of the panels is up to 8,0 m. Detailed composition of panels and components such a joints and mechanical fasteners are described in Annex 1.

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

2.1 Intended use

The panels are intended for use in timber structures subject to service classes 1 and 2 according to EN 1995-1-1.

H-Block and H-Block_{plus} panels are intended for use in single or multiple-storey constructions as a loadbearing internal wall, separating wall, loadbearing inner leaf of an external wall, loadbearing floor panel and loadbearing panel of flat or pitched roof.

Panels can be also used as infill panels to framed construction.

Suitability of intended use is considered individually according to the standards and law regulations valid in the country of panels use.

2.2 Intended working life of the construction product

Provisions made in this European Technical Assessment are based on an assumed intended working life of panels of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer or the Assessment Body but are to be regarded only as a means for choosing the appropriate product in relation to the expected, economically reasonable working life of the works.

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

3.1 Mechanical resistance and stability (BWR 1)

The mechanical properties, design load-carrying capacities for the wall, floor and roof panels are given in Annex 2 and Annex 3. The load-carrying capacities have been calculated in accordance with ETAG 019, EN 1995-1-1 and methods based on EOTA Technical Report TR 019. The data should be used for designs in accordance with EN 1995-1-1, EN 1991-1-1, EN 1991-1-2 and EN 1991-1-3 or an appropriate national code. Additional strength of the panels can be achieved using structural engineering principles and introducing structural members such as ribs or posts within the panels.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire of materials and components

The classification of the materials and components according to EN 13501-1 is given in Annex 4, Table 42. Those materials which are deemed to satisfy all requirements for the performance characteristic without need for testing according to Commission Decisions are given in Annex 2 with reference to the related Commission Decision.

3.2.2 Resistance to fire

No performance assessed.

3.2.3 External fire performance of the roof covering

No performance assessed. Roof covering is not part of the panels

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Vapour permeability and moisture resistance

No performance assessed.

3.3.2 Watertightness

No performance assessed for external envelope and internal surfaces.

3.3.3 Release of dangerous substances

The panels and their components comply with the provision of Guidance paper H¹ about dangerous substances taking in account Regulation (EC) No 1272/2008 and release scenarios according to EOTA TR 034². Content of formaldehyde in wood-based products is assessed as class E1. The content of pentachlorophenol (PCP) of the wood-based products is less than 5 ppm. Manufacturer issued declaration about content of dangerous substances. In addition, each country may have national requirements (e.g. national legislation, regulations and provisions) applicable to the intended use of the panels that should be complied with.

3.4 Safety in use (BWR 4)

3.4.1 Slipperiness of floors

No performance assessed. Floor finishes are not part of the panels.

3.4.2 Impact resistance

No performance assessed. Panels will be normally covered with external and internal finishes when they are used to construct walls, floors or roofs.

3.5 Protection against noise (BWR 5)

3.5.1 Airborne sound insulation

Weighted apparent sound reduction index R_w for wall made of H-Block panel and LBH joists is given in Table 1.

Table 1 – Airborne sound insulation of H-Block panel

Structural part	Type of panel	R_w (C; C _{tr}) (dB)
Wall	H-Block ($H=170$ mm)	30 (-2; -3)

No performance assessed for floors or roofs

¹ Guidance Paper H: A harmonised approach relating to dangerous substances under the Construction Products Directive, edition September 2002.

² EOTA TR 034: General ER 3 Checklist for ETAGs/CUAPs/ETAs – Content and/or release of dangerous substances in products/kits, edition March 2012.

3.5.2 Impact sound insulation

No performance assessed.

3.5.3 Sound absorption

No performance assessed.

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal resistance

No performance assessed.

3.6.2 Air permeability

No performance assessed.

3.6.3 Thermal inertia

No performance assessed.

3.7 Sustainable use of natural resources (BWR 7)

No performance assessed.

3.8 Durability, serviceability and identification

The panels can be used in use classes 1 and 2 according to EN 1995-1-1 and EN 335. The products may be exposed directly to the weather for a short time during installation.

The ability of the panels to resist loads without undue deflection (serviceability) is dealt with in the Clause 3.1.

Each panel bears the manufacturer's identification mark, the product type and CE marking according to 5.3. Manufacturer prefers to mark products in accompanying documentation.

The identification parameters and references to products specification for identifying the materials and components of the panels are given in Annex 4, Table 42.

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

The AVCP system 1 applies (further described in Annex V to Regulation (EU) No 305/2011).

The manufacturer shall draw up the declaration of performance and determine the product-type on the basis of the assessments and verifications of constancy of performance carried out under the system 1 on the basis of:

- (a) The manufacturer shall carry out:
 - (1) Factory production control;
 - (2) Further testing of samples taken at the manufacturing plant by the manufacturer in accordance with the prescribed test plan.
- (b) The notified product certification body shall decide on the issuing, restriction, suspension or withdrawal of the certificate of constancy of performance of the construction product on the basis of the outcome of the following assessments and verifications carried out by that body:
 - (3) An assessment of the performance of the construction product carried out on the basis of testing (including sampling), calculation, tabulated values or descriptive documentation of the product;
 - (4) Initial inspection of the manufacturing plant and of factory production control;
 - (5) Continuing surveillance, assessment and evaluation of factory production control.

Continuing surveillance, assessment and evaluation of factory production control has to be performed at least twice a year.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

In order to help the Notified Body to make an evaluation of conformity, the Technical Assessment Body (TAB) issuing the ETA shall supply the information detailed below. This information together with the requirements given in EC Guidance Paper B will generally form the basis of the factory production control (FPC).

This information shall initially be prepared or collected by the Technical Assessment Body and shall be agreed with the manufacturer. The following gives guidance on the type of information required:

1) The ETA

Where confidentiality of information is required, this ETA makes reference to the manufacturer's technical documentation which contains such information.

2) Basic manufacturing process

The basic manufacturing process is described in sufficient detail to support the proposed FPC methods.

Components for partitions are normally manufactured using conventional techniques. Any critical process or treatment of the components affecting performance shall be highlighted.

3) Product and materials specifications

The manufacturer's documentation includes:

- detailed drawings (possibly including manufacturing tolerances);
- incoming (raw) materials specifications and declarations;
- references to European and/or international standards;
- technical data sheets.

5.1 Determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product

The results of tests performed as a part of the assessment for this European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between the manufacturer and the TSÚS.

5.2 Control plan and factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures. This production control system shall insure that the product is in conformity with this European Technical Assessment.

The manufacturer shall only use materials stated in the technical documentation³ of this European Technical Assessment. The factory production control shall be in accordance with the control plan which is part of the technical documentation of this European Technical Assessment.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

³ The technical documentation of this European Technical Assessment has been deposited at the TSÚS.

5.3 CE marking

The CE marking shall be affixed visibly, legibly and indelibly to the panel or to a label attached to it. Where this is not possible or not warranted on account of the nature of the panel, it shall be affixed to the packaging or to the accompanying documents.

The CE marking shall be followed by:

- two last digits of the year in which it was first affixed;
- name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity;
- unique identification code of the product-type;
- reference number of the declaration of performance;
- level or class of the performance declared;
- reference to the harmonised technical specification applied (number of the ETA);
- identification number of the notified body;
- intended use as laid down in the harmonised technical specification applied.

Manufacturer prefers to mark products in accompanying documentation.

5.4 Packing, transport and storage

The manufacturer's manual for the packaging, transport and storage of the panels shall be followed.

The panels and their components shall be protected from weather exposure and mechanical damage during transportation and storage.

The panels and their components cannot be lifted or stored in such a way that will cause damage or excessive deformation to them.

5.5 Manufacturing

The panels 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 and factory production control by the notified body and laid down in the technical documentation.

5.6 Installation

The panels and their components shall be checked before installation that they have not been damaged during transportation or storage. Damaged components and materials shall be replaced by good ones.

The installation guide prepared by manufacturer shall be followed. Installation guide shall contain all important aspects such as:

- assembly methods and necessary equipment;
- standard assembly joints and special joints;
- completion of joints between panels and components (structural fixing, weather sealing, etc.);
- additional materials and components applied on the site, which are a precondition for the fitness of use;
- details of stiffening of the panels;
- requirements related to the foundations;
- protection against weather during installation.

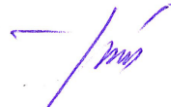
5.7 Use, maintenance, repair

It is the responsibility of the manufacturer to ensure that each delivery contains proper information for the use maintenance and repairs of the panels and their components on the basis of the European Technical Assessment

The panels shall be regularly inspected and maintained in accordance with maintenance instructions which should be available on manufacturer's website.

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On behalf of the Technický a skúšobný ústav stavebný, n. o.
Bratislava, 01 August 2018



prof. Ing. Zuzana Sternová, PhD.
Head of Technical Assessment Body

Annexes

- Annex 1 H-Block and H-Block_{plus} details
- Annex 2 Load capacities of H-Block panels
- Annex 3 Load capacities of H-Block_{plus} panels
- Annex 4 Materials and components specifications

Annex 1

H-Block and H-Block_{plus} details

Dimensions in mm

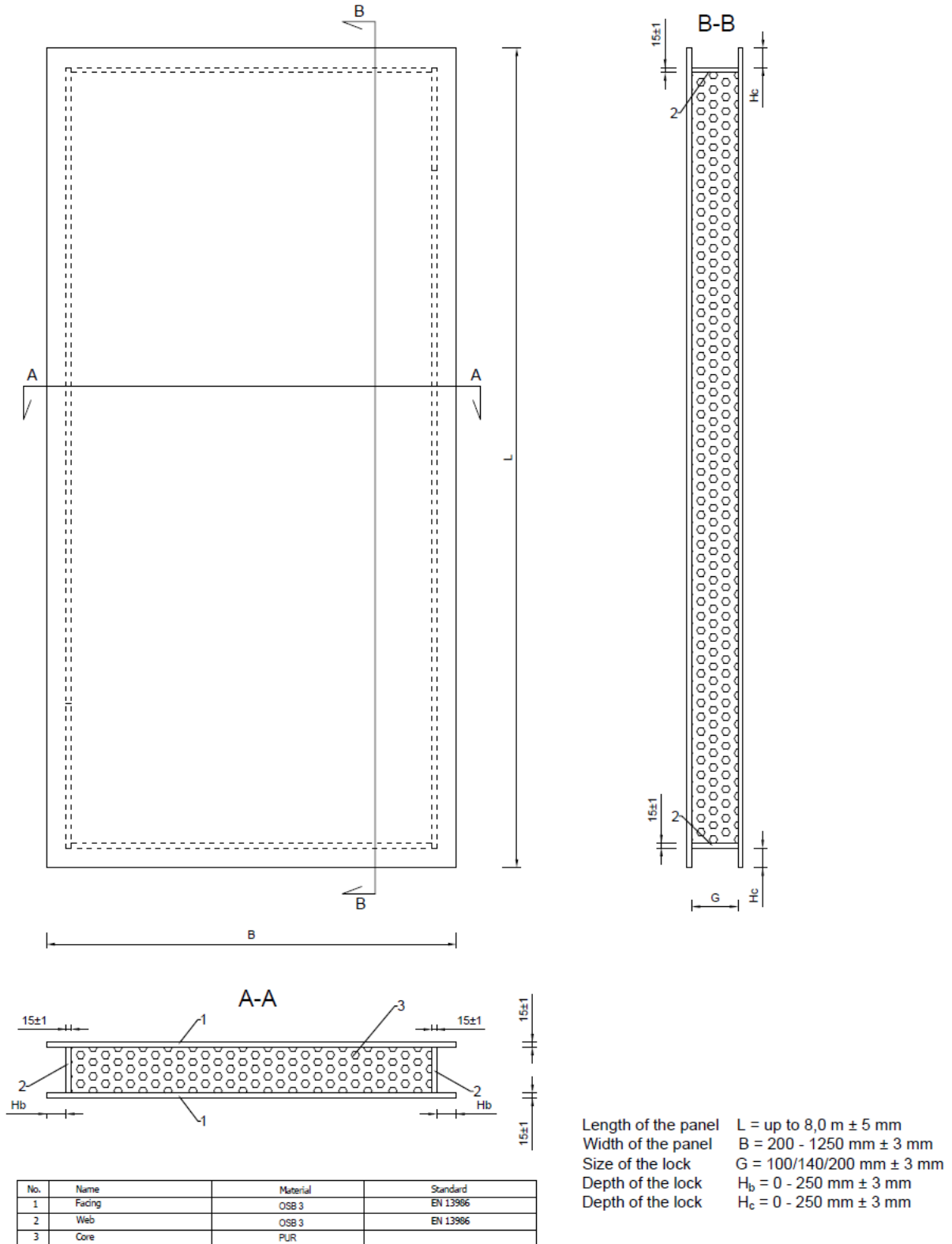


Figure 1 – H-Block panel, panel with skins made of one piece OSB board

Dimensions in mm

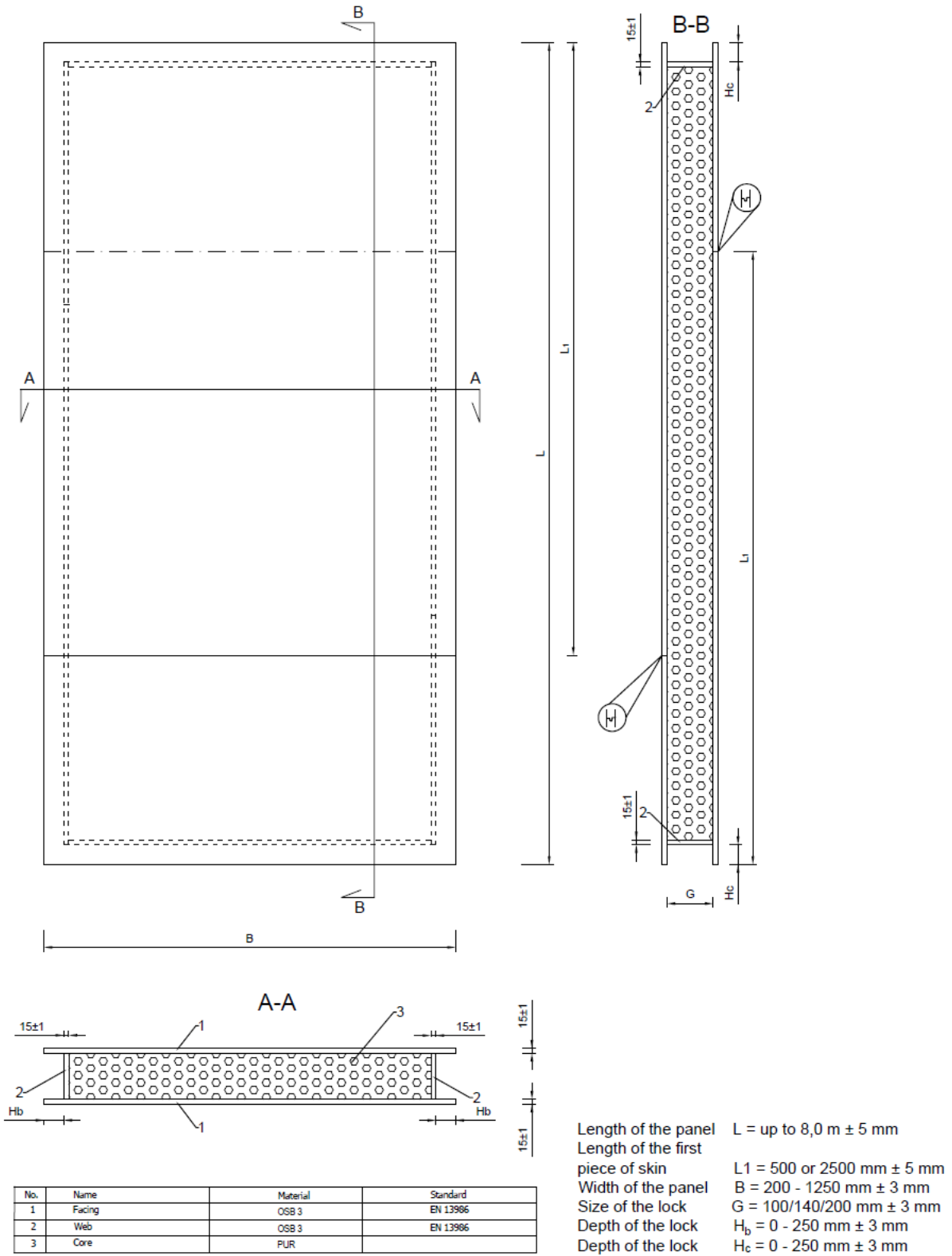


Figure 2 – H-Block panels, panel with skins made of OSB board with tongue and groove

Dimensions in mm

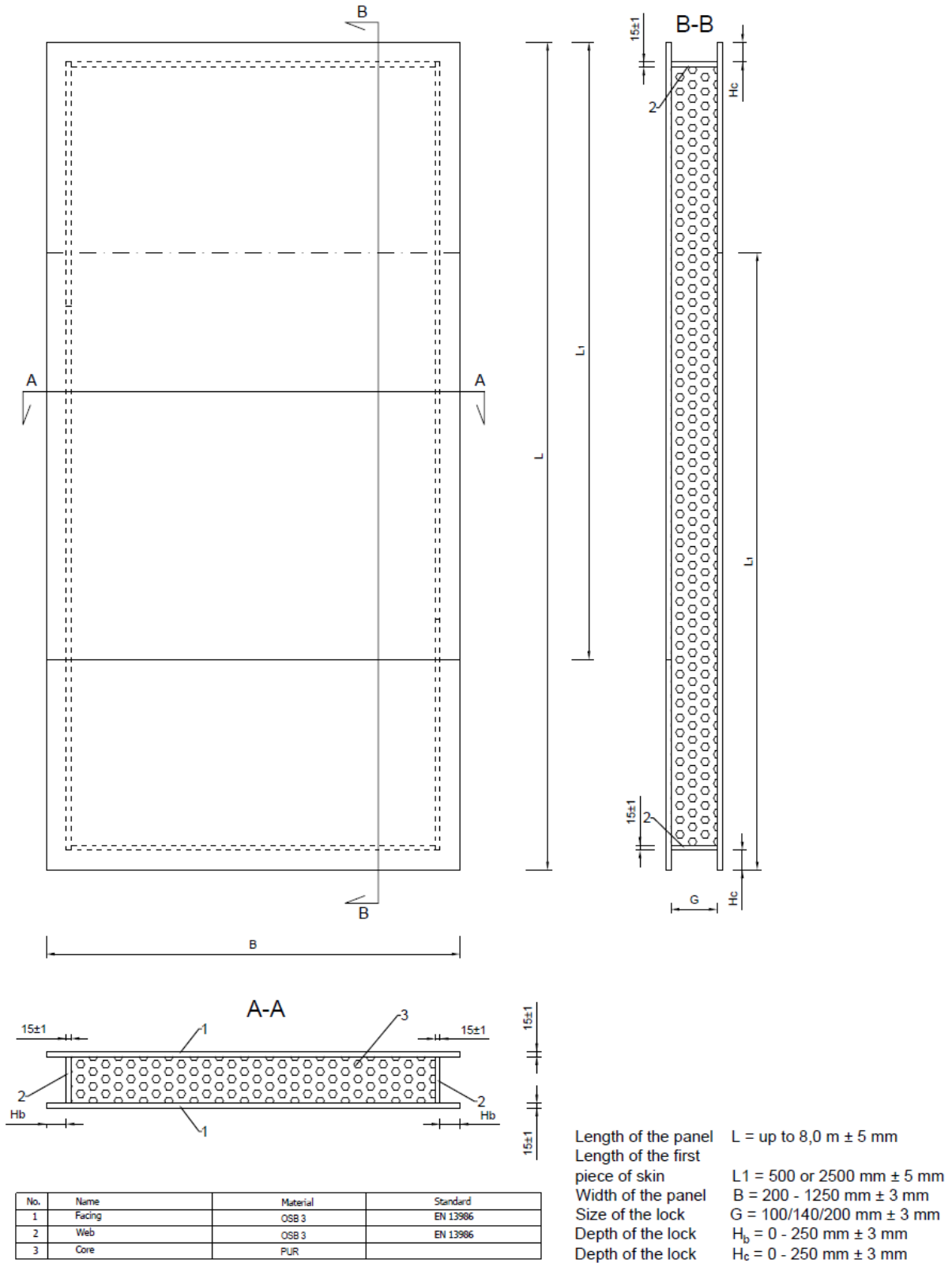


Figure 3 – H-Block panels, panel with interrupted skins made of OSB board

Dimensions in mm

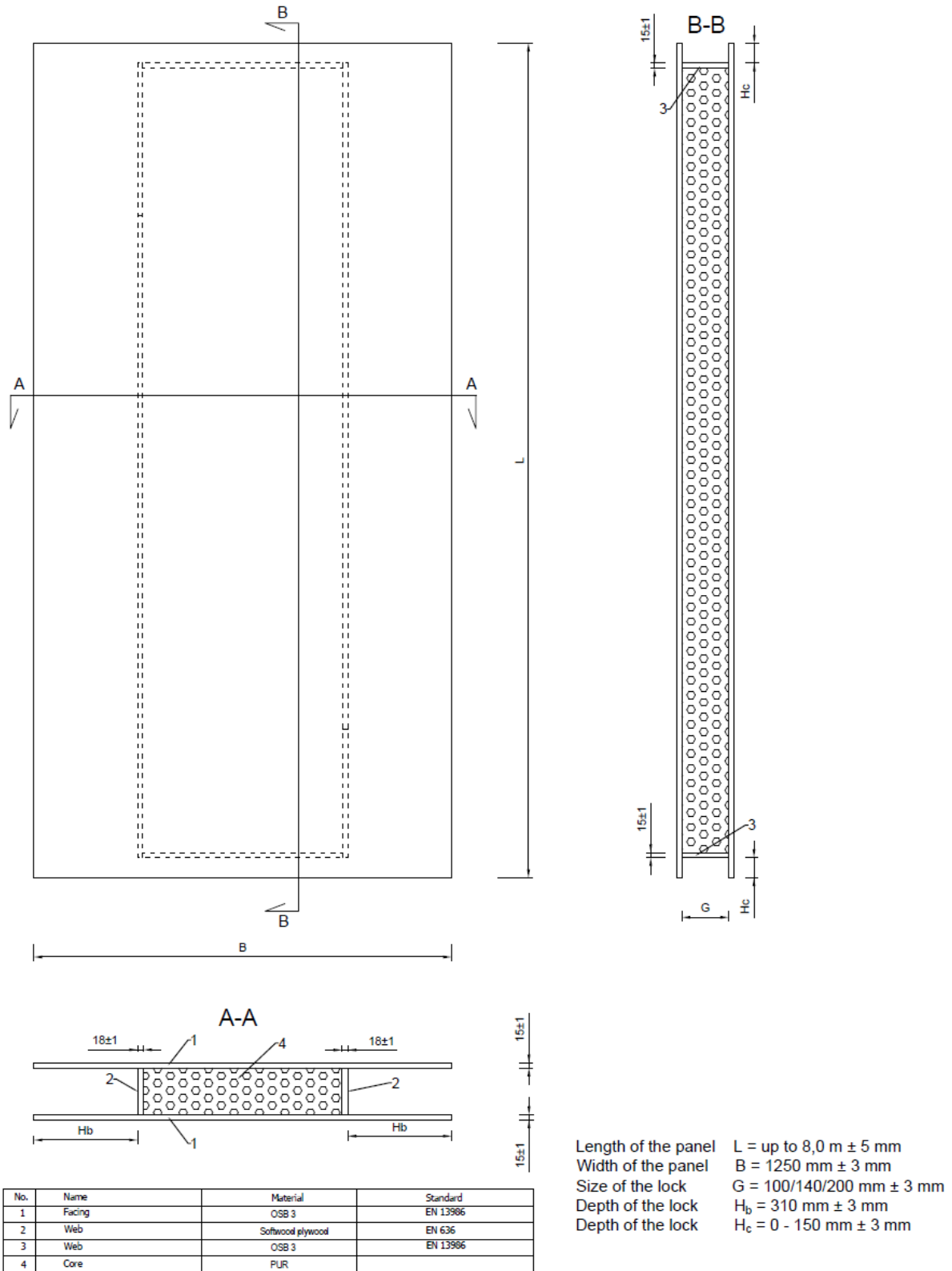


Figure 4 – H-Block_{plus} panel, panel with skins made of one piece OSB board

Dimensions in mm

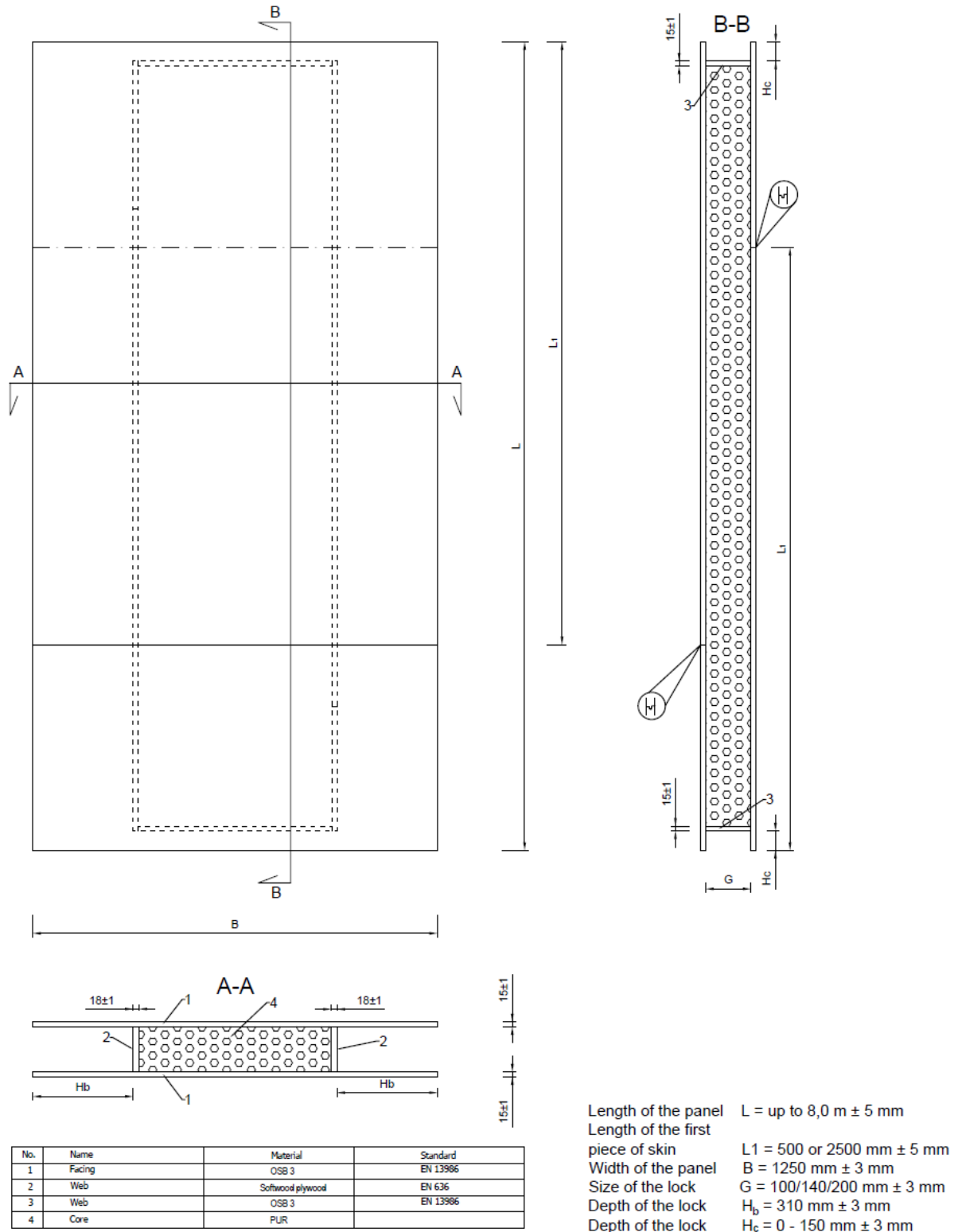


Figure 5 – H-Blockplus panel, panel with skins made of OSB board with tongue and groove

Dimensions in mm

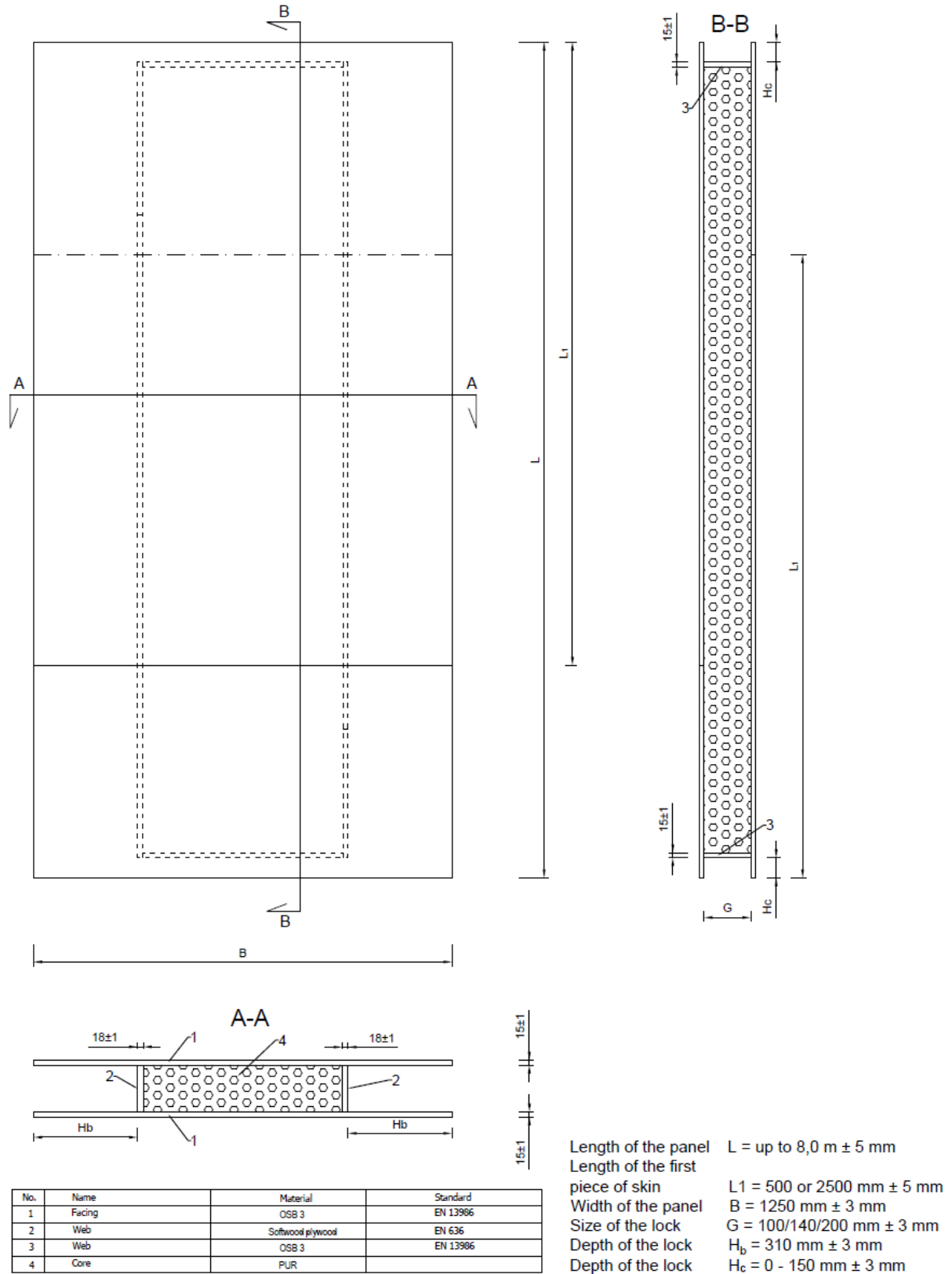
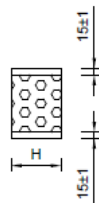
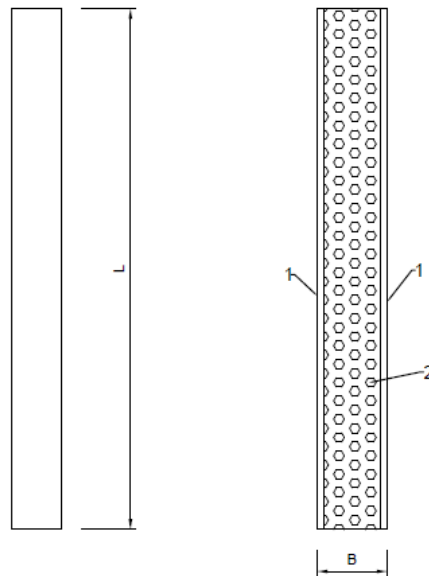


Figure 6 – H-Block_{plus} panel, panel with interrupted skins made of OSB board

Dimensions in mm

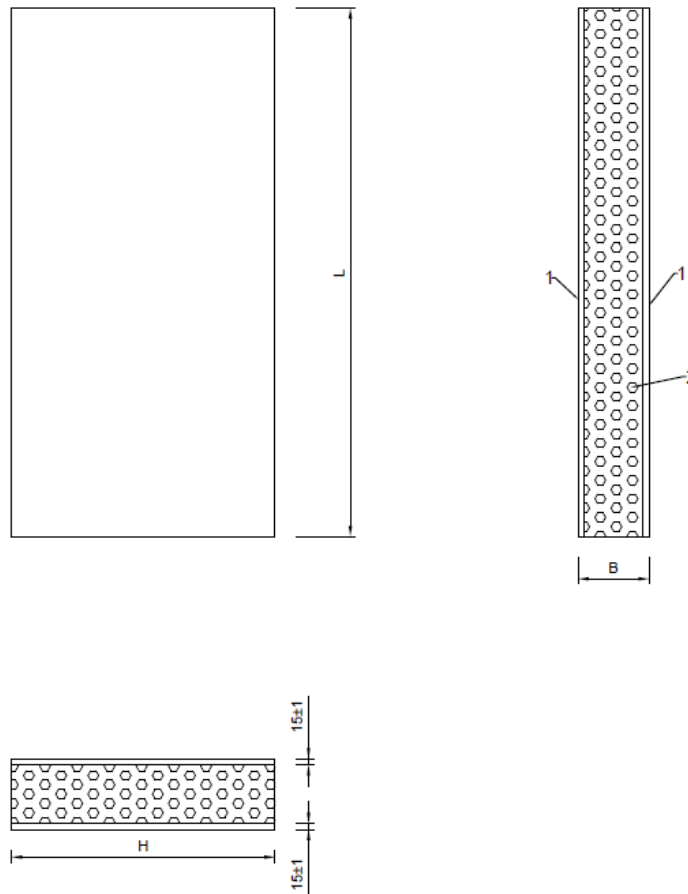


Length of the joint $L = 1,25 - 3,0 \text{ m} \pm 5 \text{ mm}$
 Thickness of the joint $B = 98/138/198 \text{ mm} \pm 3 \text{ mm}$
 Width of the joint $H = 62 - 122 \text{ mm} \pm 3 \text{ mm}$

No.	Name	Material	Standard
1	Facing	OSB 3	EN 13986
2	Core	PUR	

Figure 7 – LHB joint

Dimensions in mm

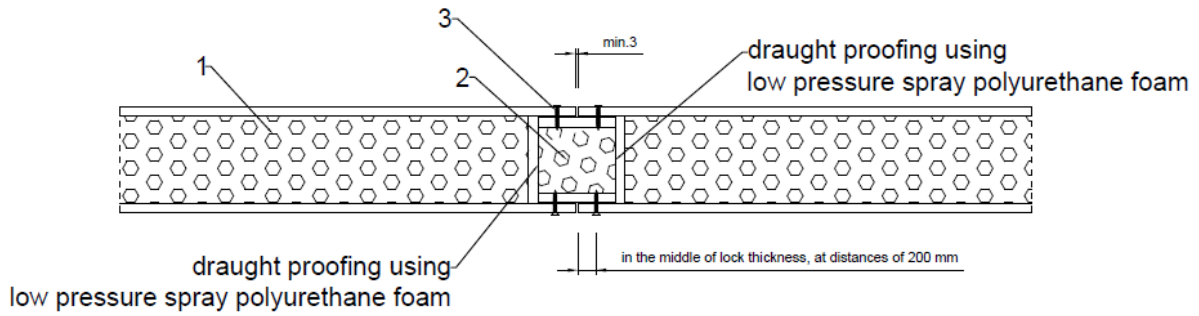


Length of the joint $L = 2,5 \text{ m} \pm 5 \text{ mm}$
 Thickness of the joint $B = 98/138/198 \text{ mm} \pm 3 \text{ mm}$
 Width of the joint $H = 620 \text{ mm} \pm 3 \text{ mm}$

No.	Name	Material	Standard
1	Facing	OSB 3	EN 13986
2	Core	PUR	

Figure 8 – LHB_{plus} joint

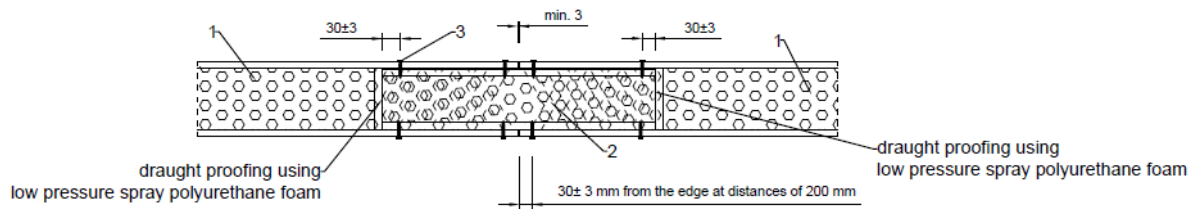
Dimensions in mm



No.	Name
1	H-Block® structural insulated panel
2	LHB joint
3	Countersunk head wood screw 5 x 40

Figure 9 – Joint of H-Block panels

Dimensions in mm



No.	Name
1	H-Block _{plus} ® structural insulated panel
2	LHB _{plus} joint
3	Countersunk head wood screw 5 x 40

Figure 10 – Joint of H-Block_{plus} panels

Annex 2

Load capacities of H-Block panels

General

Each combination of panel type and panel length has its specific layout with regard to:

- Type of the skins and total length L of H-Block.
- Position and lengths of OSB boards used as skins and position of interruptions in the skin, or position of glued tongue and groove joint in the skins.
- Position of ribs interruptions.

Specific design of each combination of panel type and panel length is part of manufacturer data file in form of technical drawings.

Walls

Load values are design values according to EN 1995-1-1 and related EN standards. Values are calculated for walls made of H-block panels joined by LHB joints according to Figure 7 and Figure 9. Values of vertical loads E_d with other load duration class can be calculated by multiply values for medium term loads and following coefficient:

Permanent load $k_1 = 0,54$

Long term load $k_2 = 0,72$

Short term load $k_3 = 1,25$

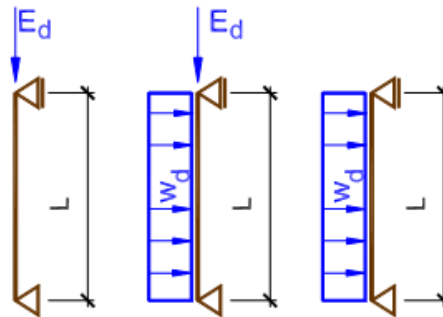


Figure 11 – Loads and their combinations for walls

Load values of walls are calculated for use class 2 according to EN 1995-1-1.

Table 2 – Perimeter wall, H-Block panels with skins made of one piece OSB board according to Figure 1

Load		Wall height L (m)															
		$\leq 1,50$	$\leq 2,00$	$\leq 2,40$	$\leq 2,50$	$\leq 2,70$	$\leq 3,00$	$\leq 3,50$	$\leq 4,00$	$\leq 4,80$	$\leq 5,00$	$\leq 5,50$	$\leq 6,00$	$\leq 6,50$	$\leq 7,00$	$\leq 7,50$	$\leq 8,00$
		H-Block thickness $H = 130$ mm – panels with skins made of one piece OSB board															
Medium term in vertical direction	E_d (kN/m)	52,824	48,400	45,632	45,440	44,440	42,984	40,672	30,400	21,200	17,080	12,000	8,000	–	–	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m)	52,824	48,400	45,632	45,440	44,440	42,984	40,672	28,000	16,000	11,200	7,200	5,600	–	–	–	–
	w_d (kN/m ²)	2,625	1,935	1,575	1,500	1,395	1,260	1,080	0,945	0,300	0,300	0,300	0,300	–	–	–	–
Short term perpendicular to wall	w_d (kN/m ²)	2,625	1,935	1,575	1,500	1,395	1,260	1,080	0,945	0,788	0,600	0,525	0,450	0,375	0,300	0,225	0,150
		H-Block thickness $H = 170$ mm – panels with skins made of one piece OSB board															
Medium term in vertical direction	E_d (kN/m)	58,160	52,844	50,195	49,984	48,884	47,282	44,739	42,293	39,200	36,000	30,400	24,000	20,000	16,000	12,000	9,600
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m)	58,160	52,844	50,195	49,984	48,884	47,282	44,739	42,293	32,000	32,000	24,000	16,000	14,400	12,000	8,000	6,400
	w_d (kN/m ²)	3,150	2,325	1,890	1,860	1,680	1,515	1,350	1,200	1,020	0,975	0,780	0,720	0,675	0,630	0,600	0,525
Short term perpendicular to wall	w_d (kN/m ²)	3,150	2,325	1,890	1,860	1,680	1,515	1,350	1,200	1,020	0,975	0,780	0,720	0,675	0,630	0,600	0,525
		H-Block thickness $H = 230$ mm – panels with skins made of one piece OSB board															
Medium term in vertical direction	E_d (kN/m)	64,000	62,400	60,000	57,600	54,400	52,800	50,400	48,000	45,600	44,000	42,000	40,000	33,600	32,000	28,000	20,800
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m)	64,000	62,400	60,000	57,600	54,400	52,800	50,400	48,000	45,600	44,000	42,000	38,400	28,000	28,000	24,000	17,600
	w_d (kN/m ²)	4,500	3,900	3,150	3,000	2,700	2,550	2,175	1,875	1,590	1,530	1,380	1,275	1,050	0,900	0,870	0,825
Short term perpendicular to wall	w_d (kN/m ²)	4,500	3,900	3,150	3,000	2,700	2,550	2,175	1,875	1,590	1,530	1,380	1,275	1,170	1,080	0,975	0,870

Table 3 – Perimeter wall, H-Block panels with skins made of OSB board with tongue and groove according to Figure 2

Load		Wall height L (m)												
		$\leq 2,62$	$\leq 2,70$	$\leq 3,00$	$\leq 3,50$	$\leq 4,00$	$\leq 4,80$	$\leq 5,00$	$\leq 5,50$	$\leq 6,00$	$\leq 6,50$	$\leq 7,00$	$\leq 7,50$	$\leq 8,00$
		H-Block thickness $H = 130$ mm – panels with skins made of OSB board with tongue and groove												
Medium term in vertical direction	E_d (kN/m)	44,800	44,440	42,984	40,672	30,400	21,200	17,080	12,000	8,000	–	–	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m)	44,800	44,440	42,984	40,672	28,000	16,000	11,200	7,200	5,600	–	–	–	–
	w_d (kN/m ²)	0,473	0,458	0,390	0,198	0,134	0,086	0,083	0,060	–	–	–	–	–
Short term perpendicular to wall	w_d (kN/m ²)	0,473	0,458	0,390	0,198	0,134	0,086	0,083	0,060	–	–	–	–	–
		H-Block thickness $H = 170$ mm – panels with skins made of OSB board with tongue and groove												
Medium term in vertical direction	E_d (kN/m)	49,600	48,884	47,282	44,739	42,293	39,200	36,000	30,400	24,000	20,000	16,000	12,000	9,600
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m)	49,600	48,884	47,282	44,739	42,293	32,000	32,000	30,400	24,000	20,000	16,000	12,000	9,600
	w_d (kN/m ²)	0,630	0,600	0,510	0,263	0,177	0,123	0,110	0,089	0,075	0,066	0,059	0,050	0,045
Short term perpendicular to wall	w_d (kN/m ²)	0,630	0,600	0,510	0,263	0,177	0,123	0,110	0,089	0,075	0,666	0,059	0,050	0,045
		H-Block thickness $H = 230$ mm – panels with skins made of OSB board with tongue and groove												
Medium term in vertical direction	E_d (kN/m)	57,440	54,400	52,800	50,400	48,000	44,600	44,000	42,000	40,000	33,600	32,000	28,000	20,800
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m)	57,440	54,400	52,800	50,400	48,000	44,600	44,000	42,000	40,000	33,600	32,000	28,000	20,800
	w_d (kN/m ²)	0,858	0,825	0,728	0,360	0,243	0,162	0,150	0,120	0,102	0,090	0,090	0,068	0,060
Short term perpendicular to wall	w_d (kN/m ²)	0,858	0,825	0,728	0,360	0,243	0,162	0,150	0,120	0,102	0,090	0,090	0,068	0,060

Table 4 – Perimeter wall, H-Block panels with interrupted skins made of OSB board according to Figure 3

Load		Wall height L (m)												
		$\leq 2,62$	$\leq 2,70$	$\leq 3,00$	$\leq 3,50$	$\leq 4,00$	$\leq 4,80$	$\leq 5,00$	$\leq 5,50$	$\leq 6,00$	$\leq 6,50$	$\leq 7,00$	$\leq 7,50$	$\leq 8,00$
		H-Block thickness $H = 130$ mm – panels with interrupted skins made of OSB board												
Medium term in vertical direction	E_d (kN/m)	25,600	24,800	21,600	16,000	12,000	–	–	–	–	–	–	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	25,600	24,800	21,600	9,600	10,400	–	–	–	–	–	–	–	–
		1,200	1,185	1,185	1,050	0,525	–	–	–	–	–	–	–	–
Short term perpendicular to wall	w_d (kN/m ²)	1,200	1,185	1,185	1,050	0,930	0,645	0,600	0,500	0,450	0,360	0,300	0,225	–
		H-Block thickness $H = 170$ mm – panels with interrupted skins made of OSB board												
Medium term in vertical direction	E_d (kN/m)	36,000	35,200	34,000	29,000	24,000	16,800	15,600	13,600	11,200	9,600	8,000	6,800	6,400
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	36,000	35,200	34,000	25,600	12,800	10,160	8,000	7,200	6,400	5,600	5,600	4,800	4,000
		1,800	1,650	1,500	1,305	1,170	0,750	0,750	0,570	0,480	0,420	0,338	0,300	0,270
Short term perpendicular to wall	w_d (kN/m ²)	1,800	1,650	1,500	1,305	1,170	1,020	0,975	0,780	0,705	0,615	0,555	0,450	0,405
		H-Block thickness $H = 230$ mm – panels with interrupted skins made of OSB board												
Medium term in vertical direction	E_d (kN/m)	44,800	44,000	42,000	40,800	39,200	34,400	32,000	28,000	23,200	19,600	16,900	15,200	13,120
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	44,800	44,000	42,000	40,800	25,600	19,200	16,800	16,000	15,200	14,400	10,400	8,160	7,600
		2,850	2,700	2,550	2,175	1,875	1,350	1,200	0,930	0,780	0,645	0,600	0,525	0,480
Short term perpendicular to wall	w_d (kN/m ²)	2,850	2,700	2,550	2,175	1,875	1,575	1,500	1,380	1,170	1,020	0,855	0,728	0,675

Floors and ceilings

Load values are design values according to EN 1995-1-1 and related EN standards. Self-load of panel is included in calculation. Values are calculated for floors or ceilings made of H-block panels joined by LHB joints according to Figure 7 and Figure 9. Values of vertical loads E_d with other load duration class can be calculated by multiply values for medium term loads and following coefficient:

Permanent load $k_1 = 0,57$

Long term load $k_2 = 0,71$

Short term load $k_3 = 1,28$

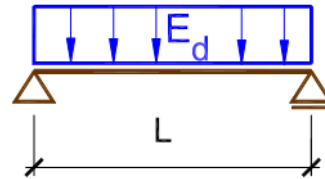


Figure 12 – Load for floors and ceilings

Load values of walls are calculated for use class 1 according to EN 1995-1-1.

Table 5 – Floors and ceilings, H-Block panels with skins made of one piece OSB board according to Figure 1

Panel thickness H (mm)	Load	Span L (m)															
		$\leq 1,50$	$\leq 2,00$	$\leq 2,40$	$\leq 2,50$	$\leq 2,70$	$\leq 3,00$	$\leq 3,50$	$\leq 4,00$	$\leq 4,80$	$\leq 5,00$	$\leq 5,50$	$\leq 6,00$	$\leq 6,50$	$\leq 7,00$	$\leq 7,50$	$\leq 8,00$
130	Medium term in vertical direction E_d (kN/m ²)	2,349	1,659	1,299	1,231	1,126	0,984	0,804	0,594	0,324	0,279	0,189	0,124	0,054	–	–	–
170		3,504	2,454	1,929	1,839	1,689	1,494	1,231	0,954	0,534	0,444	0,339	0,234	0,166	0,099	0,024	–
230		5,199	3,699	2,949	2,784	2,574	2,274	1,914	1,419	0,819	0,744	0,571	0,451	0,339	0,249	0,180	0,099

NOTE Panels where $E_d < 2,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 6 – Floors and ceilings, H-Block panels with skins made of OSB board with tongue and groove according to Figure 2

Panel thickness <i>H</i> (mm)	Load	Span <i>L</i> (m)												
		≤ 2,62	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
130	Medium term in vertical direction <i>E_d</i> (kN/m ²)	0,201	0,181	0,114	–	–	–	–	–	–	–	–	–	–
170		0,358	0,331	0,249	–	–	–	–	–	–	–	–	–	–
230		0,579	0,549	0,453	0,084	–	–	–	–	–	–	–	–	–

NOTE Panels where $E_d < 2,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 7 – Floors and ceilings, H-Block panels with interrupted skins made of OSB board according to Figure 3

Panel thickness <i>H</i> (mm)	Load	Span <i>L</i> (m)												
		≤ 2,62	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
130	Medium term in vertical direction <i>E_d</i> (kN/m ²)	1,134	1,104	0,984	0,804	0,594	0,324	0,279	0,189	0,124	0,054	–	–	–
170		1,749	1,689	1,494	1,231	0,954	0,534	0,444	0,339	0,234	0,166	0,099	0,024	–
230		2,649	2,454	2,274	1,914	1,419	0,819	0,744	0,571	0,451	0,339	0,249	0,180	0,099

NOTE Panels where $E_d < 2,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Roofs

Load values are design values according to EN 1995-1-1 and related EN standards. Values are calculated for roofs made of H-block panels joined by LHB joints according to Figure 7 and Figure 9. Self load of panel is included in calculation. Values of vertical loads E_d with other load duration class can be calculated by multiply values for medium term loads and following coefficient:

Permanent load $k_1 = 0,54$

Long term load $k_2 = 0,72$

Short term load $k_3 = 1,25$

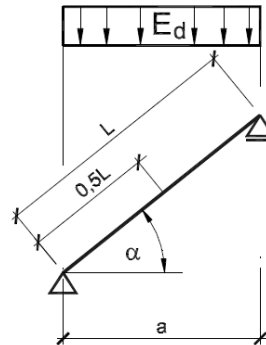


Figure 13 – Load for roofs

Load values of walls are calculated for use class 2 according to EN 1995-1-1.

Table 8 – Roofs, H-Block panels with skins made of one piece OSB board according to Figure 1

Panel thickness H (mm)	Load	Panel length $L \leq 1,5$ m			Panel length $L \leq 2,0$ m			Panel length $L \leq 2,4$ m			Panel length $L \leq 2,5$ m			Panel length $L \leq 2,7$ m			Panel length $L \leq 3,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	1,875	2,245	3,809	1,264	1,548	2,654	0,979	1,195	2,084	0,972	1,135	1,979	0,837	1,030	1,799	0,727	0,895	1,589
170		2,749	3,243	5,519	1,902	2,305	3,884	1,489	1,810	3,074	1,414	1,720	2,924	1,287	1,570	2,654	1,122	1,375	2,384
230		4,144	5,035	8,384	2,899	3,505	5,834	2,292	2,785	4,672	2,172	2,620	4,409	1,992	2,403	4,034	1,767	2,140	3,554

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 9 – Roofs, H-Block panels with skins made of one piece OSB board according to Figure 1

Panel thickness H (mm)	Load	Panel length $L \leq 3,5$ m			Panel length $L \leq 4,0$ m			Panel length $L \leq 4,8$ m			Panel length $L \leq 5,0$ m			Panel length $L \leq 5,5$ m			Panel length $L \leq 6,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,582	0,633	0,809	0,477	0,517	0,662	0,349	0,445	0,839	0,316	0,400	0,749	0,214	0,283	0,569	0,147	0,190	0,434
170		0,927	1,143	1,949	0,777	0,963	1,679	0,597	0,745	1,349	0,559	0,715	1,259	0,484	0,610	1,109	0,424	0,543	0,989
230		1,459	1,795	3,029	1,257	1,533	2,584	0,994	1,225	2,084	0,949	1,158	2,002	0,837	1,030	1,784	0,739	0,910	1,604

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 10 – Roofs, H-Block panels with skins made of one piece OSB board according to Figure 1

Panel thickness H (mm)	Load	Panel length $L \leq 6,5$ m			Panel length $L \leq 7,0$ m			Panel length $L \leq 7,5$ m			Panel length $L \leq 8,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,079	0,130	0,322	0,019	0,085	0,179	–	–	–	–	–	–
170		0,364	0,475	0,877	0,319	0,415	0,794	0,277	0,369	0,719	0,244	0,325	0,629
230		0,657	0,820	1,469	0,597	0,745	1,334	0,537	0,670	1,222	0,487	0,610	1,109

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 11 – Roofs, H-Block panels with skins made of OSB board with tongue and groove according to Figure 2

Panel thickness H (mm)	Load	Panel length $L \leq 2,62$ m			Panel length $L \leq 2,7$ m			Panel length $L \leq 3,0$ m			Panel length $L \leq 3,5$ m			Panel length $L \leq 4,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,102	0,145	0,359	0,087	0,130	0,322	0,046	0,082	0,239	–	–	–	–	–	–
170		0,229	0,301	0,604	0,214	0,273	0,569	0,151	0,205	0,449	–	–	0,029	–	–	–
230		0,417	0,520	0,959	0,387	0,490	0,914	0,304	0,385	0,734	0,012	0,040	0,179	–	–	–

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 12 – Roofs, H-Block panels with interrupted skins made of OSB board according to Figure 3

Panel thickness H (mm)	Load	Panel length $L \leq 2,62$ m			Panel length $L \leq 2,7$ m			Panel length $L \leq 3,0$ m			Panel length $L \leq 3,5$ m			Panel length $L \leq 4,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,889	1,075	1,867	0,837	1,030	1,799	0,727	0,895	1,589	0,582	0,730	1,289	0,477	0,603	1,079
170		1,332	1,630	2,789	1,287	1,570	2,654	1,122	1,375	2,384	0,927	1,143	1,949	0,777	0,963	1,679
230		2,059	2,470	4,229	1,992	2,403	4,034	1,767	2,140	3,554	1,459	1,795	3,029	1,257	1,553	2,584

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 13 – Roofs, H-Block panels with interrupted skins made of OSB board according to Figure 3

Panel thickness H (mm)	Load	Panel length $L \leq 4,8$ m			Panel length $L \leq 5,0$ m			Panel length $L \leq 5,5$ m			Panel length $L \leq 6,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,312	0,393	0,764	0,252	0,325	0,644	0,147	0,190	0,434	0,087	0,123	0,314
170		0,597	0,745	1,349	0,559	0,685	1,259	0,394	0,490	0,914	0,297	0,378	0,727
230		0,994	1,225	2,084	0,949	1,158	2,002	0,837	1,030	1,784	0,679	0,828	1,604

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 14 – Roofs, H-Block panels with interrupted skins made of OSB board according to Figure 3

Panel thickness H (mm)	Load	Panel length $L \leq 6,5$ m			Panel length $L \leq 7,0$ m			Panel length $L \leq 7,5$ m			Panel length $L \leq 8,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,034	0,073	0,224	0,004	0,033	0,164	–	–	–	–	–	–
170		0,222	0,288	0,587	0,169	0,228	0,473	0,094	0,138	0,340	0,034	0,070	0,224
230		0,562	0,685	1,299	0,469	0,565	1,049	0,342	0,433	0,817	0,274	0,363	0,697

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Annex 3

Load capacities of H-Block_{plus} panels

General

- Type of the skins and total length L of H-Block_{plus} panel.
- Position and lengths of OSB boards used as skins and position of interruptions in the skin, or position of glued tongue and groove joint in the skins.
- Position of LHB_{plus} joints.
- Position of ribs interruptions.

Specific design of each combination of panel type and panel length is part of manufacturer data file in form of technical drawings.

Walls

Load values are design values according to EN 1995-1-1 and related EN standards. Values are calculated for walls made of H-Block_{plus} panels joined by LHB_{plus} joints according to Figure 8 and Figure 10. Values of vertical loads E_d with other load duration class can be calculated by multiply values for medium term loads and following coefficient:

Permanent load $k_1 = 0,54$

Long term load $k_2 = 0,72$

Short term load $k_3 = 1,25$

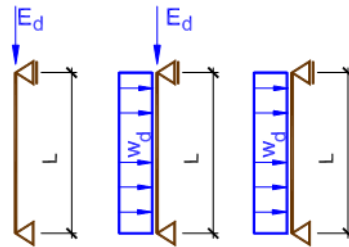


Figure 14 – Loads and their combinations for walls

Load values of walls are calculated for use class 2 according to EN 1995-1-1.

Table 15 – Perimeter wall, H-Block_{plus} panels with skins made of one piece OSB board according to Figure 4

Load		Wall height L (m)																
		≤ 1,50	≤ 2,00	≤ 2,40	≤ 2,50	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00	
		H-Block_{plus} thickness $H = 130$ mm – panels with skins made of one piece OSB board																
Medium term in vertical direction	E_d (kN/m)	80,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	55,680	54,400	44,560	37,600	–	–	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	68,000	55,680	54,400	44,560	37,600	–	–	–	–
		3,390	2,535	2,100	2,018	1,875	1,703	1,485	1,314	1,100	1,073	0,975	0,893	–	–	–	–	
Short term perpendicular to wall	w_d (kN/m ²)	3,390	2,535	2,100	2,018	1,875	1,703	1,485	1,314	1,100	1,073	0,975	0,893	0,825	0,762	0,705	0,600	
		H-Block_{plus} thickness $H = 170$ mm – panels with skins made of one piece OSB board																
Medium term in vertical direction	E_d (kN/m)	73,600	73,600	73,600	73,600	73,600	73,600	73,600	73,600	73,600	68,000	67,200	66,000	64,000	60,000	52,000	45,600	40,000
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	73,600	73,600	73,600	73,600	73,600	73,600	73,600	73,600	73,600	68,000	67,200	66,000	64,000	60,000	52,000	45,600	40,000
		4,800	3,600	2,970	2,850	2,663	2,400	2,100	1,860	1,575	1,350	1,200	1,050	0,900	0,850	0,800	0,750	
Short term perpendicular to wall	w_d (kN/m ²)	4,800	3,600	2,970	2,850	2,663	2,400	2,100	1,860	1,575	1,350	1,200	1,050	0,900	0,850	0,800	0,750	
		H-Block_{plus} thickness $H = 230$ mm – panels with skins made of one piece OSB board																
Medium term in vertical direction	E_d (kN/m)	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	72,000	64,000	56,000
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	72,000	64,000	56,000
		7,050	5,250	4,335	4,125	3,870	3,525	3,075	2,715	2,280	2,220	2,010	1,845	1,575	1,350	1,275	1,050	
Short term perpendicular to wall	w_d (kN/m ²)	7,050	5,250	4,335	4,125	3,870	3,525	3,075	2,715	2,280	2,220	2,010	1,845	1,575	1,350	1,275	1,050	

Table 16 – Perimeter wall, H-Block_{plus} panels with skins made of OSB board with tongue and groove according to Figure 5

Load		Wall height L (m)												
		≤ 2,62	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
		H-Block_{plus} thickness H = 130 mm – panels with skins made of OSB board with tongue and groove												
Medium term in vertical direction	E_d (kN/m)	68,000	68,000	68,000	68,000	68,000	55,680	54,400	44,560	37,600	–	–	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	68,000	68,000	68,000	68,000	68,000	55,680	54,400	44,560	37,600	–	–	–	–
		0,704	0,687	0,603	0,345	0,248	0,188	0,165	0,140	0,120	–	–	–	–
Short term perpendicular to wall	w_d (kN/m ²)	0,704	0,687	0,603	0,345	0,248	0,188	0,165	0,140	0,120	0,105	0,105	0,075	0,068
		H-Block_{plus} thickness H = 170 mm – panels with skins made of OSB board with tongue and groove												
Medium term in vertical direction	E_d (kN/m)	73,600	73,600	73,600	73,600	73,600	68,000	67,200	66,000	64,000	60,000	52,000	45,600	40,000
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	73,600	73,600	73,600	73,600	73,600	68,000	67,200	66,000	64,000	60,000	52,000	45,600	40,000
		0,938	0,915	0,840	0,458	0,330	0,255	0,233	0,188	0,158	0,138	0,123	0,104	0,093
Short term perpendicular to wall	w_d (kN/m ²)	0,938	0,915	0,840	0,458	0,330	0,255	0,233	0,188	0,158	0,138	0,123	0,104	0,093
		H-Block_{plus} thickness H = 230 mm – panels with skins made of OSB board with tongue and groove												
Medium term in vertical direction	E_d (kN/m)	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	72,000	68,000	64,000	60,000	52,000
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	72,000	68,000	64,000	60,000	52,000
		1,290	1,260	1,140	0,630	0,450	0,353	0,323	0,255	0,220	0,195	0,173	0,143	0,131
Short term perpendicular to wall	w_d (kN/m ²)	1,290	1,260	1,140	0,630	0,450	0,353	0,323	0,255	0,220	0,195	0,173	0,143	0,131

Table 17 – Perimeter wall, H-Block_{plus} panels with interrupted skins made of OSB board according to Figure 6

Load		Wall height L (m)												
		≤ 2,62	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
H-Block_{plus} thickness H = 130 mm – panels with interrupted skins made of OSB board														
Medium term in vertical direction	E_d (kN/m)	68,000	68,000	68,000	55,600	47,920	39,272	37,760	0,000	0,000	–	–	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	68,000	68,000	68,000	55,600	47,920	39,272	37,760	0,000	0,000	–	–	–	–
		1,890	1,875	1,695	1,485	1,314	1,100	1,065	0,975	0,885	–	–	–	–
Short term perpendicular to wall	w_d (kN/m ²)	1,890	1,875	1,695	1,485	1,314	1,100	1,065	0,975	0,885	0,690	0,660	0,630	0,600
H-Block_{plus} thickness H = 170 mm – panels with interrupted skins made of OSB board														
Medium term in vertical direction	E_d (kN/m)	73,600	73,600	73,600	73,600	73,600	68,000	67,260	66,000	51,440	44,320	38,800	–	–
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	73,600	73,600	73,600	73,600	73,600	68,000	67,260	66,000	51,440	44,320	38,800	–	–
		2,700	2,663	2,400	2,100	1,800	1,575	1,350	1,200	1,050	0,900	0,850	–	–
Short term perpendicular to wall	w_d (kN/m ²)	2,700	2,663	2,400	2,100	1,800	1,575	1,350	1,200	1,050	0,900	0,850	0,800	0,750
H-Block_{plus} thickness H = 230 mm – panels with interrupted skins made of OSB board														
Medium term in vertical direction	E_d (kN/m)	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	72,000	64,000	56,000	48,000
Combination of medium term in vertical direction and short term perpendicular to wall	E_d (kN/m) and w_d (kN/m ²)	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	72,000	64,000	56,000	48,000
		3,945	3,870	3,525	3,075	2,715	2,280	2,220	2,010	1,845	1,575	1,350	1,275	1,050
Short term perpendicular to wall	w_d (kN/m ²)	3,945	3,870	3,525	3,075	2,715	2,280	2,220	2,010	1,845	1,575	1,350	1,275	1,050

Floors and ceilings

Load values are design values according to EN 1995-1-1 and related EN standards. Self-load of panel is included in calculation. Values are calculated for floors or ceilings made of H-block_{plus} panels joined by LHB_{plus} joints according to Figure 8 and Figure 10. Values of vertical loads E_d with other load duration class can be calculated by multiply values for medium term loads and following coefficient:

Permanent load $k_1 = 0,57$

Long term load $k_2 = 0,71$

Short term load $k_3 = 1,28$

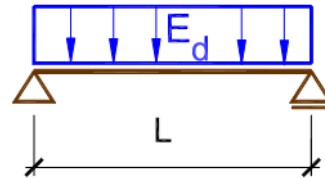


Figure 15 – Load for floors and ceilings

Load values of walls are calculated for use class 1 according to EN 1995-1-1.

Table 18 – Floors and ceilings, H-Block_{plus} panels with skins made of one piece OSB board according to Figure 4

Panel thickness H (mm)	Load	Span L (m)															
		≤ 1,50	≤ 2,00	≤ 2,40	≤ 2,50	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
130	Medium term in vertical direction E_d (kN/m ²)	2,935	2,110	1,710	1,615	1,480	1,300	1,090	0,910	0,715	0,678	0,580	0,498	0,430	0,325	0,265	0,160
170		4,405	3,205	2,575	2,455	2,260	2,020	1,705	1,465	1,165	1,120	0,985	0,865	0,775	0,693	0,610	0,520
230		6,730	4,833	3,955	3,775	3,490	3,130	2,680	2,305	1,900	1,825	1,615	1,485	1,285	1,105	0,955	0,820

NOTE Panels where $E_d < 2,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 19 – Floors and ceilings, H-Block_{plus} panels with skins made of OSB board with tongue and groove according to Figure 5

Panel thickness <i>H</i> (mm)	Load	Span <i>L</i> (m)												
		≤ 2,62	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
130	Medium term in vertical direction <i>E_d</i> (kN/m ²)	0,303	0,288	0,235	–	–	–	–	–	–	–	–	–	–
170		0,535	0,520	0,453	0,063	–	–	–	–	–	–	–	–	–
230		0,895	0,865	0,775	0,232	0,058	–	–	–	–	–	–	–	–

NOTE Panels where $E_d < 2,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 20 – Floors and ceilings, H-Block_{plus} panels with interrupted skins made of OSB board according to Figure 6

Panel thickness <i>H</i> (mm)	Load	Span <i>L</i> (m)												
		≤ 2,62	≤ 2,70	≤ 3,00	≤ 3,50	≤ 4,00	≤ 4,80	≤ 5,00	≤ 5,50	≤ 6,00	≤ 6,50	≤ 7,00	≤ 7,50	≤ 8,00
130	Medium term in vertical direction <i>E_d</i> (kN/m ²)	1,525	1,480	1,300	1,090	0,910	0,715	0,678	0,580	0,498	0,430	0,325	0,265	0,160
170		2,335	2,260	2,020	1,705	1,465	1,165	1,120	0,985	0,865	0,775	0,693	0,610	0,520
230		3,595	3,490	3,130	2,680	2,305	1,900	1,825	1,615	1,458	1,285	1,105	0,955	0,820

NOTE Panels where $E_d < 2,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Roofs

Load values are design values according to EN 1995-1-1 and related EN standards. Values are calculated for roofs made of H-block_{plus} panels joined by LHB_{plus} joints according to Figure 8 and Figure 10. Self load of panel is included in calculation. Values of vertical loads E_d with other load duration class can be calculated by multiply values for medium term loads and following coefficient:

Permanent load $k_1 = 0,54$

Long term load $k_2 = 0,72$

Short term load $k_3 = 1,25$

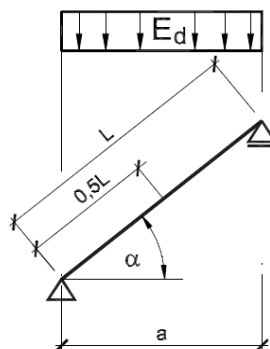


Figure 16 – Load for roofs

Load values of walls are calculated for use class 2 according to EN 1995-1-1.

Table 21 – Roofs, H-Block_{plus} panels with skins made of one piece OSB board according to Figure 4

Panel thickness H (mm)	Load	Panel length $L \leq 1,5$ m			Panel length $L \leq 2,0$ m			Panel length $L \leq 2,4$ m			Panel length $L \leq 2,5$ m			Panel length $L \leq 2,7$ m			Panel length $L \leq 3,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	2,335	2,845	4,930	1,630	2,005	3,490	1,255	1,600	2,905	1,240	1,525	2,725	1,120	1,405	2,530	0,985	1,225	2,275
170		3,535	4,240	7,240	2,523	3,049	5,260	2,020	2,455	4,293	1,915	2,335	4,098	1,765	2,155	3,798	1,570	1,926	3,415
230		5,403	6,453	10,855	3,873	4,645	7,885	3,130	3,768	6,445	2,980	3,595	6,160	2,755	3,325	5,710	2,470	2,980	5,155

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 22 – Roofs, H-Block_{plus} panels with skins made of one piece OSB board according to Figure 4

Panel thickness H (mm)	Load	Panel length $L \leq 3,5$ m			Panel length $L \leq 4,0$ m			Panel length $L \leq 4,8$ m			Panel length $L \leq 5,0$ m			Panel length $L \leq 5,5$ m			Panel length $L \leq 6,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,805	1,015	1,930	0,655	0,850	1,630	0,505	0,663	1,330	0,460	0,625	1,180	0,393	0,528	1,120	0,325	0,445	1,000
170		1,308	1,623	2,920	1,105	1,390	2,530	0,888	1,105	2,080	0,835	1,063	2,002	0,723	0,925	1,780	0,633	0,820	1,600
230		2,095	2,545	4,435	1,810	2,208	3,880	1,473	1,810	3,235	1,405	1,720	3,100	1,240	1,540	2,770	1,105	1,375	2,515

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 23 – Roofs, H-Block_{plus} panels with skins made of one piece OSB board according to Figure 4

Panel thickness H (mm)	Load	Panel length $L \leq 6,5$ m			Panel length $L \leq 7,0$ m			Panel length $L \leq 7,5$ m			Panel length $L \leq 8,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,265	0,394	0,895	0,220	0,325	0,805	0,175	0,280	0,723	0,145	0,243	0,655
170		0,550	0,727	1,443	0,483	0,640	1,315	0,423	0,577	1,195	0,376	0,516	1,102
230		0,985	1,240	2,290	0,888	1,120	2,095	0,805	1,023	1,930	0,730	0,933	1,780

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 24 – Roofs, H-Block_{plus} panels with skins made of OSB board with tongue and groove according to Figure 5

Panel thickness H (mm)	Load	Panel length $L \leq 2,62$ m			Panel length $L \leq 2,7$ m			Panel length $L \leq 3,0$ m			Panel length $L \leq 3,5$ m			Panel length $L \leq 4,0$ m			Panel length $L \leq 4,8$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	10	25	45	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,175	0,273	0,708	0,160	0,258	0,685	0,115	0,213	0,603	–	–	0,145	–	–	–	–	–	–
170		0,363	0,505	1,083	0,348	0,483	1,045	0,295	0,415	0,940	–	0,043	0,328	–	–	0,123	–	–	–
230		0,648	0,838	1,630	0,625	0,813	1,585	0,550	0,723	1,443	0,115	0,213	0,603	–	0,040	0,318	–	–	0,160

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 25 – Roofs, H-Block_{plus} panels with interrupted skins made of OSB board according to Figure 6

Panel thickness H (mm)	Load	Panel length $L \leq 2,62$ m			Panel length $L \leq 2,7$ m			Panel length $L \leq 3,0$ m			Panel length $L \leq 3,5$ m			Panel length $L \leq 4,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	1,173	1,456	2,643	1,120	1,405	2,530	0,985	1,225	2,275	0,805	1,015	1,930	0,655	0,850	1,630
170		1,825	2,223	3,910	1,765	2,155	3,798	1,570	1,926	3,415	1,308	1,623	2,920	1,105	1,390	2,530
230		2,830	3,430	5,875	2,755	3,325	5,710	2,470	2,980	5,155	2,095	2,545	4,435	1,810	2,208	3,880

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 26 – Roofs, H-Block_{plus} panels with interrupted skins made of OSB board according to Figure 6

Panel thickness <i>H</i> (mm)	Load	Panel length $L \leq 4,8$ m			Panel length $L \leq 5,0$ m			Panel length $L \leq 5,5$ m			Panel length $L \leq 6,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,505	0,663	1,320	0,460	0,625	1,180	0,393	0,528	1,120	0,325	0,445	0,895
170		0,888	1,105	2,002	0,835	1,063	2,002	0,723	0,925	1,780	0,633	0,820	1,600
230		1,473	1,810	3,235	1,405	1,720	3,085	1,240	1,540	2,770	1,105	1,375	2,515

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Table 27 – Roofs, H-Block_{plus} panels with interrupted skins made of OSB board according to Figure 6

Panel thickness <i>H</i> (mm)	Load	Panel length $L \leq 6,5$ m			Panel length $L \leq 7,0$ m			Panel length $L \leq 7,5$ m			Panel length $L \leq 8,0$ m		
		Pitch α (°)			Pitch α (°)			Pitch α (°)			Pitch α (°)		
		10	25	45	10	25	45	10	25	45	10	25	45
130	Medium term in vertical direction E_d (kN/m ²)	0,265	0,394	0,895	0,220	0,325	0,805	0,153	0,250	0,670	0,115	0,205	0,595
170		0,550	0,727	1,443	0,483	0,640	1,312	0,415	0,565	1,180	0,355	0,498	1,068
230		0,985	1,240	2,290	0,888	1,120	2,095	0,805	1,023	1,930	0,730	0,933	1,780

NOTE Panels where $E_d < 1,000$ kN/m² may have an insufficient loadbearing capacity for use in works.

Annex 4

Materials and components specifications

Table 28 – Materials and components specifications

Component/Material	Technical specification	Class	Density (kg/m ³)	Formaldehyde release	Reaction to fire class	
					D-s2, d0	EN 13986 2003/43/EC ¹⁾
OSB boards	EN 300 EN 13986	OSB/3	≥ 600	E1	D-s2, d0	EN 13986 2003/43/EC ¹⁾
Softwood plywood	EN 636 EN 13986	For use class 2 or better ²⁾	600 to 750	E1	D-s2, d0	EN 13986 2003/43/EC ¹⁾
Rigid polyurethane (PUR)	According to the manufacturer specifications	According to Table 29		–	–	No performance assessed
Low pressure polyurethane foam	According to the manufacturer specifications	According to Table 29		–	–	No performance assessed
Screws and other mechanical fasteners	EN 14592 or according to manufacturer specifications	Corrosion protection for use class 2 or better ²⁾	–	–	–	No performance assessed

¹⁾ Amended by Commission Decisions 2003/593/EC, 2006/673/EC and 2007/348/EC.

²⁾ Use class according to EN 1995-1-1.

Table 29 – Minimal requirements for mechanical properties of two composite polyurethane (PUR) and low pressure polyurethane foam

Material	Density (kg/m ³)	Strength f_{mk} (MPa)	Strength f_{vk} (MPa)	Strength f_{ck} (MPa)	Strength $f_{v,k,glue}$ (MPa)	Modulus $E_{0,mean}$ (MPa)	Modulus $G_{,mean}$ (MPa)
Two composite polyurethane (PUR)	40 ± 5 ¹⁾	0,330	0,077	1,240	1,640	0,077	1,620
Low pressure polyurethane foam	According to manufacturer specification						

¹⁾ PUR density in H-Block and H-Block_{plus} panels.

Table 30 – Minimal requirements for mechanical properties of softwood plywood

Class	Bending strength as a wall f_{mk} (MPa)	Shear strength as a wall f_{mk} (MPa)	Shear strength as a board f_{mk} (MPa)
F40/40, E60/40	29,0	11,0	2,5