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European Technical Assessment Body  
for construction products



## European Technical Assessment

ETA-05/0262  
of 15 January 2026

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

THERMOSPAN - shuttering blocks made of wood-chip concrete

Product family to which the construction product belongs

Non-load bearing permanent shuttering kit "THERMOSPAN" based on shuttering blocks of wood-chip concrete

Manufacturer

thermo-span®  
Baustoffwerk HarmI & Quehenberger GmbH  
Maschl 28  
5600 ST. JOHANN I. PG.  
ÖSTERREICH

Manufacturing plant

T1

This European Technical Assessment contains

21 pages including 13 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

EAD 340309-00-0305

This version replaces

ETA-05/0262 issued on 10 September 2018

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## Specific part

### 1 Technical description of the product

#### 1.1 Definition of construction product

The shuttering system "THERMOSPAN" is a non-loadbearing permanent shuttering kit based on standard shuttering blocks and ancillary shuttering blocks according to EN 15498, sections 3.1.1 to 3.1.4, applicable as shuttering for plain and reinforced concrete walls cast in-situ.

The shuttering blocks consist of shuttering leaves and webs of wood-chip concrete.

The shuttering blocks are generally used for non-loadbearing as well as load-bearing internal and external walls.

Finishes are not part of the shuttering system "THERMOSPAN".

#### 1.2 Shuttering elements

##### 1.2.1 Standard shuttering elements

The standard shuttering blocks consist of inner and outer shuttering leaves and webs of mineral bonded wood-chips (wood-chip concrete) according to EN 14474. The standard shuttering blocks off wood-chip concrete are precast concrete products and may include factory installed thermal insulation according to the relevant harmonised European standards or European Assessment Documents (EADs) to improve the thermal resistance (see Figures 1 and 2), which are inserted into the shuttering blocks without additional gluing.

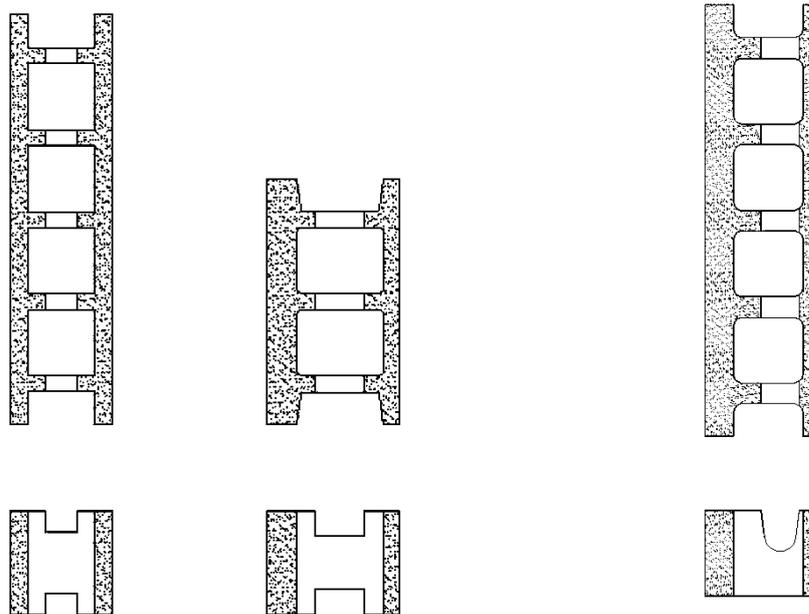


Figure 1: Examples for standard shuttering blocks off wood-chip concrete without supplementary thermal insulation

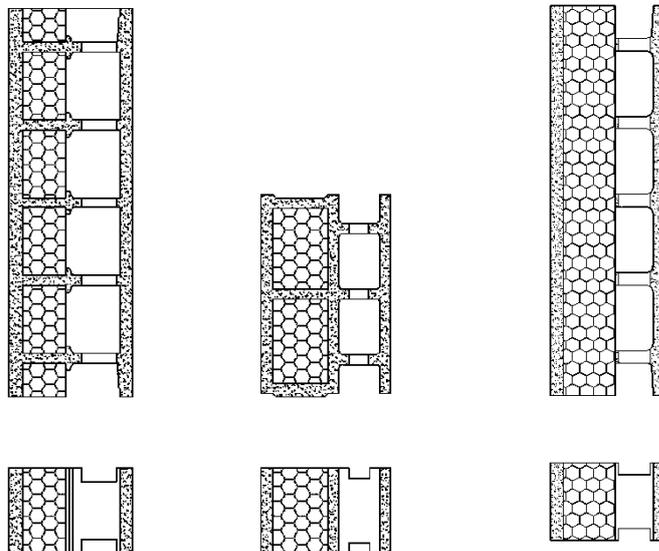


Figure 2: Examples for standard shuttering blocks of wood-chip concrete with supplementary thermal insulation

The shuttering leaves of wood-chip concrete are one-layered and are connected by webs of wood-chip concrete (see Figures 1 and 2). The main dimensions are in the following range:

thickness of the concrete core	90 to 220 mm
thickness of the whole wall without rendering	150 to 430 mm
thickness of the inner shuttering leave	25 to 90 mm
thickness of the middle shuttering leave (only for blocks with insulation chambers, see middle picture in fig. 2)	25 to 90 mm
thickness of the outer shuttering leave	25 to 90 mm
thickness of the supplementary thermal insulation	30 to 230 mm
length of the standard shuttering blocks	500 to 1250 mm
height of the standard shuttering blocks	250 mm

The shuttering blocks shall always have openings at the connecting webs which always have at least 6 cm opening width in each direction perpendicular to the wall.

The vertical ends of the standard shuttering blocks are either smooth or tongue and groove joints, depending on the type of standard shuttering blocks and form a tight joint. The top and bottom of each shuttering leave do not provide an interlocking arrangement to form a tight joint but the static friction between the top and the bottom surfaces ensure an adequate positional stability when building up the standard shuttering blocks and while placing the concrete.

It is possible to manufacture factory-prefabricated, storey-high wall elements (panels) from the standard shuttering blocks by gluing the standard shuttering blocks together in a bandage to form panels. The length of these panels is maximum 6 m and the height is maximum 3,50 m (see Annex A2). The adhesive used for this purpose is deposited with the DIBt.

### 1.2.2 Ancillary shuttering blocks

The ancillary blocks are specially shaped shuttering blocks for the execution of constructional details, such as corners, reveals, lintels, etc.

## 2 Specification of the intended use in accordance with the applicable European Assessment Document

The kit is intended to be used for construction of internal walls as well as external walls above or below ground which are load-bearing (structural) or non-load-bearing (nonstructural), including those which are subjected to fire regulations.

When using this type of construction below ground a waterproofing according to applicable national rules shall be provided depending on whether water not exerting pressure or water exerting pressure is to be dealt with. The waterproofing shall be protected from mechanical damage by a smash-resistant protective layer.

The performances given in Section 3 are only valid if the shuttering elements are used in compliance with the specifications and conditions given by the applicant.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the shuttering kit of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

### 3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Resulting structural pattern	Grid type according to EAD 340309-00-0305, chapter 1.3.3
Efficiency of filling	see Annex C1
Possibility of steel reinforcement	see Annex C1

### 3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	
Shuttering blocks made off wood chip concrete <b>without</b> supplementary <b>thermal insulation</b>	
Shuttering blocks "THERMOSPAN" according to figure 1	Class A2-s1, d0 to EN 13501-1 requirements: see Annex C2, paragraph a)
Storey-high wall elements (panels) glued together of shuttering blocks	Class B-s1, d0 to DIN EN 13501-1 requirements: see Annex C2, paragraph b)
Shuttering blocks made off wood-chip concrete <b>with</b> supplementary <b>thermal insulation</b>	
Shuttering blocks "THERMOSPAN" according to figure 2	Class B-s1, d0 to DIN EN 13501-1 requirements: see Annex C2, paragraph c)
Storey-high wall elements (panels) glued together of shuttering blocks	Class B-s1, d0 to DIN EN 13501-1 requirements: see Annex C2, paragraph c)
Shuttering blocks "THERMOSPAN" according to figure 2 dimensions within the range specified in paragraph 1.2.1	see Annex C2, paragraph d).

Essential characteristic	Performance
Not covered by annex C2, paragraph c)	
Shuttering blocks with supplementary thermal insulation of reaction to fire class A1	Class A2-s1, d0 to DIN EN 13501-1 requirements: see Annex C2, paragraph e)

### 3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content, emission and/or release of dangerous substances	
Substances classified as Carc. 1A/1B <sup>a)</sup>	None of these raw materials are actively used in the manufacture of the construction product. <sup>b) c)</sup>
Substances classified as Muta. 1A/1B <sup>a)</sup>	
Substances classified as Acute Tox. 1, 2, 3; Repr. 1A/1B; STOT SE 1 and STOT RE 1 <sup>a)</sup>	
Use scenarios regarding BWR 3:	
IA 3	Product with no contact to indoor air
Water vapour permeability	water vapour resistance factor $\mu = 2$ (wet conditions) respectively $\mu = 8$ (dry conditions) see Annex C3
Water absorption	No performance assessed
Water tightness	No performance assessed (finishes are not part of this ETA)

<sup>a)</sup> In accordance with Regulation (EC) No 1272/2008

<sup>b)</sup> Assessment based on the detailed manufacturers' statements on dangerous substances

<sup>c)</sup> Active use is the targeted use of substances to achieve specific product properties. Substances that are present as impurities and/or as a secondary component in the product are therefore not to be regarded as "actively used".

### 3.4 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Bond strength	
leaf to leaf	see Annex C4
leaf to concrete	$\geq 0.15 \text{ N/mm}^2$
Resistance to impact load	
global resistance	see Annex C4
local resistance	No performance assessed
Resistance to filling pressure	see Annex C4
Safety to personal injuries	When delivered on site the shuttering elements do not have sharp or cutting edges. Due to a certain risk of abrasion or of cutting people on rough surfaces of the shuttering blocks handling on site shall be done with gloves

### 3.5 Protection against noise (BWR 5)

Essential characteristic	Performance
Airborne sound insulation	No performance assessed
Sound absorption	No performance assessed

### 3.6 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal resistance	See Annex C5
Thermal inertia	$c = 1,50 \text{ kJ}/(\text{kg} \times \text{K})$ See Annex C5

### 3.7 Aspects of durability

Built-in finishes are not part of the assessed shuttering kit.

Essential characteristic	Performance
Resistance to deterioration	
Chemical agent	Built-in finishes are not part of the ETA

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

In accordance with EAD No 340309-00-0305, January 2019, the applicable European legal act is Decision 98/279/EC as amended by Commission Decision 2001/596/EC of 8 January 2001.

The system to be applied is: 2+

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 15 January 2026 by Deutsches Institut für Bautechnik

LBD Dipl.-Ing. Andreas Kummerow  
Head of Department

*beglaubigt:*  
Groth

### Charakteristics of product

The shuttering kit "THERMOSPAN" consists of the following shuttering blocks:

- standard shuttering blocks and
  - ancillary shuttering blocks,
- see clauses 1. and 2.

#### 1. Standard shuttering blocks

The standard shuttering blocks (composed of shuttering leaves and webs of wood-chip concrete) correspond to the information and drawings according to section 1.2.1.

The requirements of the standard shuttering blocks regarding to geometric characteristics are given in EN 15498, clauses 4.2.1 and 5.2.1.

Only wood chip concrete according to EN 14474 shall be used according to the material data sheet deposited with DIBt for the production of wood chip concrete shuttering blocks.

The material oven dry density  $\rho_{dry}$  of wood-chip concrete of the standard shuttering blocks is between 480 and 1000 kg/m<sup>3</sup>.

The mean material oven dry density shall deviate by not more than  $\pm 10\%$  from the declared value according to EN 15498, clauses 4.2.2 and 5.2.2.

Only thermal insulation inserts according to harmonized European standards or EADs may be used.

#### 2. Ancillary shuttering blocks

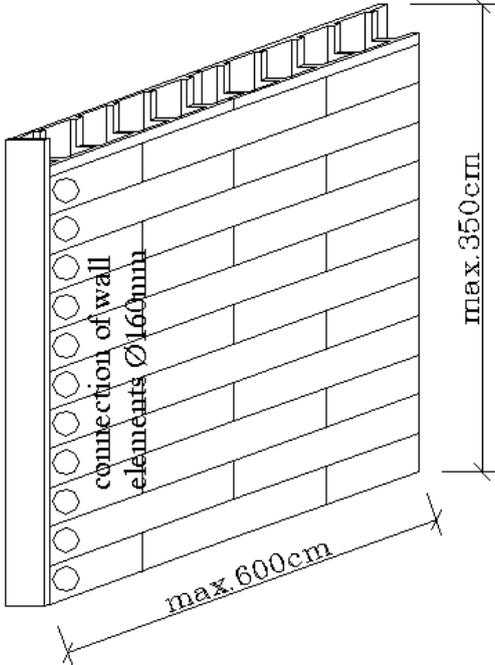
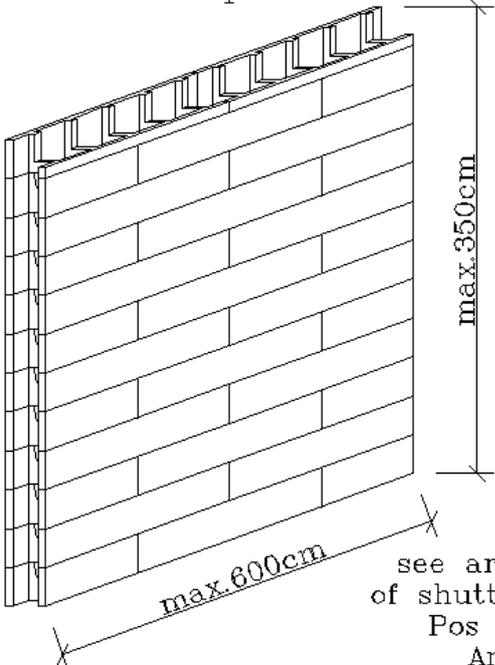
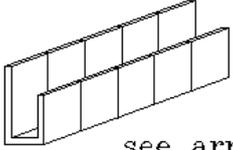
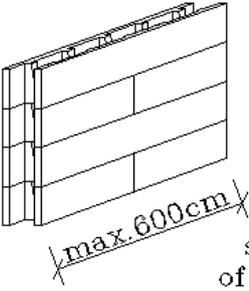
The ancillary shuttering blocks are:

- stopper blocks / corner blocks / universal blocks and
- lintel blocks.

Ancillary shuttering blocks are designed in the same manner as the standard shuttering blocks described above, see clause 1.2.2.

The ancillary shuttering blocks consist of shuttering leaves and webs of mineral bonded wood-chips (wood-chip concrete), it is the same material used for standard shuttering blocks specified in clause 1.2.1. Also the ancillary shuttering blocks may contain factory installed thermal insulation.

THERMOSPAN - shuttering blocks made of wood-chip concrete	Annex A1
Characteristics of product	

<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Corner panel</p>  </div> <div style="text-align: center;"> <p>Standard panel</p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>Lintel panel</p>  </div> <div style="text-align: center;"> <p>Parapet panel</p>  </div> </div>	<p>Annex A2</p>
<p>THERMOSPAN - shuttering blocks made of wood-chip concrete</p> <hr/> <p>Panels made by pre-assembling the shuttering blocks</p>	

standards and guidelines		issue	title
EN	206	2013+A1:2016	Concrete – Specification, performance, production and conformity
EN	1992-1-1	2011-01 + A1:2015-03	Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings
EN	13162	2012+A1:2015	Thermal insulation products for buildings – Factory made mineral wool (MW) products – Specification
EN	13163	2012+A2:2016	Thermal insulation products for buildings – Factory made products of expanded polystyrene (EPS) – Specification
EN	13164	2012+A1:2015	Thermal insulation products for buildings – Factory made extruded polystyrene foam (XPS) products – Specification
EN	13165	2012+A2:2016	Thermal insulation products for buildings – Factory made rigid polyurethane foam (PUR) products – Specification
EN	13170	2012+A1:2015	Thermal insulation products for buildings – Factory made products of expanded cork (ICB) – Specification
EN	13171	2012+A1:2015	Thermal insulation products for buildings – Factory made wood fibre (WF) – Specification
EN	13501-1	2010-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN	13501-2	2016	Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services
EN	14474	2004	Precast concrete products - Concrete with wood-chips as aggregate - Requirements and test methods
EN	15498	2008	Precast concrete products – Wood-chip concrete shuttering blocks – Product properties and performance
EN ISO	6946	2017	Building components and building elements – Thermal resistance and thermal transmittance – Calculation method
EN ISO	10211	2007	Thermal bridges in building construction - Heat flows and surface temperatures - Detailed calculations
EN ISO	10456	2010	Building materials and products – Hygrothermal properties – Tabulated design values and procedures for determining declared and design thermal values
EN ISO	13788	2013	Hygrothermal performance of building components and building elements – Internal surface temperature to avoid critical surface humidity and interstitial condensation – Calculation methods
EAD	040083-00-0404	2019-01	External thermal insulation composite systems (ETICS) with renderings
EAD	340309-00-0305	2019-01	Non load-bearing permanent shuttering kits/systems based on hollow blocks or panels of insulating materials and sometimes concrete
THERMOSPAN - shuttering blocks made of wood-chip concrete			Annex B1
List of standards and guidelines			

### Instructions for determining the fire resistance under end use conditions

The walls are exposed to the fire only on one side.

The fire resistance of non-load-bearing walls constructed with the shuttering blocks "THERMOSPAN" may be determined under the following conditions according to EN 1992-1-2, Table 5.3 in conjunction with national annexes in force at the place of use:

- The reaction to fire class according to 3.1.6 of the shuttering blocks "THERMOSPAN" corresponds to at least B s1-d0.
- The concrete of the concrete core meets at least the concrete strength class C16/20.
- As wall thickness according to EN 1992-1-2, Table 5.3 is used the thickness of the concrete core.
- All requirements according to EN 1992-1-2, sections 5.1 and 5.2 with the national annexes in force at the place of use are fulfilled.

The fire resistance of load-bearing walls constructed with the shuttering blocks "THERMOSPAN" may be determined under the following conditions according to EN 1992-1-2, Table 5.4, columns "wall exposed on one side" in conjunction with national annexes in force at the place of use:

- The reaction to fire class according to 3.1.6 of the shuttering blocks "THERMOSPAN" corresponds to at least B s1-d0.
- The wall was designed in accordance with EN 1992-1-1 only taking into account the load-bearing effect of the concrete or reinforced concrete.
- The concrete of the concrete core meets at least the concrete strength class C16/20.
- As wall thickness according to EN 1992-1-2, Table 5.4 is used the thickness of the concrete core.
- All requirements according to EN 1992-1-2, sections 5.1 and 5.2 with the national annexes in force at the place of use are fulfilled.

If the class of reaction to fire according to 3.1.6 of the used "THERMOSPAN" shuttering blocks is lower than B s1-d0, the fire resistance of the therewith erected walls may be determined with regard to stability (structural safety criterion R) under the following conditions according to EN 1992-1-2, Table 5.4, columns "Wall exposed on two sides" in conjunction with national annexes in force at the place of use:

- The wall was designed in accordance with EN 1992-1-1 only taking into account the load-bearing effect of the concrete or reinforced concrete.
- The concrete of the concrete core meets at least the concrete strength class C16/20.
- As wall thickness according to EN 1992-1-2, Table 5.4 is used the thickness of the concrete core.
- All requirements according to EN 1992-1-2, sections 5.1 and 5.2 with the national annexes in force at the place of use are fulfilled.
- The fulfilment of the thermal insulation criterion I and integrity criterion E of such walls is not detectable in this case without additional investigations.

The preconditions for this classification are:

- The design of the building has to take into consideration the secondary effects of fire. Especially constraints, introduced by thermal strain, should be sufficiently low and appropriate building joints should be foreseen. The rules, valid in place of use, govern. Structural requirements on work in normal conditions, valid in the place of use, may require larger dimensions. Concrete cover for the reinforcement has to be observed according to the rules valid in the place of use.

THERMOSPAN - shuttering blocks made of wood-chip concrete	Annex B2 Page 1 of 2
Instructions for determining the fire resistance under end use conditions	

- A normal weight concrete as defined in EN 206 shall be used. As far as the European standard EN 206 are not in force, an equivalent concrete according to national rules, valid in the place of use, is acceptable. The strength class of concrete shall be between C16/20 and C50/60 according to EN 206.
  - The shuttering blocks shall on both sides either be plastered/rendered or at least the joints on both sides shall be sealed with plastering/rendering mortar. The mortar for plastering/rendering or for sealing shall be based on inorganic aggregates, gypsum, cement or lime or on suitable combinations of these three binders.
- Note: The classification of walls constructed with the shuttering system "THERMOSPAN" regarding to fire resistance are valid only for walls without openings (for windows or doors for examples).

THERMOSPAN - shuttering blocks made of wood-chip concrete

Instructions for determining the fire resistance under end use conditions

Annex B2  
Page 2 of 2

## Instructions for determining the thermal resistance under end use conditions

The declared value of thermal resistance  $R_{D,wall}$  of walls made of shuttering blocks of wood-chip concrete in end use conditions (shuttering blocks with concrete columns and maybe thermal insulation inserts but without rendering) is the sum of the declared value of thermal resistance of the shuttering blocks of wood-chip concrete  $R_{D,block}$ , the concrete columns  $R_{D,concrete}$  and maybe the thermal insulation inserts  $R_{D,insulation}$ . The declared value of thermal resistance of the shuttering blocks of wood-chip concrete  $R_{D,block}$  shall be calculated in accordance with EN ISO 6946 with a declared value of thermal conductivity  $\lambda_D$  of the shuttering blocks of wood-chip concrete depending on the material oven dry density  $\rho_{dry}$  according to section 3.6.1, Table 1 of the "Special part". The declared value of thermal resistance of the concrete columns  $R_{D,concrete}$  shall be calculated in accordance with EN ISO 6946 with a value of thermal conductivity  $\lambda$  of the concrete columns depending on the density  $\rho$  tabulated in EN ISO 10456. The declared value of thermal resistance of thermal insulation inserts  $R_{D,insulation}$  shall be calculated in accordance with EN ISO 6946 with a declared value of thermal conductivity  $\lambda_D$  according to the declaration of performance of the used thermal insulation inserts.

Walls made of shuttering blocks consist of thermally homogenous and thermally inhomogeneous layers according to EN ISO 6946. The declared value of thermal resistance  $R_{D,wall}$  of walls made of shuttering blocks of wood-chip concrete in end use conditions (shuttering blocks with concrete columns and maybe thermal insulation inserts but without rendering) shall be calculated according to one of the three following methods:

1. Determination of the wall as three thermally homogeneous layers according to EN ISO 6946, clause 6.1 without considering the webs:
  - inner shuttering leave of wood-chip concrete,
  - concrete column and
  - outer shuttering leave of wood-chip concrete.

This calculation leads to the minimum declared value of thermal resistance  $R_{D,wall}$  of walls made of shuttering blocks of wood-chip concrete.

2. Determination of the wall as thermally homogenous and thermally inhomogeneous layers parallel to the surface of the wall according to EN ISO 6946, clause 6.2. For a simplified calculation it is possible to replace the horizontal concrete ribs  $A_R$  (web recess areas) between the chambers of the concrete columns by modelled rectangular areas  $A_R$ , see the following Figure 1.
3. Determination by calculation methods according to EN ISO 10211.

In case of shuttering blocks with thermal insulation inserts (see Figure 2 of the "Specific part"), the second or the third method has to be used.

THERMOSPAN - shuttering blocks made of wood-chip concrete	Annex B3 Page 1 of 2
Instructions for determining the thermal resistance under end use conditions	

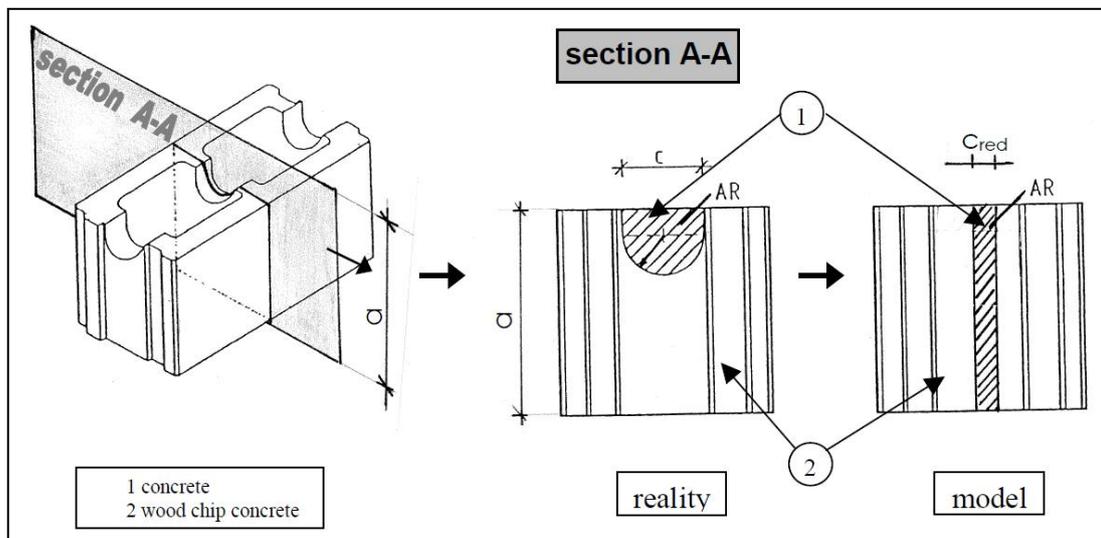


Figure 1: Replacing of the horizontal concrete ribs  $A_R$  (web recess areas) between the chambers of the concrete columns by modelled rectangular areas  $A_R$

THERMOSPAN - shuttering blocks made of wood-chip concrete

Instructions for determining the thermal resistance under end use conditions

Annex B3  
Page 2 of 2

Holder of approval	Designation of the manufacturing plant on the ETA covering page	Manufacturing plant
thermo-span® Baustoffwerk HarmI & Quehenberger GmbH Maschl 28 5600 ST. JOHANN I. PG. ÖSTERREICH	T1	thermo-span® Baustoffwerk HarmI & Quehenberger GmbH Maschl 28 5600 ST. JOHANN I. PG. ÖSTERREICH

THERMOSPAN - shuttering blocks made of wood-chip concrete

List of manufacturing plants

Annex B4

Description to BWR 1 – Mechanical resistance and stability

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**Efficiency of filling**

Considering the installation guide of the ETA holder the efficient filling without bursting of the shuttering and without voids or any uncovered reinforcement in the concrete core is possible.

**Possibility of steel reinforcement**

The instructions in the installation guide of the ETA holder are appropriate to install steel reinforcement for walls according to EN 1992-1-1 or corresponding national rules.

THERMOSPAN - shuttering blocks made of wood-chip concrete

Description of Performance to BWR 1  
Mechanical resistance and stability

Annex C1

Description to BWR 2 – safety in case of fire

**Reaction to fire**

- a) This classification is valid for shuttering blocks made of wood chip concrete
  - in accordance with the material data sheet deposited at Deutsches Institut für Bautechnik
  - with gross densities of between 500 and 1000 kg/m<sup>3</sup> and
  - a minimum wall thickness of 25 mm
- b) conditions:
  - density of wood chip concrete  $\geq 480 \text{ kg/m}^3$ ,
  - thickness of the shuttering leaves  $\geq 30 \text{ mm}$ ,
  - Application quantity of the adhesive for the connection of the shuttering blocks  $\leq 300 \text{ g/m}^2$  wall surface.
- c) conditions:
  - The insulation insert is made of EPS of at least reaction to fire class E, a density of  $15 \text{ kg/m}^3 \pm 10\%$  and a thickness of at most 165 mm.
  - The minimum thickness of the shuttering leave of the shuttering block "THERMOSPAN" is at least 30 mm, the density of the wood chip concrete is at least  $480 \text{ kg/m}^3$ .
  - Application quantity of the adhesive for the connection of the shuttering blocks  $\leq 300 \text{ g/m}^2$  wall surface.
- d) Shuttering blocks "THERMOSPAN" made off wood-chip concrete with supplementary thermal insulation according to Figure 2, the dimensions of which are in the ranges specified in section 1.2.1 and which are not covered by c), meet the requirements of the reaction to fire class of the respective insulation material.
- e) Shuttering blocks with supplementary thermal insulation of reaction to fire class A1 meet the requirements of Class A2-s1, d0, wherein for the shuttering blocks the requirements according to a) with respect to wall thickness and density of wood-chip concrete shall be complied with.

THERMOSPAN - shuttering blocks made of wood-chip concrete	Annex C2
Description of Performance to BWR 2 Safety in case of fire	

Description of performance to BWR 3 – hygiene, health and environment

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**Water vapour permeability**

The values of the water vapour resistance factor of wood-chip concrete are  $\mu = 2$  (wet conditions) respectively  $\mu = 8$  (dry conditions).

The values of the water vapour resistance factor of concrete columns depending on type and density and of the materials of supplementary thermal insulation are tabulated values in EN ISO 10456.

Using these values the verification of the annual moisture balance or the maximum amount of interstitial condensation according to EN ISO 13788 is on the safe side.

THERMOSPAN - shuttering blocks made of wood-chip concrete

Description of Performance to BWR 3  
hygiene, health and environment

Annex C3

Description to BWR 4 – Safety and accessibility in use

**Bond Strength**

between shuttering leaves: The shuttering leaves are single layered, hence there is no determination of the bond strength between shuttering leaves.

between shuttering leaf and concrete

There is an adhesive bond between the shuttering leaf and the concrete [figure 2.2.10.2.1 (a) in EAD 340309-00-0305, chapter 2.2.10.2].

**Resistance to impact load**

**Global resistance**

Concrete walls (without consideration of the finishes), constructed with shuttering system "THERMOSPAN" and designed according EN 1992-1-1 respectively in lack of availability of EN 1992-1-1 according national design rules, lead to the assumption that concrete core insures an adequate resistance of the complete wall to normal use impact loads.

**Resistance to filling pressure**

**Flexural strength of the shuttering leaves**

Assessment according to EN 15498, Annex C.4.2

the average value of bending tensile strength of the shuttering leaves of wood-chip concrete  $f_{t,m}$  according to EN 15498, clause C4.3 shall be higher than the design value of bending tensile strength according to EN 15498, clause C4.2.

**Tensile strength of the webs**

Assessment according to EN 15498, Annex B.4.2

The average value of tensile strength of the webs of wood-chip concrete  $f_{t,m}$  according to EN 15498, B4.3 shall be higher than the design value of the tensile strength of the webs  $f_{t,min}$  according to EN 15498, section B4.2

**Insulation**

As supplementary insulation for the shuttering blocks according to Figure 2 only insulation materials according to harmonized European product standards or European Assessment Documents (EADs) may be used.

In addition, the compressive stress at 10 % compression strain or/and the compressive strength (if both are specified, the smallest value is decisive) shall not be less than 80 kPa. In addition, the fresh concrete shall not penetrate into the integrated thermal insulation, so that the thermal conductivity is not reduced.

If this is not guaranteed, a waterproof film must be applied to the inside of the integrated thermal insulation in such a way that it prevents the fresh concrete from penetrating into the integrated thermal insulation during concreting.

THERMOSPAN - shuttering blocks made of wood-chip concrete	Annex C4
Description of Performance to BWR 4 Safety and accessibility in use	

Description to BWR 6 – Energy economy and heat retention

**Thermal Resistance**

The declared value of thermal resistance  $R_{D,element}$  of the shuttering elements in end use conditions (, with concrete core without plaster/finishes) is the sum of

- the declared value of thermal resistance of the wood chip concrete shuttering leaves  $R_{D,THERMOSPAN}$
- and the concrete core  $R_{D,concrete}$ .

The declared value of the thermal conductivity  $\lambda_D$  of the wood-chip concrete of the shuttering blocks determined in accordance with EN ISO 10456, Annex B.2 is given in Table 1 as a function of the dry bulk density  $\rho_{dry}$

The declared value of thermal resistance of the concrete core  $R_{D,concrete}$  shall be calculated in accordance with EN ISO 6946 with a value of thermal conductivity  $\lambda$  of the concrete core depending on the density  $\rho$  tabulated in EN ISO 10456

**Table 1:** The declared value of the thermal conductivity  $\lambda_D$  of wood-chip concrete as a function of the dry bulk density  $\rho_{dry}$

Dry bulk density $\rho_{dry}$ [kg/m <sup>3</sup> ]	Declared value of the thermal conductivity $\lambda_D$ [W/(m × K)]
475	0,100
550	0,114
650	0,123
800	0,200
1000	0,370

**Heat capacity**

The value of the heat capacity  $c$  of wood-chip concrete is  $c = 1,50 \text{ kJ}/(\text{kg} \times \text{K})$  according to EN 15498, clause 5.2.8.2.

The values of the heat capacity  $c$  of the concrete columns and of the materials of supplementary thermal insulation are tabulated values in EN ISO 10456.

THERMOSPAN - shuttering blocks made of wood-chip concrete

Description of Performance to BWR 6  
Energy Economy and heat retention

Annex C5