Rigidur H gypsum fibreboards

European Technical Approval ETA 08/0147

Rigips SAINT-GOBAIN

European Technical Approval

ÖSTERREICHISCHES INSTITUT FÜR BAUTECHNIK

Member of EOTA

European Technical Approval ETA-08/0147

(English language translation, the original version is in German language)

Handelsbezeichnung *Trade name*	RIGIDUR H Gypsum fibreboard
Zulassungsinhaber *Holder of approval*	Saint-Gobain Rigips GmbH Schanzenstraße 84 40549 Düsseldorf
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	Gipsfaserplatten zur Beplankung und Bekleidung von Bauteilen *Fibre gypsum boards used for planking and lining of building components*
Geltungsdauer vom *Validity from* bis *to*	30. 06. 2008 29. 06. 2013
Herstellwerk *Manufacturing plant*	Werk 10
Diese europäische technische Zulassung umfaßt *This European Technical Approval contains*	12 Seiten *12 pages*

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Europäische Organisation für Technische Zulassungen
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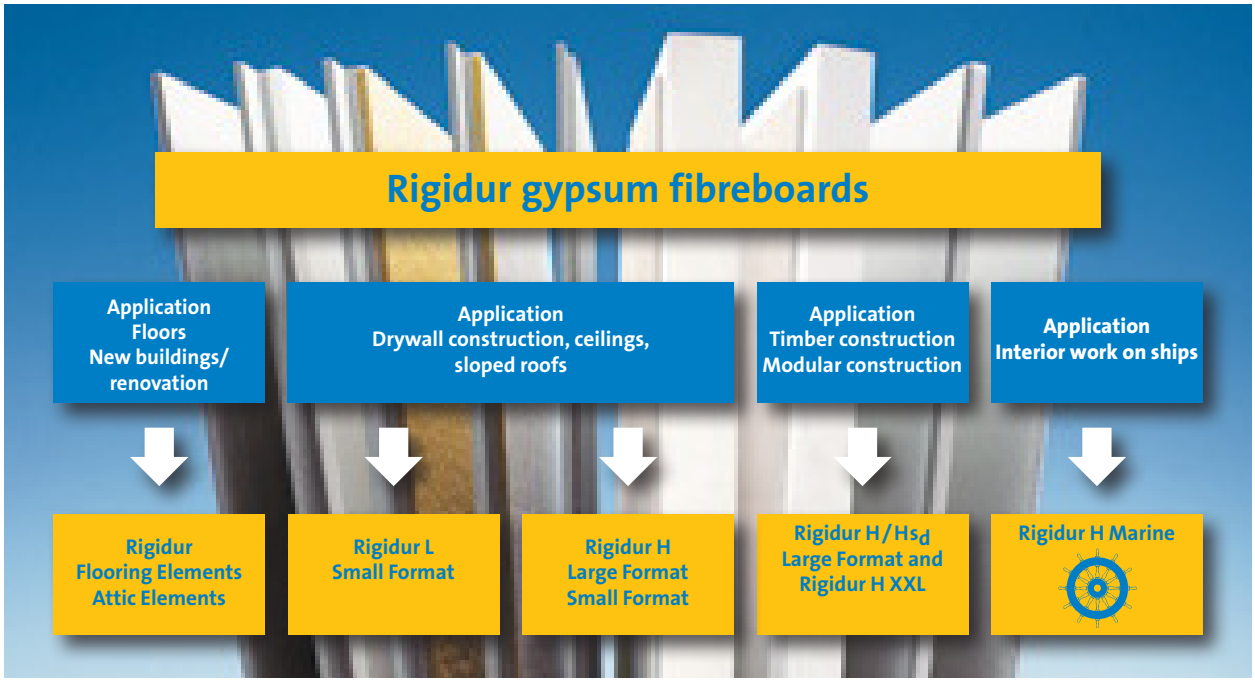
ETA 08/0147

Rigidur H (A1) – with European Technical Approval
Business relationships are becoming increasingly international. This also applies to the construction industry. This development is being aided at European level not least through a range of measures to facilitate cross-border business relationships (e.g. the introduction of the common European currency and the harmonization of standards).

Saint-Gobain Rigips is keeping pace with this development and has **attained European Technical Approval** for its Rigidur H (A1) gypsum fibreboards. This is further proof of the capabilities of Rigidur H (A1). The CE marking and approval of the boards in both German and English enable you to sell your products throughout Europe.



The Rigidur gypsum fibreboard product family from Rigips comprises a full range of products optimized for specific areas of application. Rigidur gypsum fibreboards are manufactured in Germany on modern production lines for the domestic and international markets.

Together with the comprehensive range of accessories, the products offer you a complete system tailored specifically to your needs.

Rigidur H – gypsum fibreboards with a wide range of quality features

Rigidur H gypsum fibreboards are characterized by a large number of special properties and guarantee sustainable construction.

Hard
The extra hard surfaces of the boards ensure they are resistant to everyday mechanical stresses such as knocks and scratches.

Stable
Their extremely high level of stability also makes Rigidur H boards an ideal material for wooden frame construction as they can be used as structural supporting elements.

Strong
As a result of their outstanding stability, Rigidur H gypsum fibreboards have particularly good load-bearing properties. This means that e.g. shelves or cupboards can also be fixed directly to the wall without special wall plugs, while the use of wall plugs further increases their load-bearing capacity.

Robust
Virtually no other drywall construction material is as stable and robust as Rigidur. Public buildings in particular require extremely high levels of stability. Rigidur is even approved as a construction material for regions with a high earthquake risk.

Safe
Its high A1 fire protection classification means that the properties of Rigidur H gypsum fibreboards put them into the same category as e.g. masonry, concrete, steel, glass or ceramics. Tested in accordance with EN 13501.

Flexible
Standard and special formats such as Rigidur H XXL with dimensions of 6,080 x 2,540 mm can be supplied. This makes them particularly well-suited for walls and ceilings which should show virtually no joints.

Natural
The Institute for Building Biology in Rosenheim recommends Rigidur gypsum fibreboards and accessory products such as Rigidur Nature Line joint filler and has awarded its “tested and recommended” seal of approval to these products, indicating their suitability for healthy construction.

Rigips information on the air-purifying effect

All Rigidur H gypsum fibreboards have the air-purifying effect. A special, natural substance in the board absorbs pollutants from the ambient air. The active agent is a naturally occurring silica-based mineral complex. It is specially treated and added to Rigidur H boards during the production process. Air pollutants are absorbed and permanently bound by this active agent – as proven in tests carried out by independent testing institutes. More details can be found on the Internet at **www.rigips.de** under “Rigidur H – with air-purifying effect”.

Photos: With the kind permission of Streif UK Limited, Brighton & Hove, Storey town houses, Sussex/England




Authorised and notified according to Article 10 of the Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products

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European technical approval ETA-08/0147

English translation, the original version is in German

Handelsbezeichnung *Trade name*	**RIGIDUR H Gipsfaserplatte**
Zulassungsinhaber *Holder of approval*	**Saint-Gobain Rigips GmbH** **Schanzenstraße 84** **40549 Düsseldorf** **Deutschland**
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*	**Gipsfaserplatten zur Beplankung und Bekleidung von Bauteilen** *Fibre gypsum boards used for planking and lining of building components*
Geltungsdauer vom *Validity from* bis zum *to*	**30.06.2013** **29.06.2018**
Herstellwerk *Manufacturing plant*	**Werk 10**
Diese Europäische technische Zulassung umfasst *This European technical approval contains*	**10 Seiten, einschließlich 2 Anhänge** *10 Pages, including 2 Annexes*
Diese Europäische technische Zulassung verlängert *This European technical approval extends*	**ETA-08/0147 mit Geltungsdauer vom 30.06.2008 bis zum 29.06.2013** *ETA-09/0147 with validity from 30.06.2008 to 29.06.2013*

Member of EOTA

I LEGAL BASIS AND GENERAL CONDITIONS

1 This European Technical Approval is issued by Österreichisches Institut für Bautechnik in accordance with:

1. Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1] – Construction Products Directive (CPD) –, amended by the Council Directive 93/68/EEC of 22 July 1993[2], and Regulation (EC) 1882/2003 of the European Parliament and of the Council of 29 September 2003[3];
2. *dem Gesetz über Bauprodukte und die Akkreditierung von Prüf-, Überwachungs- und Zertifizierungsstellen für Bauprodukte in Wien (Wiener Bauprodukte- und Akkreditierungsgesetz – WBAG) LGBl. Nr. 30/1996, in der Fassung LGBl. Nr. 71/2001, LGBl. Nr. 36/2007, LGBl. Nr. 24/2008 und LGBl. Nr. 08/2012;*

   the Viennese law on construction products and the accreditation of testing, inspection, and certification bodies for construction products (Viennese construction products and accreditation law – WBAG), LGBl. № 30/1996, amended by LGBl. № 71/2001, LGBl. № 36/2007, LGBl. № 24/2008 and LGBl. № 08/2012;
3. Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EC[4].

2 Österreichisches Institut für Bautechnik is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of the manufacturers other than those indicated on Page 1, or manufacturing plants other than those indicated on Page 1 of this European Technical Approval.

4 This European Technical Approval may be withdrawn by Österreichisches Institut für Bautechnik, in particular pursuant to information by the Commission on the basis of Article 5 (1) of Council Directive 89/106/EEC.

5 Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction may be made with the written consent of Österreichisches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6 The European Technical Approval is issued by the Approval Body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

1 Official Journal of the European Communities № L 40, 11.02.1989, page 12
2 Official Journal of the European Communities № L 220, 30.08.1993, page 1
3 Official Journal of the European Union № L 284, 31.10.2003, page 1
4 Official Journal of the European Communities № L 17, 20.01.1994, page 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of the products and intended use

1.1 Definition of products

The **RIGIDUR H Gypsum fibreboards** are special building boards made of gypsum (approx. 85%) and cellulose fibres (approx. 15%).

The RIGIDUR H SD Gypsum fibreboards have a brown coloured organic finish made of polymer dispersion with an applied quantity of 100g/m² which leads to a reduced water vapour diffusion.

The density is at least 1000 kg/m^3 up to a maximum of 1350 kg/m^3 and they will be manufactured with a range of thickness between 10 mm and 18 mm.

The length of the board varies between 400 mm and 6080 mm and the width between 400 mm and 2540 mm.

The edges of the boards can be produced sharp edged or formed (RIGIDUR H AK) – see Annex 1.

The **RIGIDUR H Gypsum fibreboards** are non-combustible construction products and meet class A1 (according to EN 13501-1).

1.2 Intended use

All **RIGIDUR H Gypsum fibreboards** may be used for the planking (structural) and lining (non-structural) of building components. They may be used as loadbearing as well stiffening boards.

All **RIGIDUR H Gypsum fibreboards** may be used in the service classes 1 and 2 according to EN 1995-1-1[5].

The provisions made in this ETA are based on an assumed intended working life of the gypsum fibreboards of at least 50 years, provided that the conditions laid down in sections 4 and 5 of this ETA are met. 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 product in relation to the expected economically reasonable working life of the works.

2 Characteristics of products and methods of verification

2.1 Composition and manufacturing process

The gypsum fibreboards shall as far as its composition and manufacturing process is concerned correspond to the product subject to the approval tests. Details of composition and manufacturing process are deposited at the Österreichischen Institut für Bautechnik.

2.2 Mechanical resistance and stability

Strength and stiffness values

The characteristic strength and stiffness values of all **RIGIDUR H gypsum fibre boards** are determined according to EOTA CUAP 05.04/04 „Large-sized fibre gypsum panels used for walls of prefabricated houses", edition June 2002. The reached values are:

[5] EN 1995-1-1:2004 Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings

Table 1: Characteristic strength and stiffness values in MN/m²

		characteristic values	
		12.5 mm	15 mm
Strength values			
bending ⊥ to the plane of the board	$f_{m,k}$	5.5	5.0
bending II to the plane of the board	$f_{m,k}$	4.5	4.3
tension II to the plane of the board	$f_{t,k}$	2.2	2.0
compression II to the plane of the board	$f_{c,k}$	9.0	7.2
shear ⊥ to the plane of the board	$f_{v,k}$	2.3	2.3
shear II P to the plane of the board	$f_{v,k}$	1.2	1.2
Stifffness values			
bending modulus of elasticity ⊥	$E_{m,mean}$	4500	
bending modulus of elasticity II	$E_{m,mean}$	3500	
tension modulus of elasticity II	$E_{t,mean}$	4500	2500
compression modulus of elasticity II	$E_{c,mean}$	4500	3000
shear modulus of elasticity ⊥	G_{mean}	1300	1200
shear modulus of elasticity II	G_{mean}	650	

2.3 Reaction to fire

The reaction to fire of the gypsum fibre board is determined according to the European standard EN 13 501-1[6] and is classified in the following way

Table 2: Reaction to fire classes

	nominal density (kg/m³)	thickness (mm)	Class
RIGIDUR H (SD,AK)	1200	10-18	**A1**

2.4 Hygiene, health and the environment

2.4.1 Content and/or release of dangerous substances

The ETA is issued for gypsum fibre boards with the chemical composition and other characteristics deposited at the Österreichisches Institut für Bautechnik.

The product consists of gypsum (approx. 85%) and cellulose fibres (approx. 15%) and complies with the provisions of guidance paper H[7].

A declaration of conformity in this respect was made by the manufacturer.

Changes of materials, of composition or characteristics, should be immediately notified to the approval body, which will decide whether a new assessment will be necessary.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative

[6] EN 13501-1:2002: Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests

[7] Guidance paper H: A harmonised approach relating to Dangerous substances under the construction products directive, 18 February 2000

provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.4.2 Water vapour diffusion resistance factor

The water vapour diffusion resistance factor of all **RIGIDUR H Gypsum fibreboards** is determined according to EN ISO 12572[8] and reached the following values.

Table 3: Water vapour diffusion resistance factor

	density (kg/m³)	μ	sd (m)
RIGIDUR H 12,5 mm	1237	**19**	0.24
RIGIDUR H 15 mm	1253	**19**	0.29
RIGIDUR H SD 12,5 mm	1237	**1423**	4.6

2.5 Safety in use

Impact resistance

The impact resistance of all **RIGIDUR H Gypsum fibreboards** is determined according to EN 1128[9]. The value of the mean impact resistance of the gypsum fibre board is at least **IR = 27 mm/mm** thickness of the board.

2.6 Protection against noise

No performance determined.

2.7 Energy economy and heat retention

2.7.1 Density

The density of all **RIGIDUR H Gypsum fibreboards** is determined according to European standard EN 323[10] . The density is at least **1000 kg/m³** and does not exceed **1350 kg/m³**.

The nominal density is **1200 kg/m³**.

2.7.2 Thermal conductivity

The value of thermal conductivity of the fibre gypsum boards determined according to EN 12667[11]. The thermal conductivity is for the density range of 1000 kg/m³ - 1350 kg/m³ $\lambda_{(10,trocken)}$ = **0.202 W/(m•K)**.

2.7.3 Air permeability

All **RIGIDUR H Gypsum fibreboards** are airtight.

2.8 Aspects of durability, serviceability and identification

2.8.1 Dimensions and tolerances

The dimensions of the fibre gypsum boards are determined according to EN 323[10].

The thickness of the fibre gypsum boards must be between 10 mm and 18 mm.

[8] EN ISO 12572:2001 Hygrothermal performance of building materials and products. Determination of water vapour transmission properties
[9] EN 1128:1995 Cement-borded particleboards - Determination of hard body impact resistance
[10] EN 323:1993 Wood-based panels; determination of density
[11] EN 12667:2001 Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance

Length and width of the boards must be at least 400 mm.

The dimensional tolerances are ± 0.5 mm for the thickness, ± 2 mm for the length and ± 2 mm for the width of the boards.

2.8.2 Moisture content

The moisture content of the fibre gypsum boards is determined according to EN 322[12]. The moisture content in normal climate (20°C/65% humidity) ranges between 1.0 % and 1.3 %.

2.8.3 Determination of dimensional changes associated with changes in relative humidity

The dimensional change associated with changes in relative humidity is determined according to EN 318[13]. The value for swelling and shrinkage does not exceed 0.45 mm/m by 30 % change of the relative humidity.

3 Evaluation of conformity and CE marking

3.1 Attestation of conformity system

System 3 for all RIGIDUR H Gypsum fibreboards for which the following is valid:

- intended use "for stiffening timber framed wind-load bearing walls or timber roof truss structures "
- intended use in walls, partitions or ceilings subject to reaction to fire

The system of attestation of conformity is described in Council Directive (89/106/EEC) Annex III, 2 (ii), Second possibility and is detailed as follows:

a) Tasks of the manufacturer
   - factory production control.

b) Tasks of the approved body
   - initial type-testing of the product

3.2 Responsibilities

3.2.1 Tasks for the manufacturer; factory production control

The manufacturer has a factory production control system in his plant and exercises permanent internal control of production.

All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. The factory production control system ensured that the products are always in conformity with the European technical approval.

In the framework of factory production control the manufacturer shall carry out tests and controls in accordance with the control plan[14] which is fixed with this European technical approval.

Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to this control plan which is part of the technical documentation of this European technical approval.

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

– designation of the products and of the basic materials,

– type of control or testing,

[12] EN 322:1993 Wood-based panels; determination of moisture content
[13] EN 318:2002 Wood-based panels - Determination of dimensional changes associated with changes in relative humidity
[14] The control plan has been deposited at the Österreichisches Institut für Bautechnik and is handed over only to the approved bodies involved in the attestation of conformity procedure

- date of manufacture of the products and date of testing of the products or basic materials or components,
- result of control and testing and, if appropriate, comparison with requirements,
- signature of person responsible for factory production control.

On request the records shall be presented to the Österreichisches Institut für Bautechnik.

3.2.2 Tasks for approved bodies; Initial type-testing of the products

For initial type-testing the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed between the Österreichisches Institut für Bautechnik and the approved bodies involved.

3.3 CE marking

The CE marking shall be affixed on the products, the packaging or the attached label.
The symbol "CE" shall be accompanied by the following information:

- the name and address of the producer,
- the last two digits of the year in which the CE marking was affixed,
- the number of the European technical approval,
- identification of the product (the trading name),
- nominal thickness
- shear strength
- reaction to fire (Euroclass)[15)]
- water vapour diffusion resistance factor
- thermal conductivity

4 Assumptions under which the fitness of the products for the intended use was favourably assessed

4.1 Manufacturing

The gypsum fibre boards shall as far as its composition and manufacturing process is concerned correspond to the product subject to the approval tests. Details of composition and manufacturing process are deposited at the Österreichischen Institut für Bautechnik.

4.2 Installation

4.2.1 Parameters for the design of construction works or parts of construction works

For design and calculation of building elements which are manufactured by using the present fibre gypsum boards the standards EN 1995-1-1[5] EN 1993-1-1[16] and the specific national application documents, under consideration of the characteristic values for strength and stiffness given in Table 1, are relevant.

4.2.2 Parameters for the installation in the construction works or parts of construction works

For calculation a density of 1200 kg/m² may be used.

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15 European classification of reaction to fire of building materials according to the Commission Decision 2000/147/EG of 8 February 2000 implementing Article 20 of Directive 89/106/EEC on construction products

16 EN1993-1-1:2005 Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings

As connectors of the fibre gypsum boards with the substructure zinc-coated nails, screws or staples or nails, screws or staples made of stainless steel shall be used.

They shall have a diameter of d_n between 1.5 mm and 4,0 mm.

Nails shall have a head diameter of $\geq 1.8 \times d_n$.

Staples shall have a back width $b_R > 6 \times d_n$.

The characteristic embedding strength shall be determined by using the following formula:

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

where

d_n = diameter of the connector [mm]

The distances of the connectors from the unstressed edge of the fibre gypsum board shall be at least $5 \times d_n$, from the stressed edge at least $7 \times d_n$.

4.2.3 Use of the product as airborne sound insulation

In case of use of the products as airborne sound insulation it is necessary to determine the airborne sound insulation for the specific construction work in question in accordance with the relevant technical rules in force.

4.2.4 Use of the product in construction elements with increased humidity exposure

Areas with increased water exposure have to be protected against the penetration of humidity.

In loadbearing elements with increased humidity exposure the permissible strength and stiffnes values have to be reduced accordingly.

5 Recommendations for the manufacturer

5.1 Recommendations on packaging, transport and storage

During transport and storage the fibre gypsum boards and the elements manufactured by using the present boards shall be protected against damaging and inadequate moisture, e.g. due to precipitation or high construction moisture (all-round covering of the boards or components by means of a foil).

5.2 Recommendations on installation

Damaged fibre gypsum boards or elements manufactured by using the present boards must not be used or installed.

Where components are produced on site by using fibre gypsum boards the moisture of the boards and the wood substructure must not increase inadequately (protection against precipitation or very high construction moisture).

Further the actual processing guidelines of the manufacturer have to be followed.

On behalf of Austrian Institute of Construction Engineering

Rainer Mikulits
Managing Director

Member of EOTA

Annex 1

Possible board configurations:

sharp edged RIGIDUR H or RIGIDUR H SD board

formed RIGIDUR H AK or RIGIDUR H AK SD board

Informative Annex 2
(not relevant for CE marking)

Describing notes for calculation:

Design and calculation of building elements which are manufactured by using Rigidur H Gypsum fibreboards can take place according to Eurocode 5 or an appropriate national code.[17]

For the calculation the values of table 1 as well as the embedding resistance given in 4.2 and the following values taken from Eurocode 5 are relevant:

As design data of the modification factor k_{mod} the following values are valid:

Class of load duration	Service class 1
permanent	0.20
long	0.40
average	0.60
shortterm	0.80
very short	1.10

As design data of the deformation factor k_{def} the following value for service class 1 is valid: 3.0
As partial safety factor of the fibre gypsum boards γ_m = 1.3 is recommended.

[17] Eurocode 5 - Design of timber structures

1st edition, April 2013.

All details in this publication are aimed at trained specialists and equate to the state of the art. They are correct to the best of our knowledge but do not represent any guarantees. We endeavour to provide you with the best possible solutions at all times and therefore reserve the right to make changes as a result of application or production improvements. No illustration of activities being performed may be deemed to constitute a set of instructions for performance unless expressly indicated as such. Please note that the information provided cannot replace any specialist structural planning that may be necessary. We assume that related tasks are properly executed.

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We look forward to successful collaboration and wish you every success with our system solutions.

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