PRODUCTS CATALOGUE

ISOTEX,
MAXIMUM SEISMIC SAFETY
& LIVING COMFORT,
always.

ISOTEX®
Wood-cement blocks and floor slabs

EUROPEAN LEADER FOR
OVER 30 YEARS

ISOTEX®

Wood-cement blocks and floor slabs

THE BUILDING SYSTEM THAT COMBINES THE STRENGTH OF REINFORCED CONCRETE WITH THE THOUSAND QUALITIES OF NATURAL MINERALISED WOOD

Isotex facility

In 1985, ISOTEX began to produce and market cement-bonded wood fibre blocks in Italy, after this building system had already been in use in Germany since 1946.

From then until now, over 400.000 homes throughout Europe have been constructed with ISOTEX systems, of which approximately 80.000 in Italy alone, thanks to the high-regard held by technicians, builders and end-users for the ISOTEX company and its products.

1976

Norimberga Building

1985

Fidenza Residential Area (PR)

2004

Capo Coda Cavallo Hotel Intervention (NU)

2015

Multi-storey buildings, Parma (PR)

CONTENTS

- High quality raw materials and construction elements 2
- The choice that reduces construction times and costs (dry laying) 3
- The safety you want 4-10
  - Tried and tested seismic safety 4-7
  - Fire resistance 8-9
  - Blast resistance 10
- Living comfort, always 11-24
  - Elimination of thermal bridges 11-13
  - Thermal inertia 14
  - Energy savings 15-17
  - Thermal Acoustic insulation 18-21
  - Air permeability 22
  - Vapour permeability 23
  - Absence of rising damp, hygrometric behaviour (Blower Door Air Fightness Test) 24
- Services dedicated to you 25
- Green construction: the nexus of sustainability and efficiency 26-27
- ISOTEX products and specifications 28-33
  - Range of wood-cement blocks 28-29
  - Range of wood-cement floor slabs 30-31
  - Recommendations for correct laying, plastering and painting 32
  - Specifications regarding blocks and floor slabs 33
- Isotex certifications 34
- ISOTEX, awards and acknowledgements 35
- Building systems compared 36-37

ISOTEX BUILDING SYSTEM

Simple, complete and compliant with all applicable regulations

The ISOTEX building system, with blocks and panels in cement-bonded wood fibre, is the most widely used alternative to traditional systems. Thanks to ease of use, exceptional technical characteristics, excellent living comfort and competitive costs, ISOTEX is held in high regard by technicians, builders and buyers alike.

ISOTEX blocks and floor slabs are made of spruce and Portland cement, and the wood is mineralized with a natural mineral, which makes it inert and therefore resistant to fire and atmospheric agents.

Production is carried out entirely in our own factory with next-generation machinery, which is fully automated for high quality and precision products.

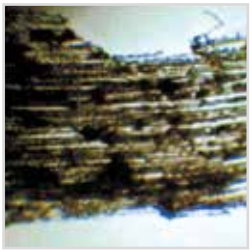
See the video and enter the heart of ISOTEX production:

http://en.blocchiisotex.com/about-us-our-values/

Much importance is given to the quality, performance, precision and quantities of the insulating materials we introduce into the mould block.

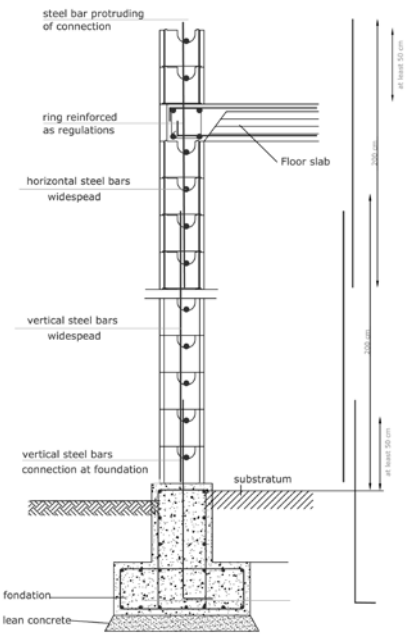
Block HDIII 38/14 with graphite BASF for external load-bearing walls.

Block HB 25/16 for internal load-bearing walls.



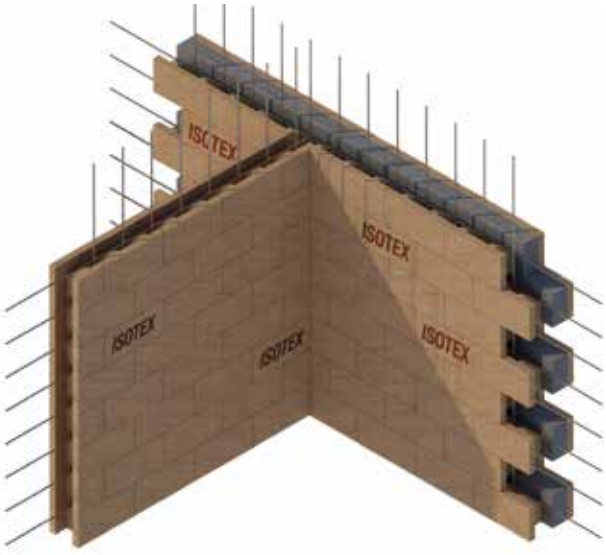
Enlargement of the mineralised wood. The close air pores are clearly visible.

Raw materials: untreated spruce and Portland cement.



WALL REINFORCEMENT IN BLOCKS

rebars from the foundation or bed (25 cm centres).



Vertical and horizontal steel reinforcement scheme with 25 cm centres.

ISOTEX®
Wood-cement blocks and floor slabs

DRY LAYING
reduces construction times and costs

Great care must always be taken regarding costs. Considering that labour accounts for about 50% of the costs of construction of buildings, ISOTEX has developed its products over time to greatly reduce required man hours. In this sense, the ISOTEX building system's main strength is that with a **single quick and easy laying operation** all the requirements of law are perfectly satisfied, including those related to seismicity, fire resistance and thermo-acoustic insulation, both vertically and horizontally.

Also greatly reduced is the risk of incorrect installation due to the intervention of various figures (e.g. carpenters, masons, thermal and acoustic insulation layers). As a result, buildings constructed with ISOTEX products offer **higher performance and lower costs**. Indeed, those who use ISOTEX products always recognize the better value for money compared to other building systems.


1

Laying of the first row with spirit level for levelling

2

All subsequent rows laid dry


3

Filling of the blocks with concrete (every 6 rows)


4

Fresh casting insertion of vertical seismic steel reinforcements


5

Chasing of wall with a router


6

Laying of the floor slabs, calculated and made to measure.

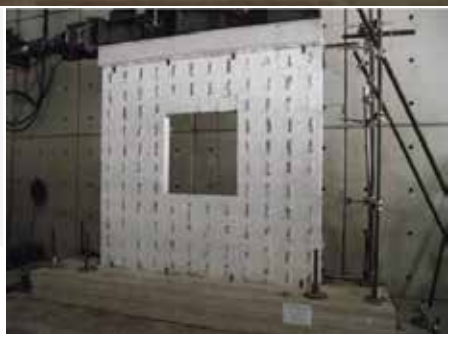
PROVEN SEISMIC SAFETY

4 devastating earthquakes in 7 years gives food for thought …

In 1994, ISOTEX embarked on a partnership with the prestigious University of Bologna, whose laboratory has conducted a series of highly successful, full-scale tests to verify the seismic behaviour of Isotex walling.

In 2000, through the laboratory of the Department of Structural Testing of the same University of Bologna (see photo below), a sample building, constructed with **ISOTEX blocks and panels, was subjected to testing with Vibrodina,** a machine capable of simulating earthquakes with the application of horizontal forces at several points on each floor of the building. The tests, conducted at the maximum intensity (well over the magnitude 6 on the Richter Scale) of forced vibrations for approximately 20 minutes, **did not cause the slightest damage to the building.**

Building constructed with Isotex blocks and panels, tested with the Vibrodina of the University of Bologna.



Left: Seismic test on ISOTEX two-storey wall
Above: Seismic test on full ISOTEX wall
Rights: Seismic test on ISOTEX wall with window

Superior Council of Public Works
Central Technical Service

GUIDELINES FOR THE DESIGN AND CALCULATION OF STRESSED-SKIN PANELS BUILDING SYSTEMS BASED ON HEAT-INSULATED BLOCKS AND CAST-IN-PLACE LIGHTLY REINFORCED CONCRETE

July 2011

From 2005 to 2014 (see photo above and left), ISOTEX continued research on the seismic behaviour of its building system with a vast campaign of experimental tests on walls and structures, carried out at the Eucentre Laboratory of the University of Pavia, one of the most authoritative bodies at European level for research into seismicity, also in this case with excellent results. **The experimental tests were also carried out in full compliance with the provisions of the 2011 Ministerial Guidelines** (see cover left).

MAXIMUM RESISTANCE TO SEISMIC EVENTS

Of the approximately 80,000 homes built since 1985 in Italy, many are in areas that have suffered major seismic events: from the earthquake in Umbria in 1997) and in Friuli in 1998 to the latest in Abruzzo in 2009, in Emilia in 2012 and in Central Italy in 2016, no building has suffered any damage, not even a crazing (see photographs and testimonials from our clients).

Apartment building in Medolla (MO) - 2002

Nursery school in Ganaceto (MO) - 2011

Apartment buidlings in Teramo (TE) - 2008

Apartment buildings in Nocera Umbra (PG) - 1997

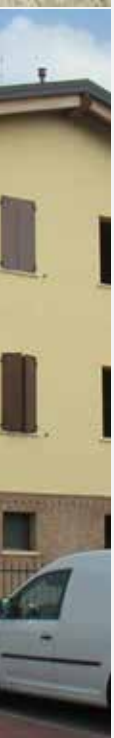
Apartment building in Novi (MO) - 2002

Gym in Novi (MO) - 2012

POST-EARTHQUAKE **TESTIMONIALS**

Read. all. testimonials:

http://en.blocchiisotex.com /earthquake-resistant-structure/



All this highlights how the ISOTEX building system ISOTEX, beyond the excellent results of university tests, has passed the real field test, with real, inhabited buildings, which have survived unscathed the most devastating earthquakes in the last 20 years. This is a guarantee of safety for those who live in Isotex buildings, unlike thousands of buildings made of different and traditional construction systems that have collapsed, caused the deaths of hundreds and been rendered uninhabitable.

Post-earthquake testimonial from Central Italy 2016

I am sending you some pictures of the residence built in Norcia (PG) in ISOTEX HDIII 38/14 Blocks with graphite and reinforced concrete conglomerate. We, as the construction company Boccanera Ivo e Fratelli Snc, are very pleased with the product, especially for its earthquake resistance. We would like to take this opportunity to confirm to you that ***the house did not suffer any damage as a result of the magnitude 6.5 earthquake that occurred*** *a few days ago. - Engineer Boccanera, August 2016.*

ISOTEX BUILDINGS DO NOT COLLAPSE
REI certifications

Another significant aspect, regarding the safety of buildings and those who live in them, is the fire resistance of walls and their ability to maintain load-bearing strength in case of fire or explosions inside the home.

The mineralization process which the wood is subjected to makes it inert and thus resistant to fire and insect, rodent and mould infestation.

Fire resistance tests conducted on plaster-less ISOTEX blocks and panels and cement-bonded wood fibre in direct contact with a flame have determined resistance classes REI 120 and REI 240 respectively. The 21 cm of polystyrene contained within and protected by the blocks (also fire resistance tested) maintains very low temperatures and thus does not burn and **does not emit toxic gases.**

What is REI Classification?

REI is an acronym used to indicate the fire resistance of a building element (component or structure):

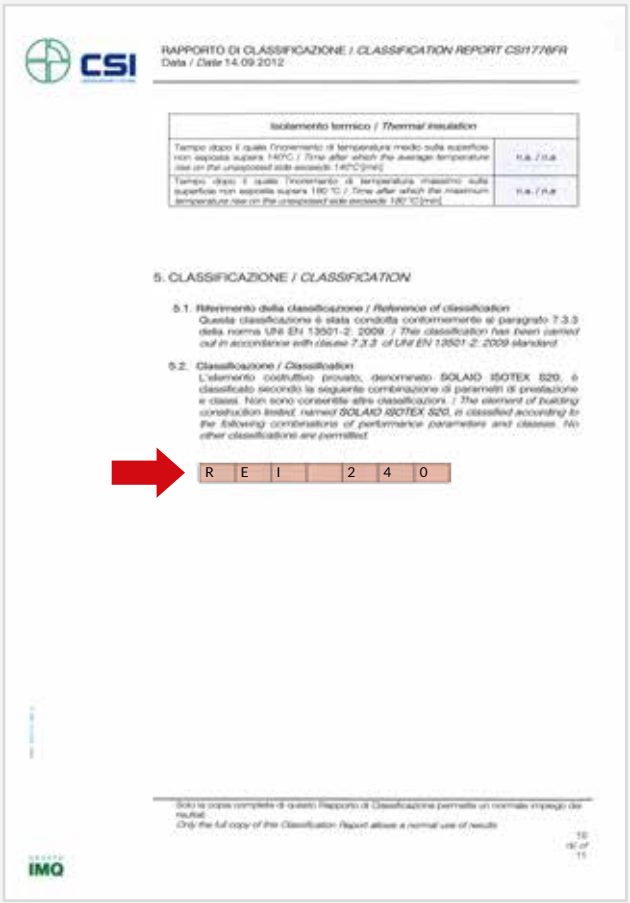
R, indicates stability in terms of mechanical load-bearing strength when exposed to fire.

E, indicates integrity in preventing flames and hot gases from being produced when exposed to fire and from passing through to the unexposed side.

I, indicates thermal insulation in terms of slowing down the transmission of heat.

The numbers that follow the acronym are used to indicate the minutes of stability, integrity and insulation when the element is exposed to fire.

FLOOR SLABS - REI 240 certificate



RAPPORTO DI CLASSIFICAZIONE / *CLASSIFICATION REPORT CSI1776FR*
Data / *Date* 14.09.2012

Isolamento termico / *Thermal insulation*	
Tempo dopo il quale l'incremento di temperatura medio sulla superficie non esposta supera 140°C / *Time after which the average temperature rise on the unexposed side exceeds 140°C* [min]	n.a. / n.a
Tempo dopo il quale l'incremento di temperatura massimo sulla superficie non esposta supera 180 °C / *Time after which the maximum temperature rise on the unexposed side exceeds 180 °C* [min]	n.a. / n.a

5. CLASSIFICAZIONE / *CLASSIFICATION*

5.1. Riferimento della classificazione / *Reference of classification*
Questa classificazione è stata condotta conformemente al paragrafo 7.3.3 della norma UNI EN 13501-2: 2009 / *This classification has been carried out in accordance with clause 7.3.3 of UNI EN 13501-2: 2009 standard*

5.2. Classificazione / *Classification*
L'elemento costruttivo provato, denominato SOLAID ISOTEX S20, è classificato secondo la seguente combinazione di parametri di prestazione e classi. Non sono consentite altre classificazioni. / *The element of building construction tested, named SOLAID ISOTEX S20, is classified according to the following combinations of performance parameters and classes. No other classifications are permitted*

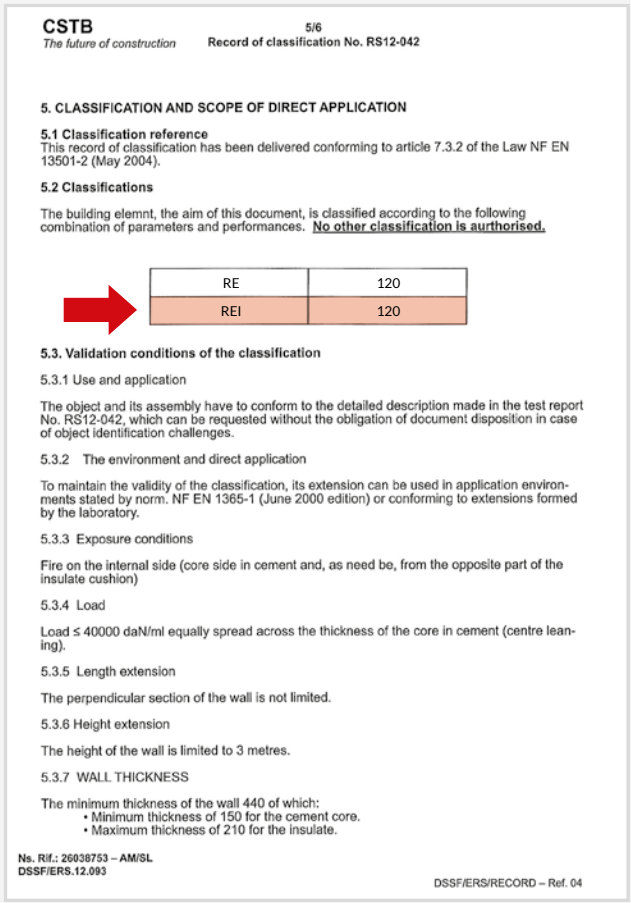
R	E	I		2	4	0

Solo la copia completa di questo Rapporto di Classificazione permette un normale impiego dei risultati
Only the full copy of this Classification Report allows a normal use of results

IMQ

Certification of resistance to fire of plaster-less floor slabs

BLOCKS - REI 120 certificate



CSTB
The future of construction

5/6
Record of classification No. RS12-042

5. CLASSIFICATION AND SCOPE OF DIRECT APPLICATION

5.1 Classification reference
This record of classification has been delivered conforming to article 7.3.2 of the Law NF EN 13501-2 (May 2004).

5.2 Classifications

The building elemnt, the aim of this document, is classified according to the following combination of parameters and performances. **No other classification is aurthorised.**

RE	120
REI	120

5.3. Validation conditions of the classification

5.3.1 Use and application

The object and its assembly have to conform to the detailed description made in the test report No. RS12-042, which can be requested without the obligation of document disposition in case of object identification challenges.

5.3.2 The environment and direct application

To maintain the validity of the classification, its extension can be used in application environments stated by norm. NF EN 1365-1 (June 2000 edition) or conforming to extensions formed by the laboratory.

5.3.3 Exposure conditions

Fire on the internal side (core side in cement and, as need be, from the opposite part of the insulate cushion)

5.3.4 Load

Load ≤ 40000 daN/ml equally spread across the thickness of the core in cement (centre leaning).

5.3.5 Length extension

The perpendicular section of the wall is not limited.

5.3.6 Height extension

The height of the wall is limited to 3 metres.

5.3.7 WALL THICKNESS

The minimum thickness of the wall 440 of which:
- Minimum thickness of 150 for the cement core.
- Maximum thickness of 210 for the insulate.

Ns. Rif.: 26038753 – AM/SL
DSSF/ERS.12.093

DSSF/ERS/RECORD – Ref. 04

Certification of resistance to fire of plaster-less blocks

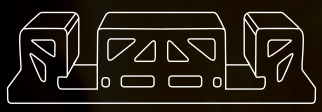
TEMPERATURE DIAGRAMS

Very significant are the temperature diagrams (see photo) that demonstrate that the side of the wall and the floor where temperature sensors are located register 33°C after 180 minutes of fire exposure (of over 1.100°C) in the case of the blocks and 25°C after 240 minutes of fire exposure (of over 1.100°C) in the case of the floor slabs.

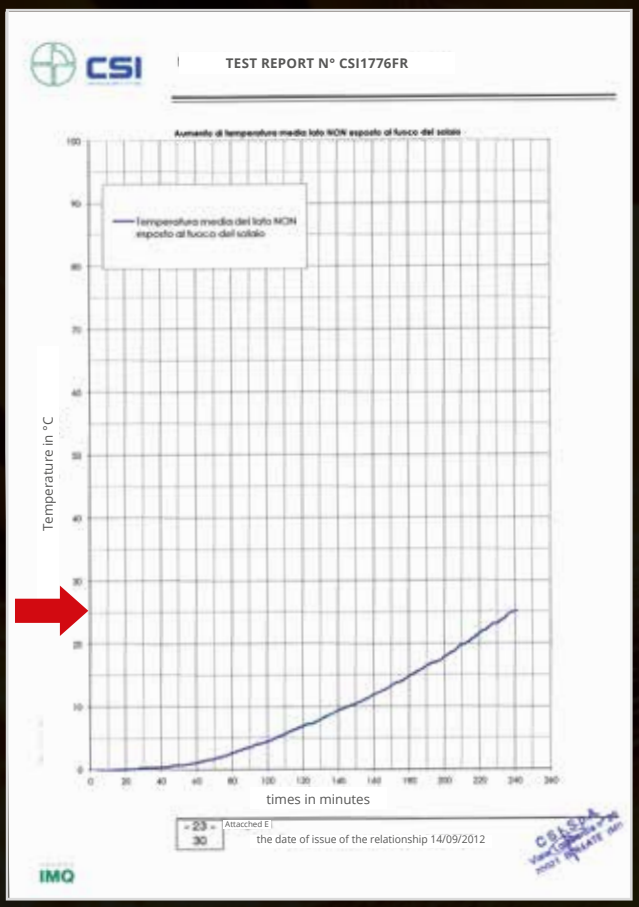
This exceptional fire resistance highlights two very important advantages:

1. **The building does not collapse** in case of fire. The ISOTEX constructive elements, with reinforced concrete cores, retain their load-bearing capacity and insulation properties, without suffering damage.

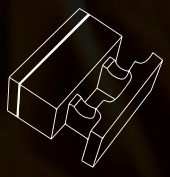
2. **Thermally exceptional.** Excellent thermal insulation and inertia uneasily matched by other building systems.



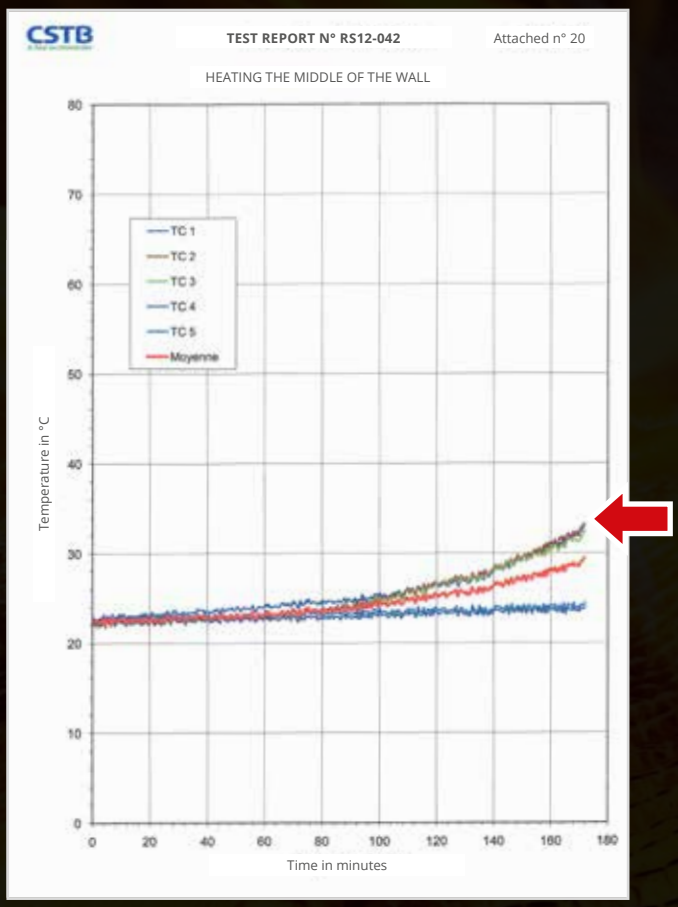
FLOORS SLABS temperature



Temperature of 25°C measured on the extrados of the panel after 240 minutes of exposure to fire with temperatures on the flame side of 1.000°C.



BLOCKS temperature



Temperature of 33°C measured on the opposite side to the flame after 180 minutes of fire exposure with temperatures on the flame side of 1.000°C.

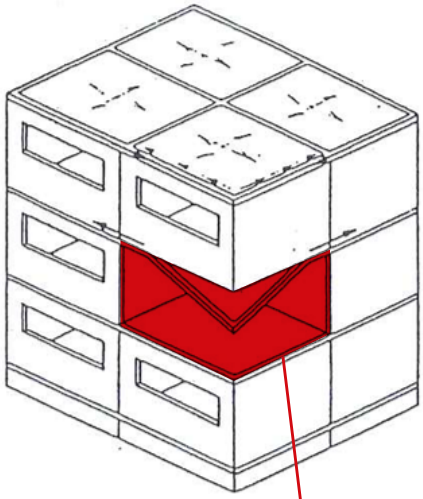
ISOTEX BUILDINGS DO NOT COLLAPSE

Demonstration by Prof. Claudio Ceccoli

Until further demonstrations on the safety of the buildings and of the people who live in them, **Prof. Claudio Ceccoli** (who has been a distinguished lecturer at the Department of Structural Engineering at the University of Bologna), in collaboration with **Ing. Gilberto Dallavalle,** demonstrated that, in the event of an explosion, even without the two corner walls of an intermediate floor of a building, that building will not suffer progressive collapse in that the vertical and horizontal steel reinforcing system contained in the concrete within the form work blocks, make the ISOTEX walls work as shear walls (see experimental tests). **For which there is absolutely no danger of collapse.**

Images taken from the report "ISOTEX seismic resistant construction method" by Prof. Eng. Claudio Ceccoli and Eng. Gilberto Dallavalle.

Experimental tests carried out at the Eucentre of Pavia to confirm the functioning of the ISOTEX construction system such as shear walls.



Following the explosion of the middle floor, the ground floor and the second floor remain intact.

ISOTEX BLOCKS & FLOOR SLABS

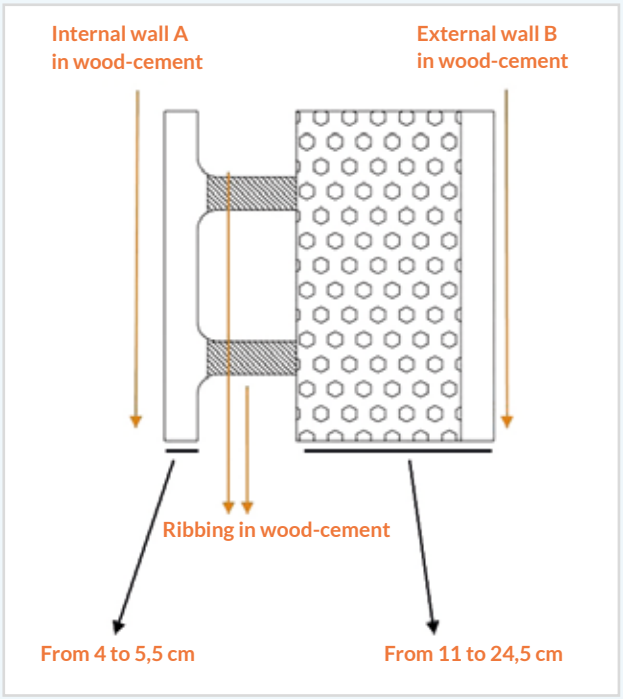
Functionality and elimination of thermal bridges

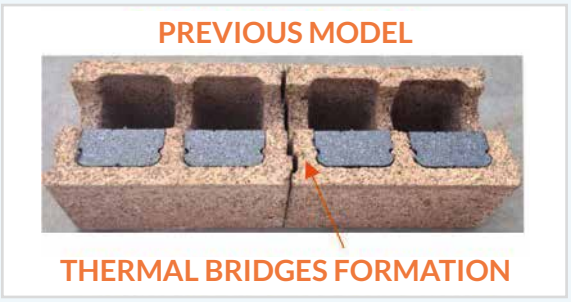
Another goal that ISOTEX has always pursued is the living comfort and optimal microclimate within a home.

To produce hollow blocks and panels, ISOTEX uses a cement-bonded wood fibre conglomerate with excellent thermal insulation characteristics (ı=0,104 W/mK), thus obtaining insulation on both walls of the elements (see drawing below). To achieve such excellent values of thermal insulation (U=0,16 W/m²K), a variable thickness polystyrene and graphite insert is introduced into the block (see side photo) in order to obtain the same insulating effects as a "**protective coat**".

It should be noted that the insulation of the block (and therefore the wall) is homogeneous since, where the polystyrene is not present, the larger thickness of the cement-bonded wood fibre ribs, which connect the two walls of the block, compensates for the lack of polystyrene.

Furthermore, **the "new" type of blocks with 2 ribs** (instead of 3 ribs), in addition to improving thermal insulation by 15/18% and load bearing by 45%, completely eliminates the thermal and acoustic bridge between one block and another (see thermographs on page 13).

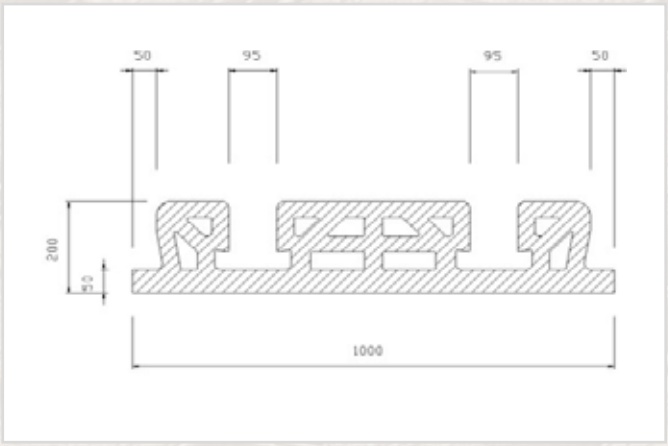




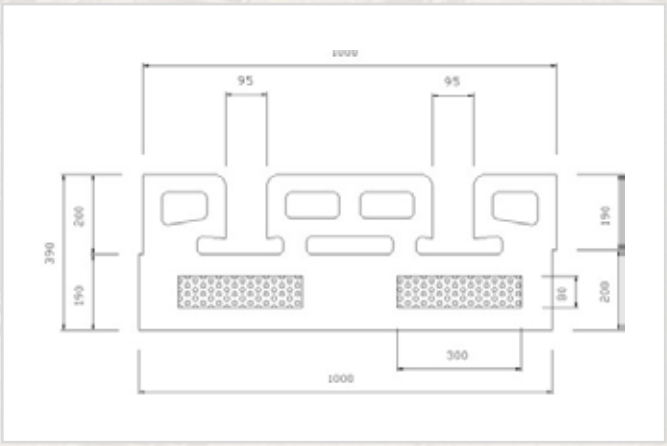
The outer wall of the ISOTEX block, whose thickness ranges from 11 to 24,5 cm, thus acts as protective coat, keeping the heat out during the summer. On the other hand, the inner wall of the ISOTEX block, which ranges from 4 to 5,5 cm of cement-bonded wood fibre, facilitates a faster attainment of the desired temperature for an environment when the heating is switched on in winter. What's more, the surface temperature of the inner wall, since it is insulated, has the same temperature as the environment, thus **providing a pleasant sensation of well being.**

THE WINNING COMBINATION – BLOCKS & PANELS

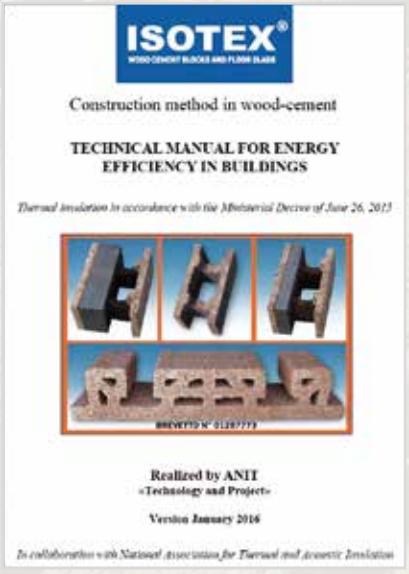
The above discussion regarding blocks, also applies to ISO-TEX floor slabs, whose thicknesses range from 5 to 20 cm of wood cement towards the interior of the home (*see drawings below*).



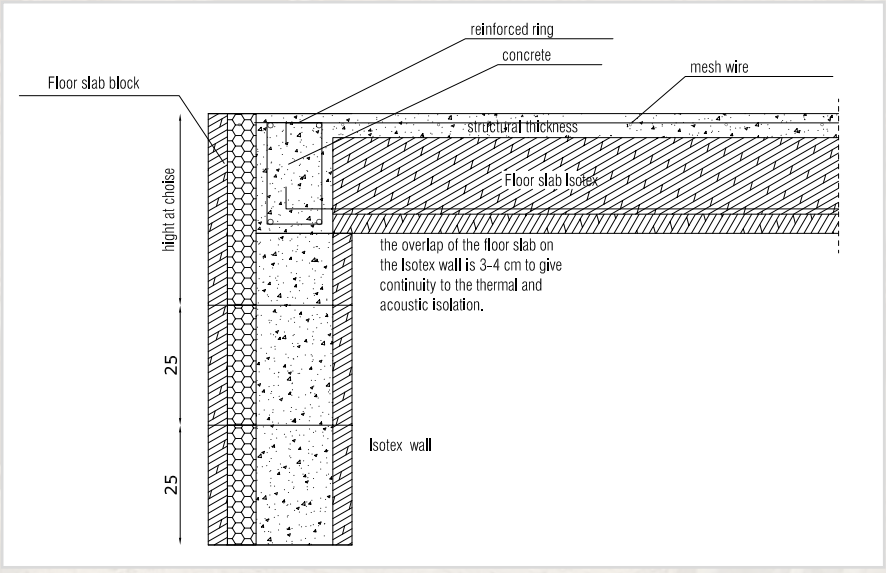
ISOTEX S20 wood-cement floors slab.



ISOTEX S39 wood-cement floor slab for coverings and unheated spaces (e.g. basements, garages)


ISOTEX®
Construction method in wood-cement
TECHNICAL MANUAL FOR ENERGY EFFICIENCY IN BUILDINGS
Realized by ANIT
«Technology and Project»
Version January 2016

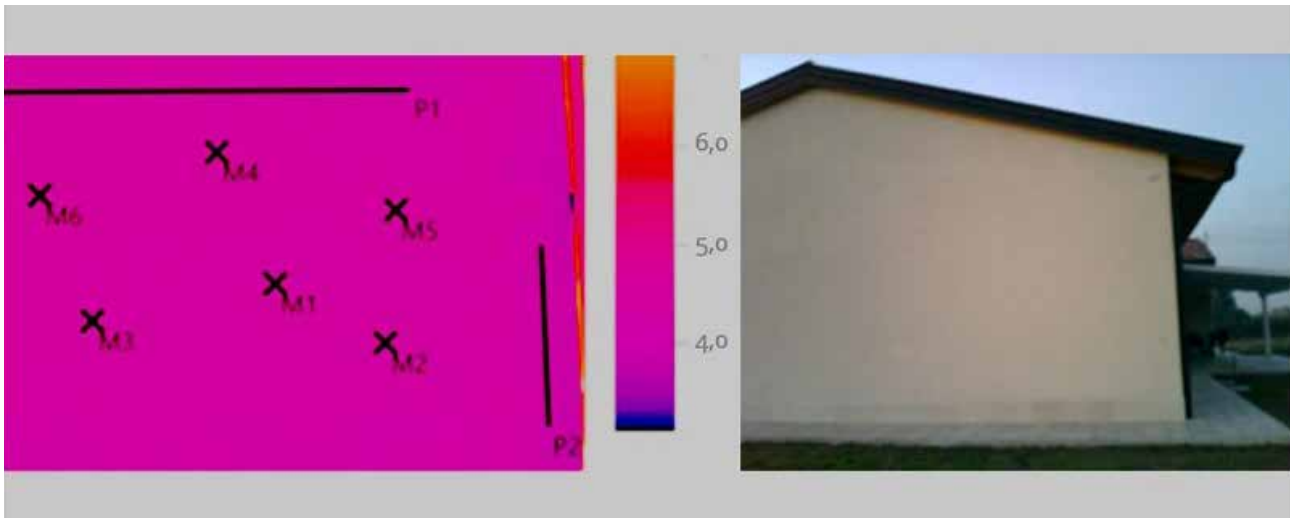
Thermal report compiled by the National Association for Thermal and Acoustic Insulation (ANIT). Full and downloadable version on the website: www.blocchiisotex.com



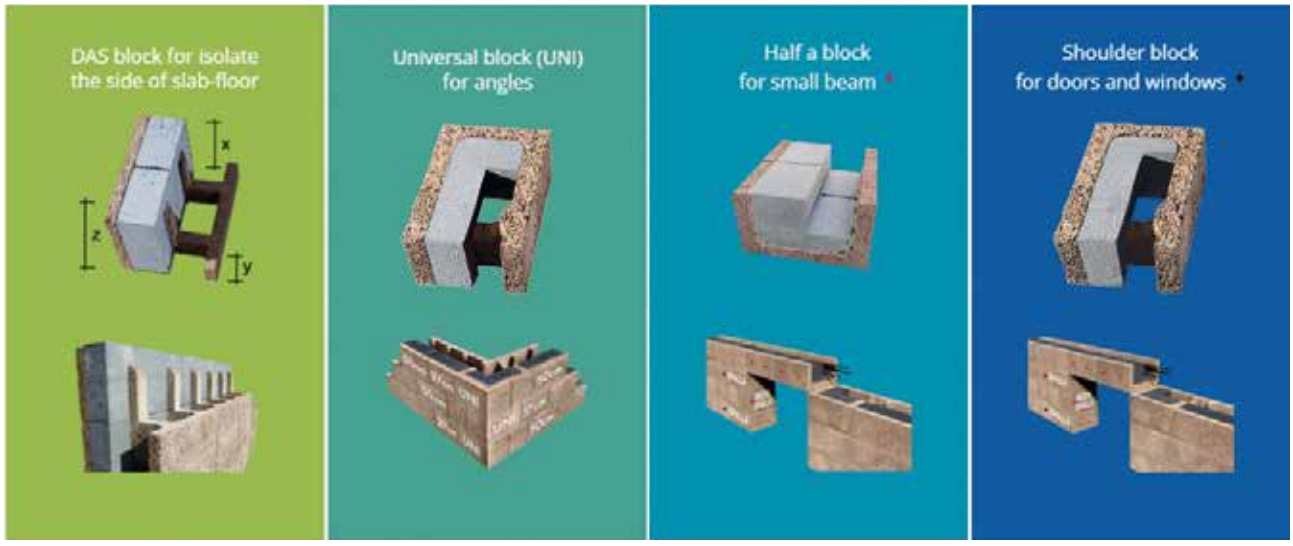
Floor curb constructive detail

It is important to specify that the outer envelope accounts for 80% of energy savings, thus walls, floors and openings have decisive role.

ISOTEX has developed its own building system that completely eliminates thermal bridges (see thermograph below) with the use of special pieces such as corners, architraves, spandrel blocks and shoulder blocks for doors and windows (see photo at page bottom).



The fuchsia colour is homogeneous indicating that the temperatures is equal over the entire wall. This confirms the absence of thermal bridges. Excerpt from report by Arch. Vittorio Righetti. For further information visit the site *www.blocchiisotex.com.*

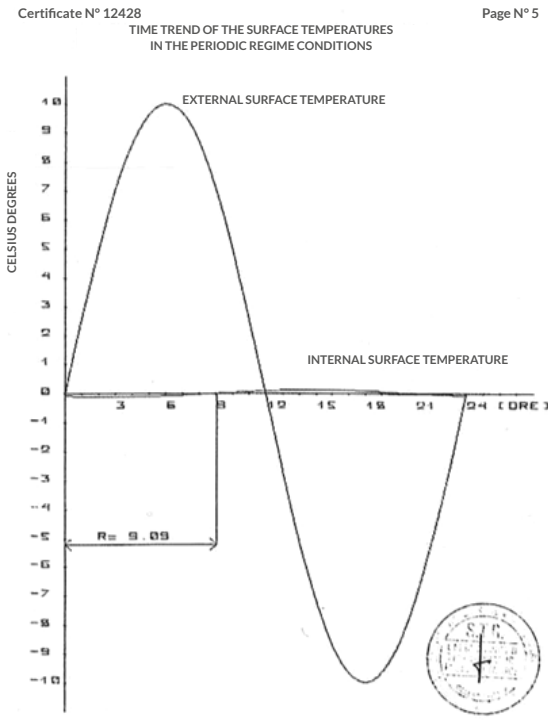


Special pieces for the elimination of thermal bridges.

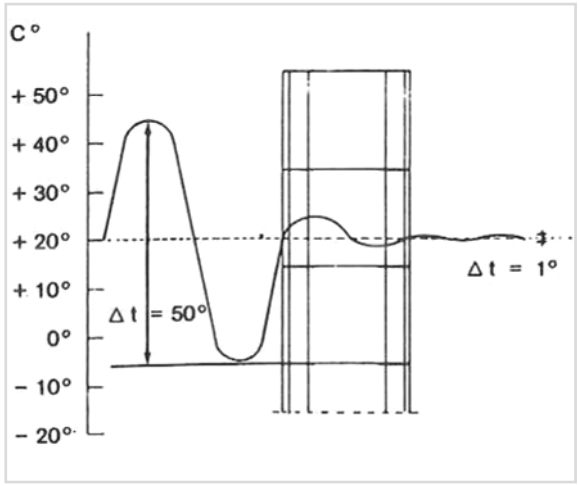
ISOTEX ELIMINATES TEMPERATURE FLUCTUATIONS

ISOTEX hollow blocks are laid dry and then filled every 6 rows with lightly reinforced concrete in order to create a massive wall with exceptional thermal inertia. This reduces to a minimum temperature variations in the home that occur routinely throughout the day (see diagrams below).

This directly influences living comfort, since the temperature is kept constant inside the home in both winter and summer, thus also reducing heating and cooling consumption.



Temperature variation throughout the day in winter. The test starts at a temperature of 0°C in the two environments separated by an ISOTEX wall of 25 cm. One environment is brought to +10°C before falling to -10°C over the course of 24 hours. The variation in temperature recorded in the adjacent environment is imperceptible (approximately 0,04°C). The phase shift is over nine hours.



Temperature variation throughout the day in summer with 30 cm wall. As in the previous test, the external environment of the wall changes from an initial +20°C to +45°C and then -5°C. The variation in temperature in the other environment is an imperceptible +1°C.

The diagrams above have been obtained from experimental tests conducted in the laboratory. The National Association for Thermal and Acoustic Insulation has produced for ISOTEX a technical manual for energy efficiency in compliance with the Ministerial Decree of 26/06/2015 in which technical requirements are indicated (see page 12).

EXCELLENT THERMAL INSULATION

Also regarding thermal insulation, ISOTEX products achieve excellent results. For blocks, transmittance ranges from **0,34 to 0,16 W/m²K** in external load-bearing walls and from **0,79 to 0,56 W/m²K** in internal load-bearing walls.

Concerning to the UK Market, having different regulations (as minimum thickness of concrete 12 cm), it is intended to increase the thickness of the 3 cm more of insulation with BASF-NEOPOR® graphite.

External load-bearing walls

*HDIII 30/7 Graphite - **U=0,34 W/m²K***

*HDIII 33/10 Graphite - **U=0,27 W/m²K***

*HDIII 38/14 Cork - **U=0,24 W/m²K***

*HDIII 38/14 Graphite - **U=0,21 W/m²K***

*HDIII 44/20 Graphite - **U=0,16 W/m²K***

Periodic thermal transmittance, attenuation and phase shift

Plastered wall of block:	Mass excluding plaster (Kg/m²)	Y_{IE} (W/m²K)	Attenuation	Phase shift
HDIII 30/7 eps + graphite	401,8	0,019	0,064	12 h 19'
HDIII 33/10 eps + graphite	402,5	0,014	0,060	12 h 43'
HDIII 38/14 eps + graphite	408,5	0,008	0,048	14 h 06'
HDIII 44/20 eps + graphite	419,5	0,004	0,032	16 h 22'

EXCELLENT THERMAL INSULATION - *FLOOR SLABS*

As for panels, values range from **0,63 to 0,60 W/m²K** for intermediate floor slabs and from **0,24 to 0,28 W/m²K** for floor and covering panels (see photo below).

Intermediate floor slabs

*Floor slab S20 - **U=0,63 W/m²K***

*Floor slab S25 - **U=0,60 W/m²K***

*Floor slab S30 - **U=0,60 W/m²K***

Intermediate and covering floor slabs

*Floor slab S39 - **U=0,24 - 0,28 W/m²K***

S39 (8 cm eps + graphite)	Winter values	Summer values
Periodic thermal transmittance yie [W/m²K]	0,003	0,003
Attenuation	0,011	0,012
Phase shift	25 h 36'	25 h 28'

CLASS A4

The best energy classification

All these thermal transmittance values are obtained using a three-dimensional calculation, as required by applicable regulations (UNI EN ISO 6946), specific to the peculiarities of ISOTEX blocks and Floor slab.

The excellent thermal transmittance values of ISOTEX products, combined with the excellent characteristics of the other components required for the energy calculation, allow ISOTEX buildings to achieve the best energy classification, namely **Class A4** (see table to the side).

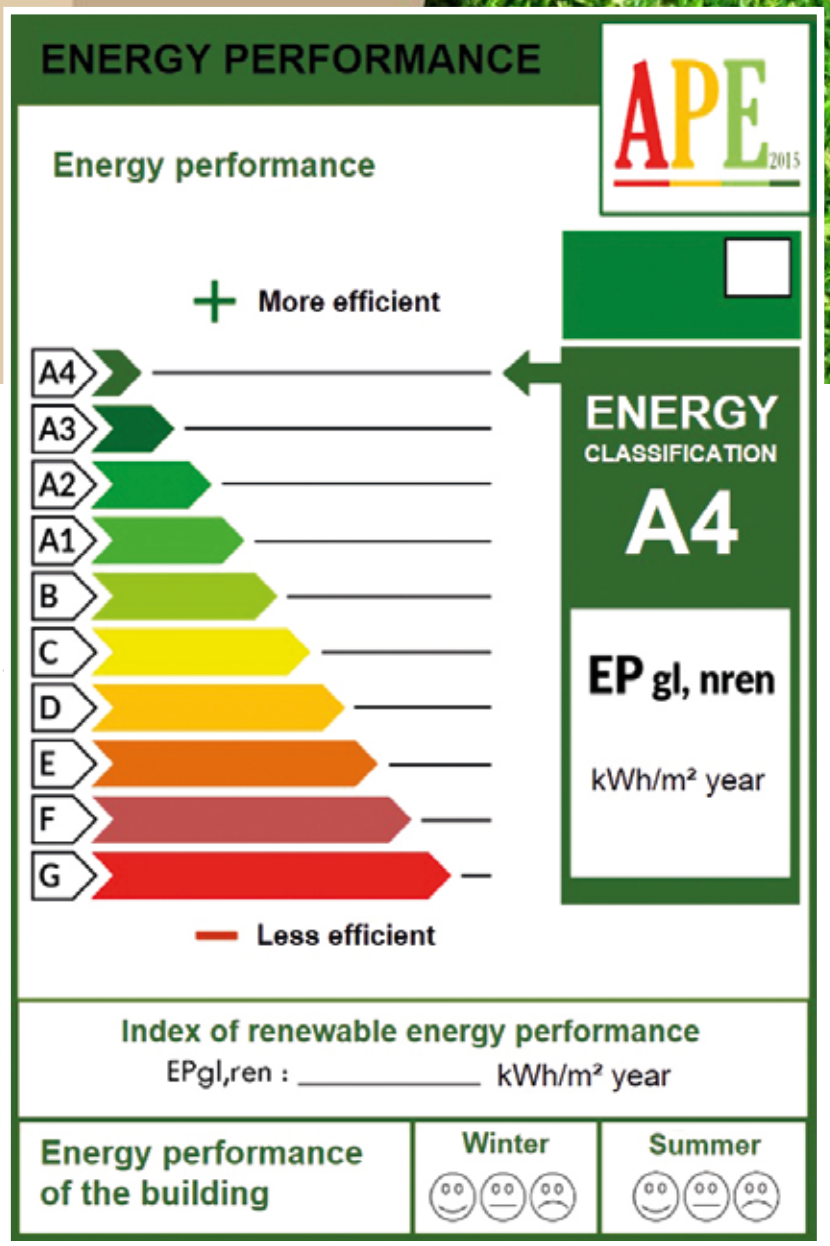


Table for classification efficiency reference NEW Ministerial Decree of 26/06/2015

MAXIMUM CLASSIFICATION of the buildings in the REDUCTION OF NOISE TRANSMISSION at low and high frequencies

The massive structure of ISOTEX hollow blocks and panels in cement-bonded wood fibre with the use of structural concrete, used inside the blocks as a bearing structure and as the structural concrete topping of floor or panels, also favours excellent acoustic isolation both from aircraft noise and from footfalls, adding another benefit to the living comfort of the environment (see certificates below).

Block HB 44/15-2

Rw = 60 dB

The block HB 44/15-2 allows, with just a single laying, the attainment of two loading-bearing walls, which separate the horizontal structures and thus eliminate the transmission of noise through walls and flooring.

(Test report No. 281255 dated 18/04/2011) Sheet 10 of 10 follows

ISTITUTO GIORDANO

Speciment net measuring area:
10,80 m²

Source room volume:
109,6 m³

Receiving room volume:
103,9 m³

Test result*:
Single-number rating at 500 Hz in the frequency range 100 Hz to 3150 Hz:

Rw = 60 dB**

Adaptation terms:

C = -5 dB
Ctr = -12 dB

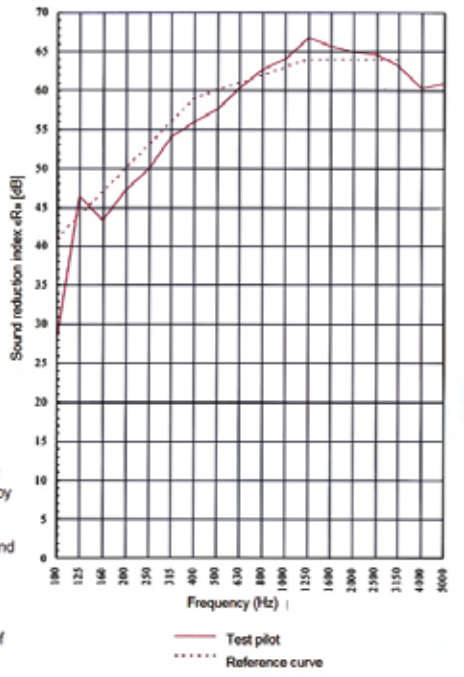
(*) Evaluation based on laboratory measurement results obtained by an engineering method.

(**) Single-number quantity of sound reduction index measured in steps of 0,1 dB:

61,1 dB

Uncertainty of measurement of the single number quantity U(Rw):

0,4 dB

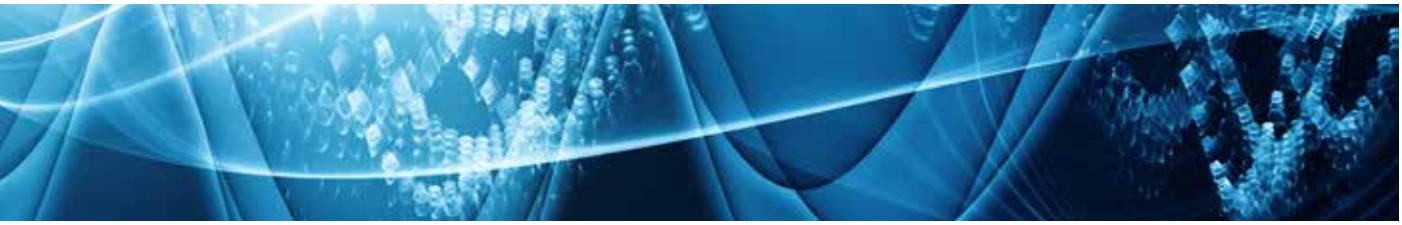


Il Responsabile del Laboratorio di Acustica e Vibrazioni (Dott. Ing. Roberto Baruffa)

Il Responsabile Tecnico di Prova (Geom. Omar Nardi)

L'Amministratore Delegato

L'AMMINISTRATORE DELEGATO Dott. Ing. Vincenzo Iannini



Block HB 25/16

Rw = 61 dB

The wall tested in the laboratory, with the plastered block HB 25/16, obtains a noise reduction of 56 dB, with no finishes each side.

The wall with the block HB 25/16, **without plaster**, with 2 panels of IsolGypsum Fibra of 3.2 cm each obtains a noise reduction of 61 dB.

ISTITUTO GIORDANO

Wall in configuration "B"

ACCREDIA

LAB N° 0021

Specimen net measuring area:
10,80 m²

Source room volume:
109,6 m³

Receiving room volume:
105,0 m³

Test result*:

Single-number rating at 500 Hz in the frequency range 100 Hz to 3 150 Hz:

R_w = 61 dB**

Adaptation terms:

C = -6 dB
C_{tr} = -13 dB

(*) Evaluation based on laboratory measurement results obtained by an engineering method.

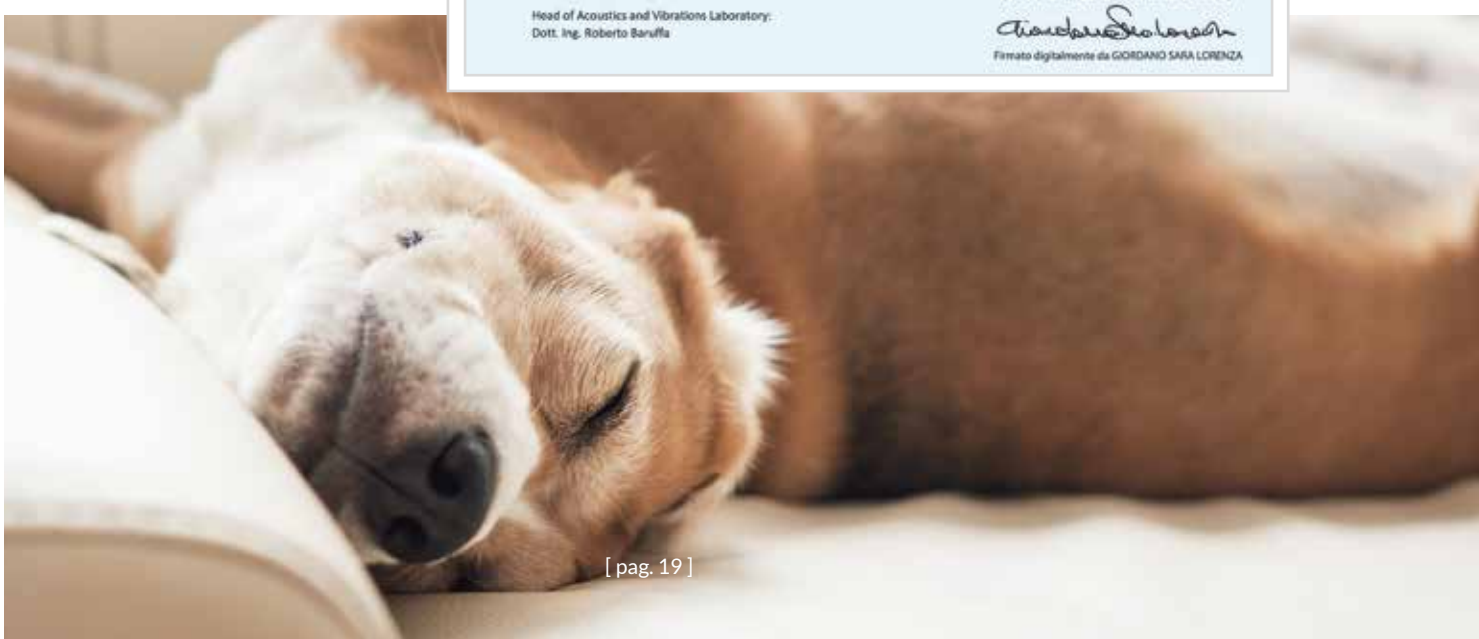
(**) Single-number quantity of sound reduction index measured in steps of 0,1 dB:
61,1 dB
Uncertainty of measurement of the single number quantity U(R_w):
0,4 dB

Test Technician:
Geom. Omar Nanni

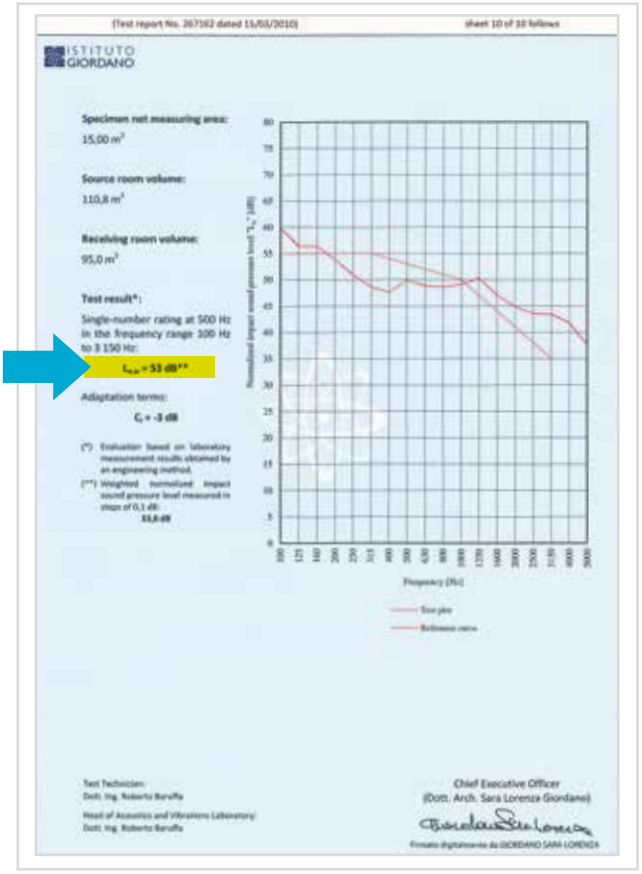
Head of Acoustics and Vibrations Laboratory:
Dott. Ing. Roberto Baruffa

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)

Firmato digitalmente da GIORDANO SARA LORENZA



HOW TO ELIMINATE AIRCRAFT AND FOOTFALL NOISE TRANSMISSION


ISTITUTO GIORDANO

Specimen net measuring area: 15,00 m²

Source room volume: 110,8 m³

Receiving room volume: 95,0 m³

Test result*:

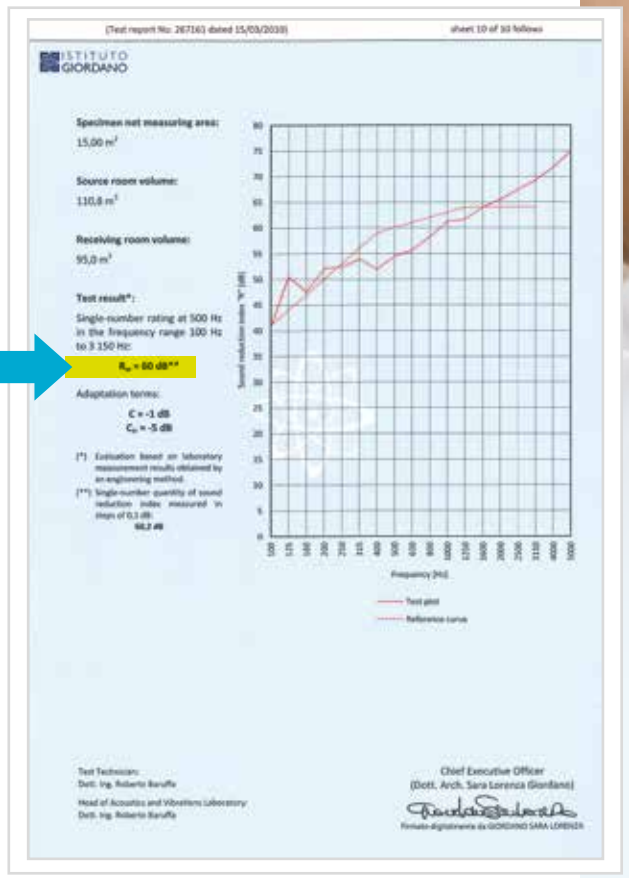
Single-number rating at 500 Hz in the frequency range 100 Hz to 3 150 Hz:

$L_{n,w}$ = 53 dB**

Adaptation terms:

C_i = -3 dB

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)


ISTITUTO GIORDANO

Specimen net measuring area: 15,00 m²

Source room volume: 110,8 m³

Receiving room volume: 95,0 m³

Test result*:

Single-number rating at 500 Hz in the frequency range 100 Hz to 3 150 Hz:

R_w = 60 dB**

Adaptation terms:

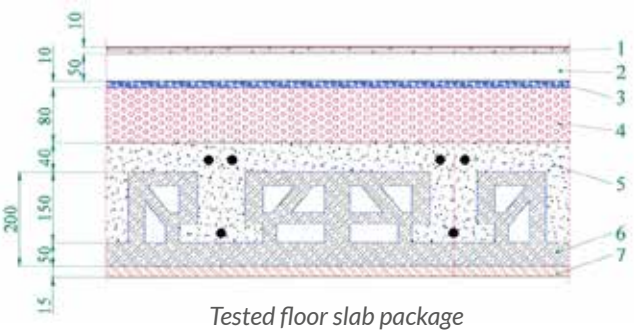
C = -1 dB

C_{tr} = -5 dB

Chief Executive Officer
(Dott. Arch. Sara Lorenza Giordano)

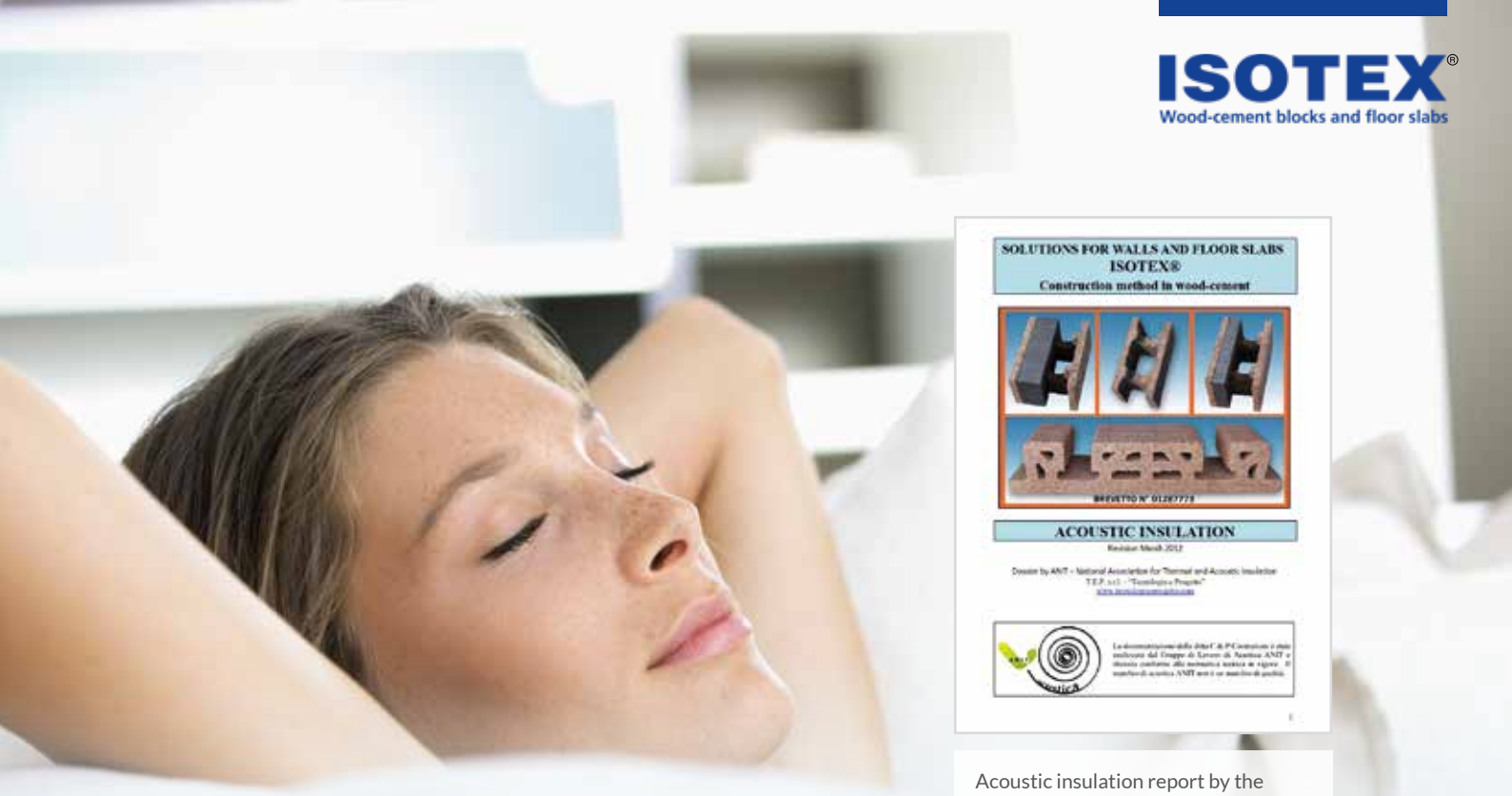
Footfall noise **Ln,w = 53 dB**

Aircraft noise **Rw = 60 dB**



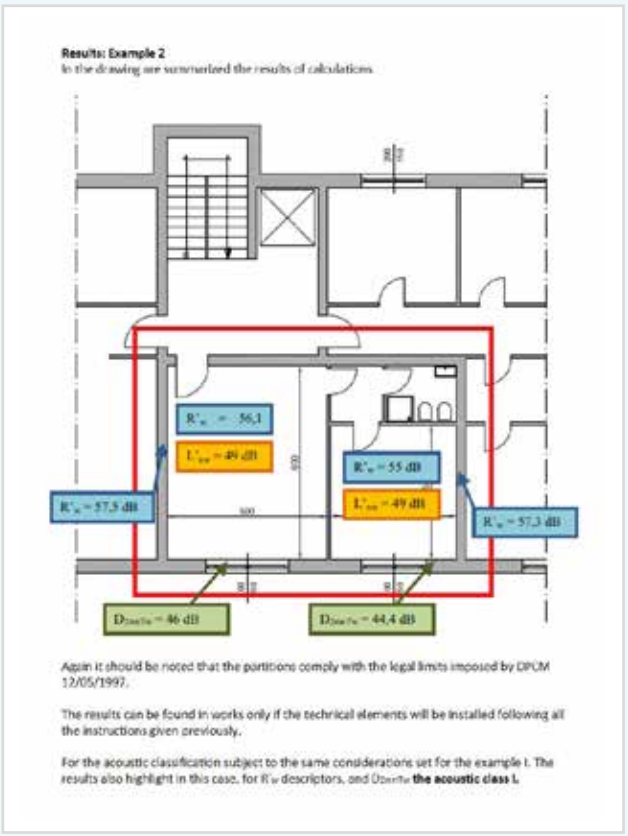
Tested floor slab package

1. Flooring: stoneware tiles, dimensions 320x320 mm, nominal thickness 8 mm and nominal surface mass 19Kg/m².
2. Concrete screed, nominal thickness 50 mm and nominal density 1800 Kg/m³.
3. Elastic separating material "ISOLMANT UNDERSPECIAL", nominal total thickness 8 mm and nomical density 30 Kg/m³, formed by physically cross-linked polyethylene panels, closed cell expanded foam, goffered and serigraphed on the upper surface, nominal thickness 5 mm, bonded on the lower side with special needle-punched fibre, nominal thickness 3 mm.
4. Levelling layer lightened with virgin expanded polystyrene beads, cement and sand, nominal thickness 80 mm and nominal density 400 Kg/m³.
5. Poured concrete, nominal minimal thickness 40 mm, nominal maximum thickness 190 mm and nominal density 2400 Kg/m³.
6. ISOTEX S20 panel made with mineralized wood fibre and cement, nominal thickness 200 mm and nominal surface mass 120 Kg/m².
7. Layer of traditional cement mortar plaster, nominal thickness 15 mm and nominal density 1900 Kg/m³.



Acoustic insulation report by the National Association for Thermal and Acoustic Insulation.
Full version downloadable on the website www.blocchiisotex.com

ISOTEX has designed and tested its products and solutions to offer performance deserving of the best acoustic insulation classification, Class I (from the Acoustic Report prepared by ANIT, see above).

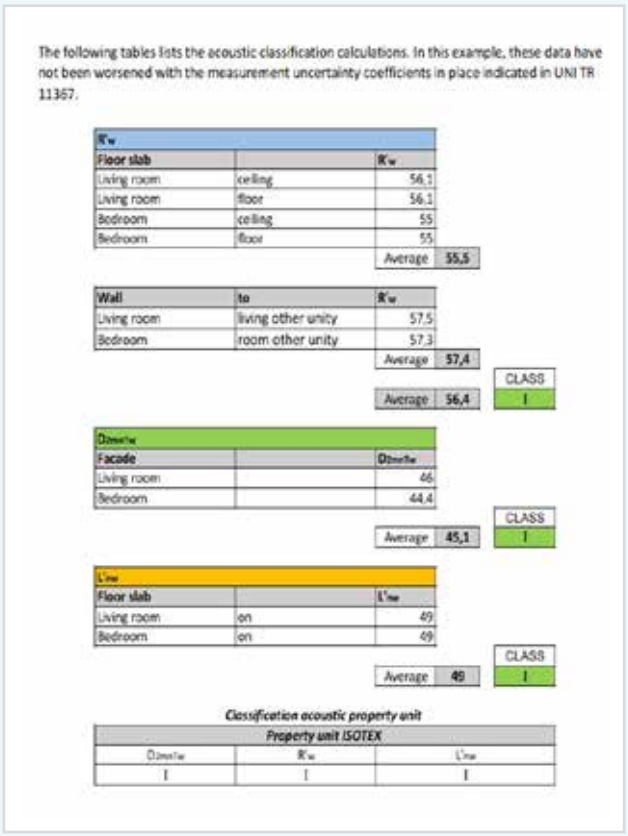


Results: Example 2
In the drawing are summarized the results of calculations

Again it should be noted that the partitions comply with the legal limits imposed by DPCM 12/05/1997.

The results can be found in works only if the technical elements will be installed following all the instructions given previously.

For the acoustic classification subject to the same considerations set for the example I. The results also highlight in this case, for R'w descriptors, and Dnew **the acoustic class I.**



The following tables lists the acoustic classification calculations. In this example, these data have not been worsened with the measurement uncertainty coefficients in place indicated in UNI TR 11367.

R'w		
Floor slab		**R'w**
Living room	ceiling	56,1
Living room	floor	56,1
Bedroom	ceiling	55
Bedroom	floor	55
	Average	55,5

Wall	**to**	**R'w**
Living room	living other unity	57,5
Bedroom	room other unity	57,3
	Average	57,4
	Average	56,4

CLASS I

Dnew		
Facade		**Dnew**
Living room		46
Bedroom		44,4
	Average	45,1

CLASS I

L'nw		
Floor slab		**L'nw**
Living room	on	49
Bedroom	on	49
	Average	49

CLASS I

Classification acoustic property unit

Property unit ISOTEX		
Dnew	R'w	L'nw
I	I	I

AIR IMPERMEABILITY (Blower Door Air tighness-test)

no air leaks through walls, minimizing heat dispersion

Walls made of ISOTEX blocks have been tested for air permeability (see certificate below) with excellent results. **This means that there are no air leaks from the walls, therefore minimizing heat loss.** Naturally, all the essential qualities of the outer envelope can be further preserved with the use of suitable windows and openings.

ISTITUTO GIORDANO

TEST REPORT No. 312272

Place and date of issue: Bellaria-Igea Marina - Italy, 30/12/2013

Customer: C&P COSTRUZIONI S.r.l. - Via D'Este 5/7 - 5/8 - 42028 POVIGLIO (RE) - Italy

Date test requested: 14/10/2013

Order number and date: 61053, 14/10/2013

Date specimen received: 03/12/2013

Test date: 16/12/2013

Purpose of test: determination of air permeability of a wall in accordance with standard UNI EN 12114:2001

Test site: Istituto Giordano S.p.A. - Via Erbosa, 72 - 47043 Gatteo (FC) - Italy

Specimen origin: sampled and supplied by the Customer

Identification of specimen received: No. 2013/2447

Specimen name*

The shuttering blocks used to build the test specimen are called "ISOTEX HDIII 30/7 Graphite BLOCKS".

(*) according to that stated by the Customer.

(Test report No. 312272 dated 30/12/2013)

sheet 7 of 9 follows

Test results

Air permeability under positive pressure

Positive pressure		Air flow rate*	
nominal [Pa]	test [Pa]	total [m³/h]	related to overall area** [m³/h·m²]
50	48,9	2,6	0,41 ± 0,02
100	98,2	4,3	0,68 ± 0,02
200	195,4	6,9	1,11 ± 0,02
500	499,5	15,7	2,52 ± 0,05
1000	1002,1	35,3	5,64 ± 0,16

(*) figures refer to pressure of 101,3 kPa and temperature of 293 K.

(**) uncertainty considers contributions caused by measurement of the following quantities: air flow rate, test chamber pressure and size of specimen; expanded uncertainty has been calculated using a coverage factor "k" of 2, corresponding to a confidence level of 95,45 %.

Air permeability under negative pressure

Negative pressure		Air flow rate*	
nominal [Pa]	test [Pa]	total [m³/h]	related to overall area** [m³/h·m²]
50	49,4	2,6	0,41 ± 0,02
100	98,6	4,3	0,69 ± 0,02
200	198,2	7,1	1,14 ± 0,02
500	498,6	18,6	2,98 ± 0,06
1000	999,7	27,9	4,46 ± 0,11

figures refer to pressure of 101,3 kPa and temperature of 293 K.

uncertainty considers contributions caused by measurement of the following quantities: air flow rate, test chamber pressure and size of specimen; expanded uncertainty has been calculated using a coverage factor "k" of 2, corresponding to a confidence level of 95,45 %.

Certificate with air permeability test report

VAPOUR PERMEABILITY

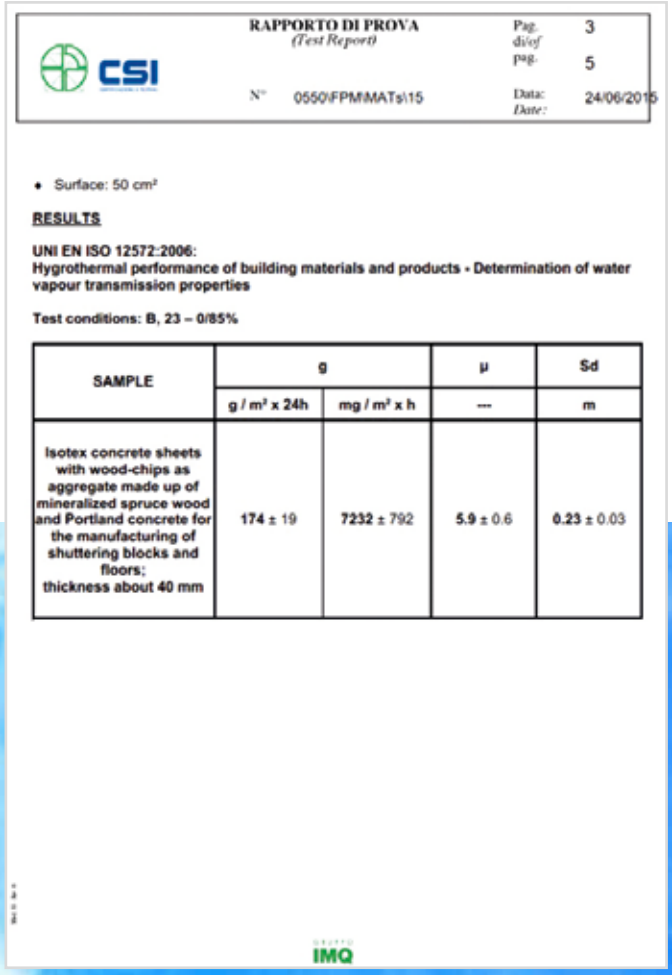
made possible by preferential channels. No condensation.

An aspect that is certainly not negligible for living comfort and the home microclimate is the passage of vapour through the walls.

ISOTEX blocks are made from cement-bonded wood fibre, which has a very low resistance to vapour μ=5.9 (see certificate below). The ribs which connect the two walls of the hollow block form preferential channels through which water vapour passes (see figure below).

These ribs are not made from concrete or insulation, which have much higher values of water vapour resistance than the cement-bonded wood fibre.

This peculiarity, added to the complete absence of structural thermal bridges and adequate air circulation, equates to the **total elimination of condensation and mould.**



RAPPORTO DI PROVA
(Test Report)

Pag. 3
di/of
pag. 5

N° 0550/FPM/MATs/15

Data: 24/06/2015
Date:

- Surface: 50 cm²

RESULTS

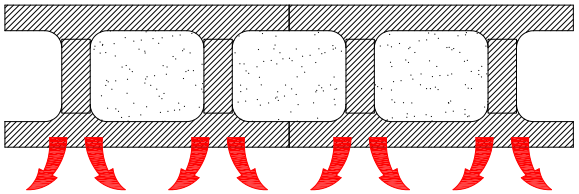
UNI EN ISO 12572:2006:
Hygrothermal performance of building materials and products - Determination of water vapour transmission properties

Test conditions: B, 23 – 0/85%

SAMPLE	g		μ	Sd
	g / m² x 24h	mg / m² x h	---	m
Isotex concrete sheets with wood-chips as aggregate made up of mineralized spruce wood and Portland concrete for the manufacturing of shuttering blocks and floors; thickness about 40 mm	174 ± 19	7232 ± 792	5.9 ± 0.6	0.23 ± 0.03

IMQ

Certificate of water vapour permeability



The ribs, which connect the inner wall to the outer wall of the cement-bonded wood fibre block, form preferential channels for the passage of the water vapour produced inside the dwelling.

ABSENCE OF RISING DAMP

freeze-thawing and water absorption by the wood fibre, is eradicated thanks to its mineralization

Determination of the water rise in the submerged specimens to half height:

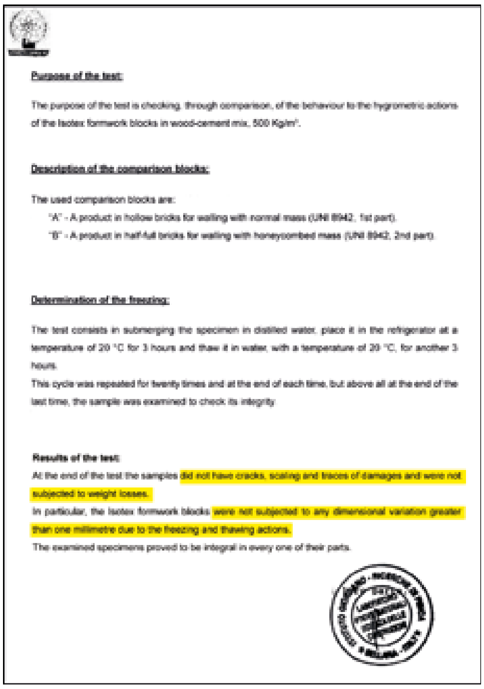
The test consists in submerging in distilled water at half height a dry specimen and to check at sight on the external surface and at regular intervals the rise of the specimen water measured in millimetres.

Results of the test

Specimen (n.)	Type	Rise of the water at determined intervals: After 15 min (mm)	After 30 min (mm)	After 60 min (mm)	After 120 min (mm)	After 180 min (mm)	After 240 min (mm)	Average rise after 240 min (mm)
1	"A" Normal mass brick	20	40	Total rise	/	/	/	Total
2		27	40	Total rise	/	/	/	
1	"B" Honeycombed mass brick	18	23	63	Total rise	/	/	Total
2		10	23	33	74	Total rise	/	
1	D III 28/3	8	15	18	20	30	33	31
2		10	14	21	28	30	30	
1	D III 30/3	10	15	24	30	30	30	
2		6	13	21	27	30	30	

Total rise = block fully damp

Absence of rising damp test



Purpose of the test:

The purpose of the test is checking, through comparison, of the behaviour to the hygrometric actions of the Isotex formwork blocks in wood-cement mix, 500 Kg/m³.

Description of the comparison blocks:

The used comparison blocks are:
"A" - A product in hollow bricks for walling with normal mass (UNI 8942, 1st part).
"B" - A product in half-full bricks for walling with honeycombed mass (UNI 8942, 2nd part).

Determination of the freezing:

The test consists in submerging the specimen in distilled water, place it in the refrigerator at a temperature of 20 °C for 3 hours and thaw it in water, with a temperature of 20 °C, for another 3 hours.
This cycle was repeated for twenty times and at the end of each time, but above all at the end of the last time, the sample was examined to check its integrity.

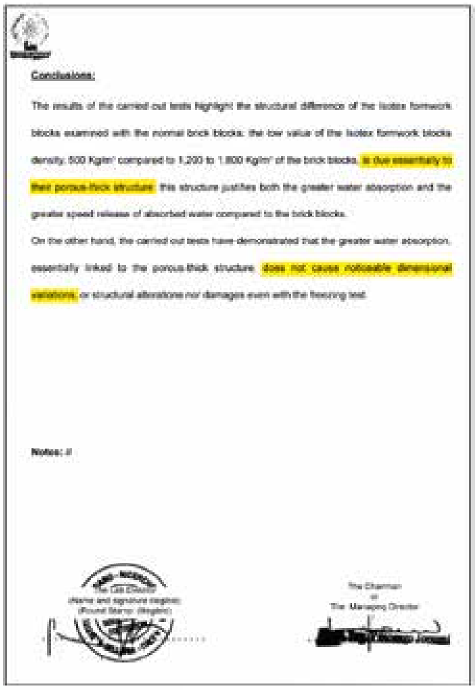
Results of the test:

At the end of the test the samples did not have cracks, scaling and traces of damages and were not subjected to weight losses.
In particular, the Isotex formwork blocks were not subjected to any dimensional variation greater than one millimetre due to the freezing and thawing actions.
The examined specimens proved to be integral in every one of their parts.

Freeze-thawing and dimensional stability test

Water residue after extraction at different time intervals

Water absorption and release test



Conclusions:

The results of the carried out tests highlight the structural difference of the Isotex formwork blocks examined with the normal brick blocks: the low value of the Isotex formwork blocks density, 500 Kg/m³ compared to 1,200 to 1,800 Kg/m³ of the brick blocks, is due essentially to their porous-thick structure: this structure justifies both the greater water absorption and the greater speed release of absorbed water compared to the brick blocks.
On the other hand, the carried out tests have demonstrated that the greater water absorption, essentially linked to the porous-thick structure, does not cause noticeable dimensional variations, or structural alterations nor damages even with the freezing test.

Notes: //

The Lab Director (Name and signature legible) (Round Stamp: illegible)

The Chairman or The Managing Director

ISOTEX®
Wood-cement blocks and floor slabs

ALL THE SERVICES DEDICATED TO YOU

To optimize the use of its products according to building type, customers needs and in order to achieve the absolute best performance, ISOTEX freely offers a continuous, qualified assistance service to technicians and builders, including ISOTEX use structural feasibility studies, consultation regarding correct structural, thermal and acoustic analyses and technical assistance for construction sites from preparatory works until the final painting of the buildings.

From January 2018, ISOTEX has adopted the BIMobject portal for BIM design. Download all the subjects free of charge from the site www.blocchiisotex.com

FEASIBILITY STUDY

The feasibility study is designed to evaluate whether the architectural design is suitable for the use of ISOTEX blocks as load-bearing walls, or if minor adjustments are necessary.

FREE CALCULATION SOFTWARE

For designers calculating structures for use with the ISOTEX system, we provide a specially prepared free calculation application for the structural analysis of walls.

FLOORING CALCULATION

If the ISOTEX floor slabs to be produced have not already been calculated by the structural engineer, our technical department will see to it.

DESIGNER & SITE ASSISTANCE

ISOTEX provides a complete and professional assistance service to technicians and construction sites that use its cement-bonded wood fibre blocks and panels.

FREE VIDEO COURSES

Follow the first online laying courses from ISOTEX. 7 free video courses that show, simply and quickly, the techniques for the correct laying of ISOTEX cement-bonded wood fibre blocks and panels.

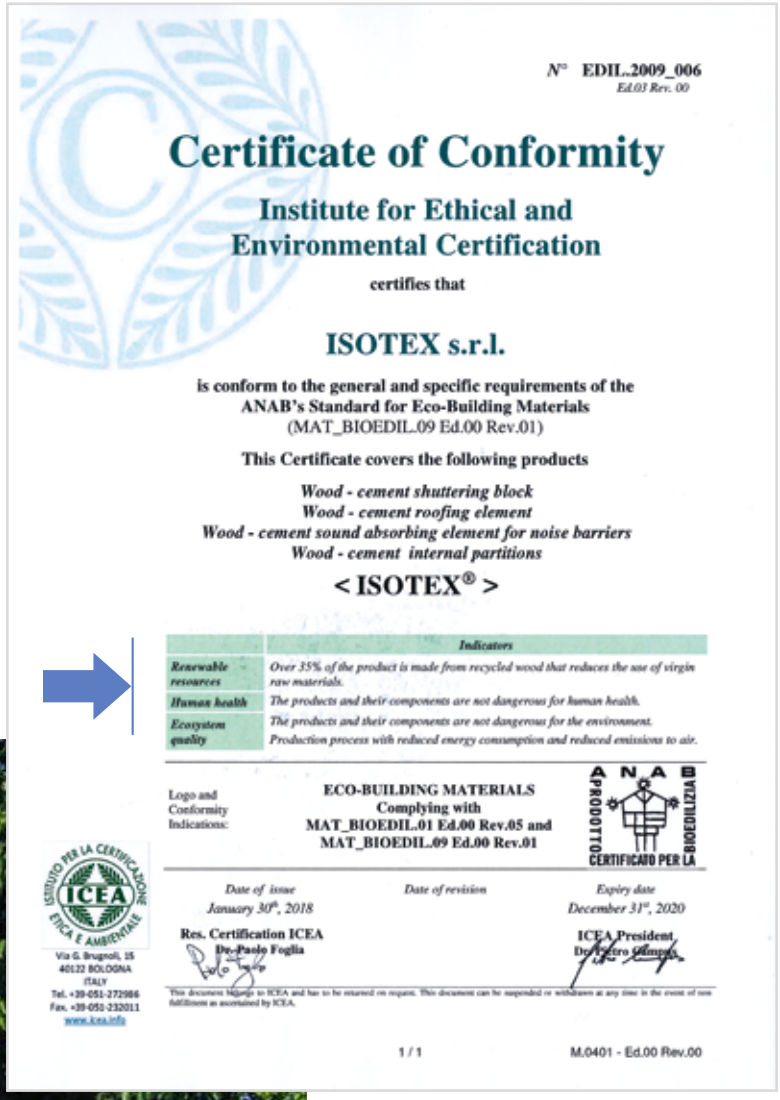
ISOTEX FINDS YOU A HOME!

ISOTEX will help you find the perfect home in the area of your choice by putting you into contact with those who have chosen to build homes with ISOTEX blocks and panels.

SUSTAINABILITY & EFFICIENCY

For the health of buildings and their inhabitants, it is essential to use natural building materials.

ISOTEX has always paid close attention to the raw materials that make up its products, with strictly untreated spruce and 99% pure cement. For such reasons, ISOTEX cement-bonded wood fibre products have attained an important certification for green construction (see certificate), which indicates that the products are not dangerous to human health or the environment. Furthermore, tests carried out regarding radioactivity give negligible values: I = 0,115 ± 0,010 (see certificate on page 31 and the website *www.blocchiisotex.com*).



N° EDIL.2009_006
Ed.03 Rev. 00

Certificate of Conformity

Institute for Ethical and Environmental Certification

certifies that

ISOTEX s.r.l.

is conform to the general and specific requirements of the ANAB's Standard for Eco-Building Materials (MAT_BIOEDIL.09 Ed.00 Rev.01)

This Certificate covers the following products

Wood - cement shuttering block
Wood - cement roofing element
Wood - cement sound absorbing element for noise barriers
Wood - cement internal partitions

< ISOTEX® >

	Indicators
Renewable resources	Over 35% of the product is made from recycled wood that reduces the use of virgin raw materials.
Human health	The products and their components are not dangerous for human health.
Ecosystem quality	The products and their components are not dangerous for the environment. Production process with reduced energy consumption and reduced emissions to air.

Logo and Conformity Indications: ECO-BUILDING MATERIALS Complying with MAT_BIOEDIL.01 Ed.00 Rev.05 and MAT_BIOEDIL.09 Ed.00 Rev.01

ANAB PRODOTTO CERTIFICATO PER LA BIOEDILIZIA

ISTITUTO PER LA CERTIFICAZIONE ETICA E AMBIENTALE ICEA
Via G. Brugnoli, 15 40122 BOLOGNA ITALY
Tel. +39-051-272986 Fax. +39-051-232011 www.icea.info

Date of issue: January 30th, 2018 — Res. Certification ICEA Dr. Paolo Foglia
Date of revision:
Expiry date: December 31st, 2020 — ICEA President Dr. Pietro Colonna

This document belongs to ICEA and has to be returned on request. This document can be suspended or withdrawn at any time in the event of non fulfilment as ascertained by ICEA.

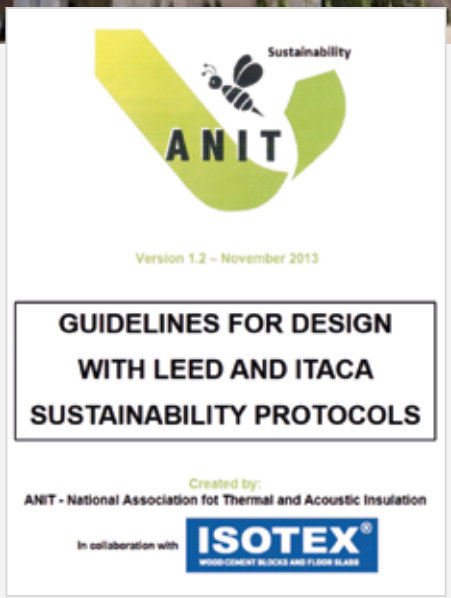
1 / 1 M.0401 - Ed.00 Rev.00

National Association for Bio-ecological Architecture (ANAB) / Institute for Ethical and Environmental Certification (ICEA) certificate of conformity for green construction materials

Pavullo school complex (MO)

Considering all the above, it is reasonable to say that the **ISOTEX building system is the best system to guarantee the safety of buildings, the people who live in them and the highest level of comfort.** This is evidenced by further additional certifications in the field of environmental ethics such as the LEED Credits (see certificate bottom left) and ITACA Protocol prepared by the National Association for Thermal and Acoustic Insulation (see image below right).
Following the coming into effect of **Ministerial Decree of 11 October 2017** "Minimum environmental criteria", CAM became obligatory in the technical folders of tender bids for public works. The percentage of recycled material must be shown using various options, amongst which and most importantly, an **Environmental Declaration of Type III Products (EPD)** in conformity with Standard UNI EN 15804 and Standard ISO 14025. All ISOTEX® products answer to this requirement and are equipped with the related EPD (or FDES = EPD also complete with health data) verified by third party bodies, and published and consultable on the European portal [www.eco-platform.org.](http://www.eco-platform.org)

EPD (Environmental Product Declaration) obtained for the whole range of blocks, flooring and acoustic barrier elements.



Guidelines for design with LEED and ITACA sustainability protocols, prepared by the National Association for Thermal and Acoustic Insulation.

ISOTEX BLOCK RANGE

STANDARD BLOCKS				
LEGEND: **HB** blocks without polystyrene; the first digit is the thickness of the block, the second the thickness of the concrete. **HD** III blocks with insulation; the first digits is the thickness of the block, the second the insulation.	**HB 20**	**HB 25/16**	**HB 30/19**	**HB 44/15-2**
				
Indicative permitted capacity (t/m) R'cK ≥ 30 N/mm² interp. H = 3.00 m	•	34	45	32+32
Thermal transmittance U of the plastered wall including boundaries W/m²K of wall. 3D method *	•	0,79	0,68	0,56
Thermal transmittance U of the plastered wall including boundaries W/m²K of wall. 2D method **	•	-	-	-
Thermal periodic transmittance Y_{IE} [W/m²K]	•	-	-	-
Acoustic insulation *** (dB) (R'W) [Dmntw] RW [D2mntw]	•	[56*****]	[55****]	[60*****]
Concrete volume requirement l/m²	110	126	151	236
Weight of the blocks Kg/m² (± 10%)	46	80	85	128
Weight of the wall filled with non-plastered concrete Kg/m²	310	382	445	694
Block wall thickness (cm)	3	4,5	5,5	15+15
Concrete thickness (cm)	14	16	19	4,5
Polystyrene, graphite, cork thickness (cm)	-	-	-	-
REI Class fire resistance (loaded and unplastered wall)	•	120	120	120

* The calculation of thermal transmittance has been performed according to the criteria of standards UNI 10355 and UNI EN ISO 6946, using a three-dimensional finite element calculation application validated according to EN 10211/1 and on the basis of thermal conductivity data obtained from experimental evidence (see website www.blocchiisotex.com).

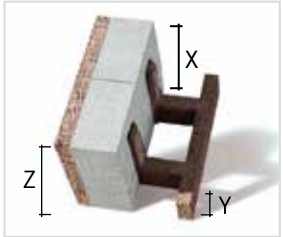
• For this block, the technical characteristics are not given, since it does not meet current applicable regulations.

Concerning to the UK Market, having different regulations (as minimum thickness of concrete 12 cm), it is intended to increase the thickness of the 3 cm more of insulation with BASF-NEOPOR® graphite.

SPECIAL BLOCKS

Block with custom angle
(thicknesses of 25-30-33-38-44 cm)

Spandrel flooring block:
X= custom,
Y= custom,
Z= X + Y



Wall pillar block of:
33 cm section concrete 25x38 cm
38 cm section concrete 30x38 cm
44 cm section concrete 33x39 cm

Half block
for 44 cm shoulder

Mineralized spruce wood, Portland cement and BASF-NEOPOR® polystyrene

Neopor® provided by BASF

STANDARD BLOCKS				CUSTOM BLOCK
HD III 30/7 with graphite	HDIII 33/10 with graphite	HD III 38/14 with graphite	HD III 44/20 with graphite	HD III 38/14 with cork
				 NEW
35	35	35	35	35
0,34	0,27	0,21	0,16	0,24
0,30	0,23	0,18	0,12	0,21
0,019	0,014	0,008	0,004	0,008
[54***]	[54***]	[54****]	[53****]	[54****]
130	130	130	130	130
80	83	88	95	88
392	395	400	407	412
4	4	4,5	4,5	4,5
15	15	15	15	15
7	10	14	20	14
120	120	120	120	120

** Indicative two-dimensional calculation according to standards UNI-TS 13788, UNI 10355 and UNI 10351.

*** Note: the test certificates can be requested from ISOTEX or consulted on the website www.blocchiisotex.com. TThe tests were field tests in which the data was elaborated according to the indications provided by technical standards UNI EN ISO 140 and UNI EN ISO 717.

**** Tests performed in the laboratory according to standards UNI EN ISO 140-3:2006 and UNI EN ISO 717-1:2007.

***** Tests performed in the laboratory according to standards UNI EN ISO 10140-2:2010 and UNI EN ISO 717-1:2007.

ISOTEX HOLLOW BLOCKS CONFORM TO THE GUIDELINES APPROVED BY THE SUPREME COUNCIL FOR PUBLIC WORKS (JULY 2011)

SPECIAL BLOCKS

PASS block of 30-33-38-44 cm

Shoulder block of 38-44 cm

Universal (UNI) block of 38-44 cm for external corners

Universal (UNI) block of 30-33 cm for external corners and shoulders

Block for internal corners of 30-33-38-44 cm

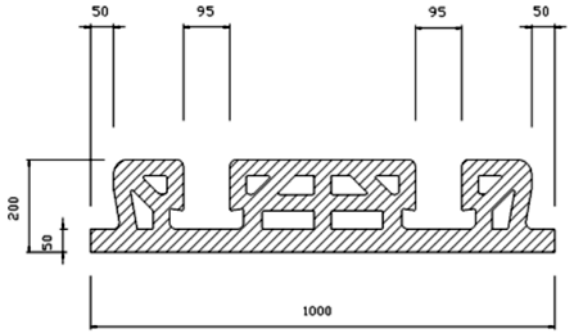
ISOTEX FLOOR SLABS RANGE

Mineralized spruce wood and Portland cement

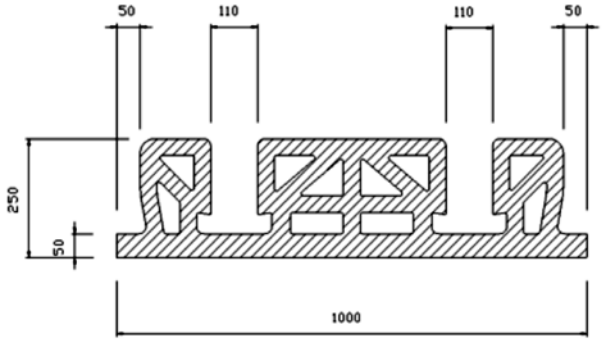
The tables below have been compiled on the basis of resistance criteria, considering materials with the following characteristics: Concrete C25/30, fyk = 25 N/mm², Steel B450C.

Relevant evaluations of the deformability limits are to be made case by case. If necessary, appropriate precautions must be adopted to absorb shear stresses (in case of additional brackets, elimination of hollow end blocks, etc.).

Floor slab S20



Floor slab S25



Structural use of ISOTEX wood-cement foor slabs

PANEL DESIGN INDICATIONS	S20 thickness 20 cm
Height of factory cast joist	**5 cm**
Weight	(0,016 x 2 500) = **40 kg/m²**
Weight of the factory produced panel	4 (elements) x 20 kg each = 80 + 40 = **120 kg/m²**
Volume of structural concrete	0,02 + 0,015 (filling of wood cement element) + 0,040 base thickness 4 cm) = **0,075 m³/ m²**
Weight of structural concrete	(0,075 x 2 400 = **180 kg/m²**
Total weight of the completed panel	40 + 80 + 180 = **300 kg/m²**

PANEL DESIGN INDICATIONS	S25 thickness 25 cm
Height of factory cast joist	**5 cm**
Weight	(0,016 x 2 500) = **40 kg/m²**
Weight of the factory produced panel	4 (elements) x 20 kg each = 96 + 40 = **136 kg/m²**
Volume of structural concrete	0,03 + 0,023 (filling of wood cement element) + 0,040 base thickness 4 cm) = **0,093 m³/ m²**
Weight of structural concrete	(0,093 x 2 400 = **224 kg/m²**
Total weight of the completed panel	40 + 96 + 224 = **360 kg/m²**

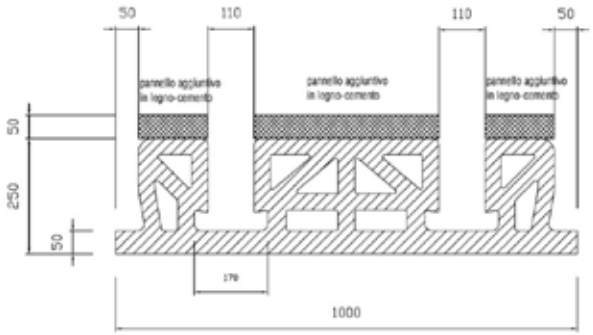
Total sustainable load beyond own weight

(indicative reinforcement with 50 cm centres)

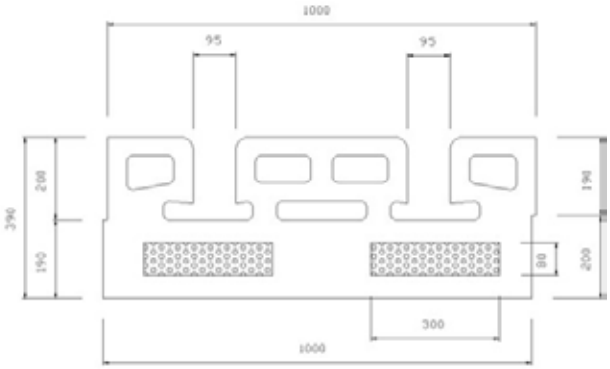
	LOADS				
OPEN-INGS	300 kg/m²	400 kg/m²	500 kg/m²	600 kg/m²	700 kg/m²
3.00	1ø8	1ø10	1ø10	1ø12	1ø12
4.00	1ø12	1ø14	1ø10+1ø12	1ø16	2ø12
5.00	1ø16	1ø12+1ø14	1ø12+1ø16	1ø14+1ø16	2ø16
6.00					
7.00					

	LOADS				
OPEN-INGS	300 kg/m²	400 kg/m²	500 kg/m²	600 kg/m²	700 kg/m²
3.00	1ø8	1ø8	1ø10	1ø10	2ø8
4.00	2ø8	1ø12	1ø8+1ø10	1ø8+1ø12	1ø10+1ø12
5.00	1ø8+1ø12	1ø10+1ø12	2ø12	1ø12+1ø14	2ø14
6.00	1ø12+1ø14	1ø12+1ø16	1ø14+1ø16	2ø16	1ø16+1ø18
7.00					

Floor slab S30



Floor slab S39



Structural use of ISOTEX wood-cement foor slabs

PANEL DESIGN INDICATIONS	S30 thickness 25 cm + 5 CM
Height of factory cast joist	**5 cm**
Weight	(0,016 x 2 500) = **40 kg/m²**
Weight of the factory produced panel	4 (elements) x 28 kg each = 112 + 40 = **152 kg/m²**
Volume of structural concrete	0,04 + 0,029 (filling of wood cement element) + 0,040 base thickness 4 cm) = **0,109 m³/ m²**
Weight of structural concrete	(0,109 x 2 400 = **262 kg/m²**
Total weight of the completed panel	152 + 262 + 224 = **414 kg/m²**

PANEL DESIGN INDICATIONS	S39 thickness 39 cm
Height of factory cast joist	**5 cm**
Weight	(0,016 x 2 500) = **40 kg/m²**
Weight of the factory produced panel	4 (elements) x 39 kg each = 156 + 40 = **196 kg/m²**
Volume of structural concrete	0,03 + 0,029 (filling of wood cement element) + 0,040 base thickness 4 cm) = **0,07 m³/ m²**
Weight of structural concrete	(0,07 x 2 400 = **168 kg/m²**
Total weight of the completed panel	40 + 156 + 168 = **364 kg/m²**

Total sustainable load beyond own weight

(indicative reinforcement with 50 cm centres)

	LOADS				
OPEN-INGS	300 kg/m²	400 kg/m²	500 kg/m²	600 kg/m²	700 kg/m²
3.00	1ø10	1ø12	1ø12	1ø12	1ø12
4.00	1ø8+1ø10	1ø14	1ø10+1ø12	1ø16	2ø12
5.00	1ø16	1ø12+1ø14	1ø12+1ø14	2ø14	2ø14
6.00	2ø14	1ø14+1ø16	1ø14+1ø16	2ø16	1ø16+1ø18
7.00	2ø16	1ø16+1ø18	2ø18	2ø14+1ø18	3ø16

	LOADS				
OPEN-INGS	300 kg/m²	400 kg/m²	500 kg/m²	600 kg/m²	700 kg/m²
3.00	2ø8	2ø8	1ø12	1ø12	2ø10
4.00	1ø14	1ø10+1ø12	1ø10+1ø12	1ø16	2ø12
5.00	2ø12	1ø12+1ø14	2ø14	1ø12+1ø16	1ø14+1ø16
6.00	1ø12+1ø16	1ø14+1ø16	2ø16	1ø16+1ø18	2ø18
7.00					

RECOMMENDATIONS FOR CORRECT APPLICATION OF PLASTERS AND COLOURED FINISHES

The plaster must only be applied on dry surfaces. Therefore, avoid application on walls that are wet from rain or frost, or from improper curing. Do not apply the plaster at temperatures below 4°C, since the significant slowing of hardening makes it difficult to check when it is right to apply the finish. The week before applying plaster, close any gaps caused by incorrect laying with mortar in order to **avoid notable thicknesses of plaster** which might result in areas of crazing. The walls should be adequately levelled and squared during installation as the application of thicknesses of plaster to straighten and square off walling is inconceivable and ineffective. A thickness of greater than 2 cm may lead to the formation of crazing and cracks. Where more than 2 cm of plaster thickness is necessary, it is essential that the plaster is applied in two coats, with maturation of the first coat of at least 28 days.

Given these important premises, pre-mixed or traditional plaster can be applied, taking into account that, since the plaster has the function of protecting the wall from weather and wear, it should have a thickness as uniform as possible of approximately 15 mm, bearing in mind that a less or greater thickness can facilitate the formation of crazing and cracks. Over the last few years, insulation is becoming ever more efficient which makes it all the more important to consider inserting a suitable netting, in **alkali-resistant fibre glass with CE marking,** positioned half way through the plaster; that being 7-8 mm from the support.

Any application of fine mortar or similar must always be made after a coat of adhesive on the hardened plaster, following, on average, an interval of 3-4 weeks. Naturally, this time interval will vary according to weather and climatic conditions. This type of finish (for exteriors), which for its success must be made with a base coat (15 mm.) fully matured in order to avoid the formation of shrinkage cracks, is not recommended by Isotex Srl, given the enormous difficulty in verifying that the right conditions and timings of applications are met.

The solution recommended by Isotex, given positive experience gained since 1995 on various construction sites and the increased use of thermally high performing blocks, which subject the plaster to increased stress, is to apply to the plaster base coat (15mm), levelled with a straight edge and matured for 4-6 weeks, a thick colour finish.

This solution does not require fine mortar or similar. Remember that when you apply the base coat and level it with a straight edge, make sure that the result is as consistent and solid as possible, in order to avoid chalking. Isotex Srl can provide data sheets regarding the characteristics of these products for external finishes and methods of application, which in any case must always ensure the water impermeability of the wall and low resistance to the passage of vapour.

For interiors, Isotex recommends a 4-5 day interval between the plaster base and the fine mortar or similar, so that there is a good thorough maturation of the plaster before application of the mortar itself. Consider the particularities of the S 39 panelling, which for thermal reasons has joints but not concrete between the panels. In correspondence with these joints micro-cracks may form and therefore, to avoid this, it is recommended to use a plasterboard finish.

For **intermediate floors (S20-S25-S30)**, if a plaster finish with a thickness of 15mm (no less) is chosen, the recommendation is to “embed” half way through the thickness, a reinforcing net in alkali-resistant fibre with CE marking. Then wait 4/5 days, depending on the season, before applying the finish and 4/6 weeks before painting. Please note that, Isotex Srl, due to the fact that it is unable to physically monitor on a day to day basis compliance with these recommendations, the quality of materials used (plaster and coloured finishes) and timings between applications, disclaims any responsibility for issues that may occur in the future.

SPECIFICATIONS REGARDING WOOD-CEMENT BLOCKS AND FLOOR SLABS

SPECIFICATIONS OF WOOD-CEMENT BLOCKS

Exterior and interior load-bearing walls from H-form Isotex® cement-bonded wood fiber blocks of density %10 ± 510 kg/m^3 to be laid dry and staggered by half a block, cast with concrete every 6-5 layers and with a single continuous cavity for concrete casting. The walling is reinforced with horizontal and vertical steel rods at 25 cm intervals and concrete of a consistency of no less than S4. The range of blocks is complete with a number of special units such as half-blocks, corner blocks, flooring curb blocks, architrave blocks and pillar blocks.

The blocks will have to contain graphite BASF-NEOPOR® EPS and the CE markings in accordance with the European Technical Assessment (ETA) and harmonized European standard EN 15498, certification of thermal transmittance (U-value) according to European standards UNI EN ISO 6946, UNI 10355 and EN 10211, thermal and humidity characteristics provided for by Presidential Decree 09/59, acoustic testing according to UNI EN ISO 140 and UNI EN ISO 717, fire resistance testing with loaded walls according to EN 1-1365 and EN 2-13501 and certification of materials in compliance with requirements for green construction building and the environmental label of third type – EPD in conformity with UNI EN 15840 E ISO 14025 released by competent authorities.

Manufacturers of structural blocks must comply with the "guidelines for load-bearing panel building systems based on the use of blocks and weakly reinforced concrete cast on site" approved by the First Chamber of the Supreme Council of Public Works with opinion 117 of 10/02/2011.

Blocks production department

SPECIFICATIONS OF WOOD-CEMENT FLOOR SLABS

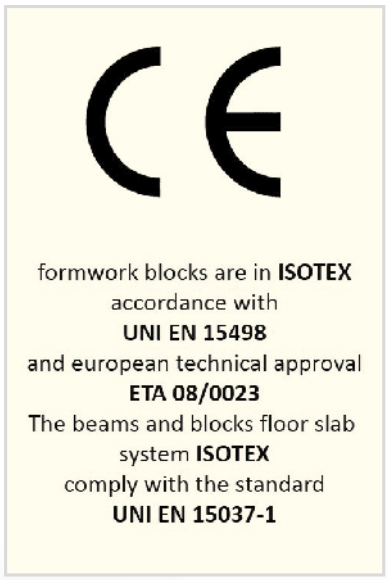
The ISOTEX cement-bonded wood fibre panel system for highly thermo-acoustic insulated horizontal or inclined structures consists of pre-assembled 100 cm x 20/25/30/39 panels of lengths up to 6.5-7 m, with horizontal and vertical cavities to eliminate thermal and acoustic bridges, reinforcing rods and concrete filling. The flooring system is completed on site with reinforcing rods, partitioning wire mesh and concrete casting.

Isotex floor panels and beams are CE marked in accordance with harmonized European standard EN 15037-1, certifications of fire resistance (Resistance, Sealing & Insulation – REI 240), thermal transmittance (Presidential Decree 09/59 and Ministerial Decree 09/06/26), on site acoustic tests in compliance with UNI EN ISO 140 e UNI EN ISO 717, structural testing, and green construction materials certification and the environmental label of third type – EPD in conformity with UNI EN 15840 E ISO 14025 released by competent authorities.

Floor slabs production department

ISOTEX CERTIFICATIONS

Continuous and strict controls are carried out in the company and associated bodies.

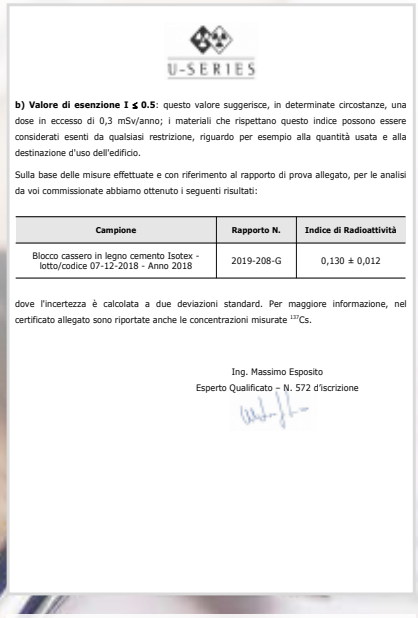


CE marking

European Technical Approvals ETA 08/0023

Flooring panel CE marking obligatory since 01/01/2011

Quality Certificate ISO 9001 : 2008



Proof of absence of radioactivity

Interpretive report and experimental test results

ISOTEX®
Wood-cement blocks and floor slabs

ISOTEX
awards and acknowledgements

SHE Venezia Project, Preganziol (TV)

In 2002, Isotex was given the prestigious PREMIO COSTRUIRE award, for which eight university academics chose our construction technology for walls and flooring.

SAIE Innovate, Integrate and Build Award given to ISOTEX for the best sustainable project with the presentation of the 44/18 HDIII Graphite Block.

Jury Mention for the project "Casanova" as the first energy-efficient building in Reggio Emilia in the environmentally friendly innovation competition "Premio all'INNOVAZIONE AMICA dell'AMBIENTE" 2007.

Thanks from Mogol to ISOTEX for the realization of the musical school Centro Europeo Tuscolano Terni-Italy.

The project "LE QUERCE" received the ENDESA Barcelona Award for "Most Environmentally Friendly Real Estate Project" 2009, the Eco-building Award Paris 2009, the Klimahouse Trend Award Bolzano 2016 and the Casa Clima Gold Award 2016.

CONSTRUCTION SYSTEMS COMPARISON

As explained above in the preceding pages, ISOTEX has applied all the principles of **safety and living comfort** to develop its building system, which is certified in all aspects according to applicable regulations in Italy and Europe.

We invite technicians, builders and buyers to compare ISOTEX with other building systems, on which we make some brief remarks below:

STRUCTURAL FRAMES & NON-LOAD-BEARING WALLS:

Pillars and beams have been widely used over the last few decades. The realization of the structural frame then requires the installation of non-load-bearing walls.

The Technical Construction Regulations 2018 (NTC) specify that non-load-bearing walls must be securely anchored to the structural frame in order to prevent them from collapsing, in case of an earthquake, and causing damage to persons and property. In order to insulate and eliminate thermal bridges, **coating insulation** must then be used (see side paragraph). Finally, to comply with the regulations on sound insulation, specific action must be with suitable materials.

Clearly, the sum of all these requirements significantly increases the time and costs of construction, exposing the site to the risk of **IMPROPER INSTALLATION,** which may compromise the final technical performance of the building.

EXTERNAL WALL INSULATION (E.W.I):

Coating insulation can be found on the market with considerable differences in costs per square metre, closely linked to the quality of insulation itself, and the final result depends highly on the professionalism of the applicators. Considerable attention must therefore be paid to avoid any unpleasant surprises over time. It is also extremely difficult (if not impossible) to apply finishes to the coating.

INSULATED CONCRETE FORMWORK (I.C.F.):

For supporters of the ethics of green construction, polystyrene blocks would not seem the ideal solution. It must also be considered that, in case of fire, polystyrene fumes are harmful to human health and the environment. Similar considerations as for the coating insulation also apply.

TIMBER FRAME:

Though advertised as a natural product, the adhesives used for the assembly of wooden boards, in order to make them structurally robust, and the paints used to protect them from the elements can be discussed at length.

Does it still seem natural to you?

Also regarding fire resistance, there are still considerable doubts and many buildings have had problems.

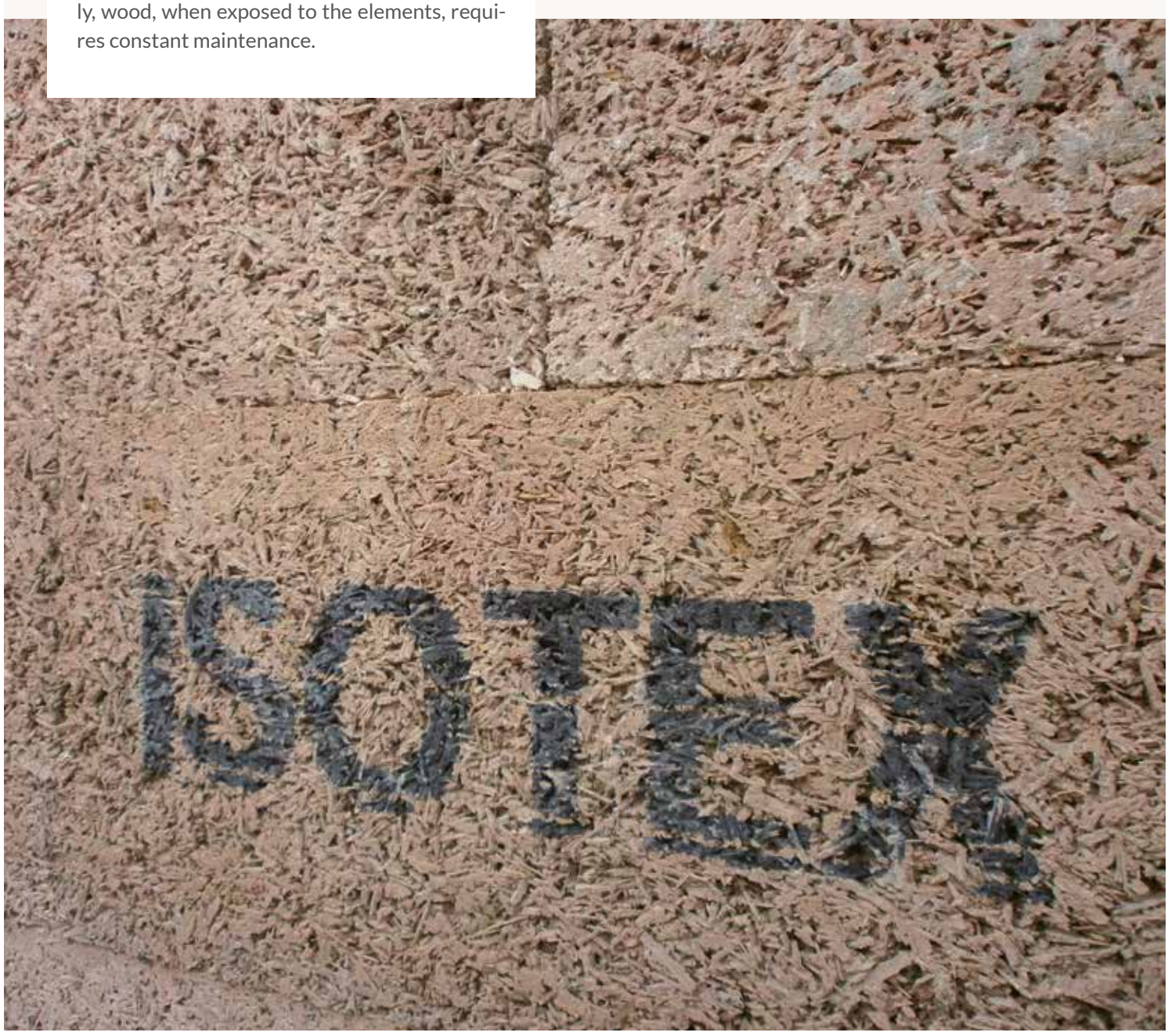
Furthermore, wooden houses are lightweight structures, which raise many questions concerning thermal inertia and sound insulation. Finally, wood, when exposed to the elements, requires constant maintenance.

AERATED CONCRETE BLOCKS:

Their little mass raise significant questions about thermal inertia sound insulation. Also, the lack of reinforcement in the structure limits its seismic integrity.

More information:

www.blocchiisotex.com



MAXIMUM SEISMIC SAFETY & LIVING COMFORT, always

ISOTEX®
Wood-cement blocks and floor slabs

ISOTEX Srl - Via D'Este, 5/7-5/8 - 42028 Poviglio (RE)-Italy
Tel.: +39 0522 9632 - Fax: +39 0522 965500
info@blocchiisotex.it - www.blocchiisotex.com

CE
UNI EN 15037-1
UNI EN 15498
ETA 08/0023

QUALITY SYSTEM CERTIFICATION
DNV·GL
ISO 9001

ANAB
PRODOTTO CERTIFICATO PER LA BIOEDILIZIA
ICEA

EPD®
THE INTERNATIONAL EPD® SYSTEM

03 - 2019