European Technical Approval

ETA 08/0023

Nome commerciale
Trade name

“ISOTEX”

Beneficiario
Holder of approval

C&P COSTRUZIONI srl
Via d’Este, 5/7 – 5/8
I - 42028 Poviglio (RE) - Italy

Tipologia del prodotto da costruzione ed utilizzo
Generic type and use of construction product

Non-load bearing permanent shuttering kits based on hollow blocks of wood-chips aggregate concrete

Validità da/a
Validity from/to

10.06.2013/09.06.2018

Indirizzo stabilimento di produzione
Manufacturing plant

Via d’Este, 5/7 – 5/8
I - 42028 Poviglio (RE) - Italy

Questo Benestare Tecnico Europeo contiene:
This European Technical Approval contains:

21 pagine, inclusi 11 allegati
21 pages, including 11 annexes
I LEGAL BASIS AND GENERAL CONDITIONS

1. This European Technical Approval is issued by Istituto per le Tecnologie della Costruzione - Consiglio Nazionale delle Ricerche (called ITC-CNR in the following text) in accordance with:
   - DPR 246 of 21/04/93\(^4\) and DPR 499 of 10/12/97\(^5\), concerning the implementation of Council Directive 89/106/EEC;

2. ITC-CNR 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 this 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 manufacturers other than those indicated on cover page, or manufacturing plants other than those as laid down in the context of this European Technical Approval.

4. This European Technical Approval may be withdrawn by ITC-CNR, according to Article 5 (1) of Council Directive 89/106/EEC.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 can be made with the written consent of ITC-CNR. 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 (ETA) is issued by the Approval Body in its official language. This version fully corresponds to the version used by EOTA for circulation. Translations into other languages have to be designated as such.

\(^1\) Official Journal of the European Communities N° L 40, 11.02.1989, p.12
\(^2\) Official Journal of the European Communities N° L 220, 30.08.1993, p.1
\(^3\) Official Journal of the European Union N° 1 L 220,30.10.2003, p.1
\(^4\) Gazzetta Ufficiale della Repubblica Italiana n. 170 of 22.07.1993
\(^5\) Gazzetta Ufficiale della Repubblica Italiana n. 21 of 10/12/1998
\(^6\) Official Journal of the European Communities N° L 17, 20.01.1994, p.34
II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 DEFINITION OF PRODUCT, INTENDED USE AND ASSUMED WORKING LIFE
The system “ISOTEX” is a non-load bearing shuttering kit based on hollow blocks made of concrete with wood-chips as aggregate according to definition given in § 3.2 of ETAG 009 Edition 2002.
The shuttering elements consist of hollow blocks of wood-chips aggregate concrete, in conformity with the CE marking in accordance with the product standard EN 15498, having nominal density of 510 kg/m3 ± 10%. All package contain a minimum of 4 hollow blocks showing CE mark, manufacturer name, reference to product standard and batch number.
In respect to the form there are two types of blocks for standard elements. In the first type the hollow blocks have two closed full-length hollow spaces (see e.g. Annex 1, 2 and 3), in the second type there is one closed full-length hollow space in the middle and two open full-length hollow spaces at each side there is an open hollow space (see e.g. Annex 4); special elements are shown in annexes 5, 6, 8 and 9.
The jointing surfaces are leveled by milling-machine to obtain a good mounting.
The length of elements is 500 mm and the height is 250 mm.
The blocks with additional insulating materials (EPS, EPS with graphite and cork) are generally used for external walls.
The thickness of blocks leaves is from 30 mm to 95 mm (see Annexes).
The maximum thickness of the space for the concrete core is 330 mm, the minimum thickness is 90 mm.
Special hollow blocks as end blocks, angular and pillar blocks (see Annexes) are also part of the system.
ETA Holder’s design and installation instructions are deposited at ITC-CNR.
Area categories according to Eurocode 1 are: A, B, C, D and E.
The ETA Holder declares an assumed average working life of at least 50 years. The indication on the working life cannot be interpreted as a guarantee given by the producer, but has to be regarded only as a mean for choosing the right products in relation to the expected economically reasonable working life of the works.

1.1 Intended use
“Isotex” kit is a non load-bearing permanent shuttering system intended to be used only for construction of internal and external walls (according to types definition given in § 2.2 of ETAG 009 Edition 2002) above or below ground. The walls could be load-bearing or not load-bearing, included those which are subject to fire regulation. The load-bearing concrete walls realized with the kit are not covered by this ETA and they are subject to the applicable national regulation, under the direct responsibility of the designer.

2. CHARACTERISTICS OF PRODUCT AND METHODS OF VERIFICATION

2.1 General
This ETA is issued for “ISOTEX” on the basis of admitted information/data, deposited at ITC-CNR, which identify the kit that was assessed and judged. Changes to the production process of the components or to the components of the kit which could result in deposited information/data being incorrect, shall be notified to ITC-CNR before they are introduced and ITC-CNR will assess whether or not such changes affect the ETA and, if so, whether further assessment and/or alteration to the ETA shall be necessary7.

7 The ETA Holder may change, under his own responsibility, some of the suppliers of a component, but only provided that the characteristics and the performances of the new components and the final performances of the system do not change at all. These changes must be fully recorded within the Factory Production Control documents in order to grant full traceability.
The characteristics of the components and of the system not mentioned in this ETA nor in the Annexes shall correspond to the respective values laid down in the Technical Documentation of this ETA, checked by ITC-CNR.

The insulating materials are cutted from CE marked boards according to the products standard (EN 13163 and EN 13170) and they are delivered in form of elements to be inserted in to the blocks.

2.2 Methods of verification
The identification tests and the assessment of fitness for use of “ISOTEX” were carried out in compliance with ETAG 009 Edition June 2002.

2.2.1 ER 1: MECHANICAL RESISTANCE AND STABILITY

Type of structural pattern
According to the definition given in § 2.2 of ETAG 009 Edition 2002, the type of structural pattern is grid.

Efficiency of filling
The efficiency of filling has been determined by erection of trial structures, used for cycling load tests.

According to the experience of the ETA Holder, the concrete properties shall fulfil the following requirements:
- concrete according to UNI EN 206-1:2001
- the slump class of fresh concrete S4 – S5
- the flow class of fresh concrete according to § 7.2.2 of ETAG 009 Edition 2002
- concrete shall be compacted by means of shaking device
- the aggregate sizes shall be maximum 16 mm but for HB15 and HB17.5 blocks where the maximum aggregate size shall be 8 mm
- strength developing according to UNI EN 206-1:2001, Table 12
- the maximum height of filling shall not be greater than 1.5 m (6 layers) and the next filling with concrete shall be made after 2 hours at least.

The requirements according to ETAG 009 Edition 2002, chapter 6.1.2 are met satisfactory.

Possibility of steel reinforcement
The geometry of the voids and the arrangement of the spacer should be compatible with correct installation and provide appropriate covering of the reinforcement, as resulted from drawings examination and from practice tests.

The requirements according to ETAG 009 Edition 2002, chapter 6.1.3 are met satisfactory.

2.2.2 ER 2: SAFETY IN CASE OF FIRE

Reaction to fire
The reaction to fire of the non-load bearing shuttering kit “ISOTEX” was tested in accordance with § 6.2.1 of ETAG 009 Edition 2002, with reference to the EN 13501-1 standard.

According to EN 13501-1:2007 the non-load bearing shuttering kit “ISOTEX” without and with insulating materials has the following classification for the reaction to fire:

<table>
<thead>
<tr>
<th>Fire Behaviour</th>
<th>Smoke Production</th>
<th>Dripping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euroclass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>- s 1</td>
<td>d 0</td>
</tr>
</tbody>
</table>

Tab.1: Reaction to fire: classification of “ISOTEX” without and with insulating materials

For all types of blocks with other insulating materials, “No Performance Determined” option was adopted (Euroclass F according to EN 13501-1).
**Fire resistance**

The wall build with HDIII 44/21 blocks has been classified REI 120 according to EN 13501-2 from results obtained by test according to EN 1365-1 with the following condition: 3 m height and load of 40.000 daN/m, with concrete infill type C25/30 S5.

The hollow block DII 30/16 has been classified as REI 180 with the following condition:
- dimension: 300 x 300 cm
- rendering on two sides: mortar with average resistance $\geq 8.00$ MPa, thickness 15 mm
- normal weight concrete with characteristic resistance 300 Kg/cm$^2$
- total load imposed: 89.600 daN.

All the others blocks, according to Annex C, Table 1, third column, depending on the thickness of the concrete core, the walls meet the criteria according to the Table 2, when exposed to fire on one side.

The precondition for the use of the mentioned table are:

- The design of the building has to take into consideration the secondary effects of fire. Especially constraints, introduced by thermal strain, should be sufficiently low and appropriate building joints should be foreseen. The rules, valid in place of use, govern.

Structural requirements on work in normal conditions, valid in the place of use, may require larger dimensions. Concrete cover for the reinforcement has to be observed according to the rules valid in the place of use.
- The strength of concrete shall be between C16/20 and C50/60 according to EN 206.
- the walls shall on both sides either be plastered/rendered or at least the joints on both sides shall be sealed with plastering/rendering mortar. The mortar for plastering/rendering or for sealing shall be based on inorganic aggregates, gypsum, cement or lime or on suitable combinations of these three binders.

<table>
<thead>
<tr>
<th>Fire resistance REI (minutes)</th>
<th>Minimum thickness of the concrete core (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>140</td>
</tr>
<tr>
<td>90</td>
<td>160</td>
</tr>
<tr>
<td>120</td>
<td>$\geq 170$</td>
</tr>
</tbody>
</table>

Tab.2: Fire resistance in dependence of the thickness of concrete core

NOTE: The classification of the walls constructed with the shuttering system regarding to fire resistance are valid for walls without openings (for windows or doors for example).

### 2.2.3 ER 3: HYGIENE, HEALTH AND ENVIRONMENT

**Content and/or release of dangerous substances**

The manufacturer has presented a written declaration in which he states that the hollow blocks do not contain any dangerous substances as listed in EU database.

In addition the manufacturer has shown results from chemical-physical tests which are lower than limits reported in DM 03/08/05 by standard UNI 10802:04 and are radioactive emission-free (UNI 10797:99)

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 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.
**Water vapour permeability**

The nominal vapour permeability of “ISOTEX” concrete with wood-chips as aggregate is the following:

\[ \mu = 5.9 \pm 0.6 \]  
(according to EN ISO 12572:2006)

**Water absorption**

The requirements according to ETAG 009 Edition 2002, chapter 6.3.3 are met satisfactory.

**Water tightness**

Not relevant.

### 2.2.4 ER4: SAFETY IN USE

**Bond strength and resistance to impact load**

Not relevant.

**Resistance to filling pressure**

This requirement is met as shown by the results analysis of the tests according to EN 15498 (§4.2.6.2 Tensile strength of the webs and § 4.2.6.3 Flexural strength of the sheets) and considering that the ETA Holder specification envisages that only six blocks height has to be filled in and that the next blocks have to be filled in not before 2 hours, the requirements according to ETAG 009 Edition 2002, chapter 6.4.2 are met satisfactory.

**Safety against personal injury by contact**

Delivered on site the hollow blocks do not have sharp or cutting edges even if they are curtailed at door or windows opening.

In any case there is a certain risk of abrasion due to of the rough surfaces of the hollow blocks; handling on site shall be done with gloves.

The requirements according to ETAG 009 Edition 2002, chapter 6.4.3 are met satisfactorily.

### 2.2.5 ER5: PROTECTION AGAINST NOISE

**Airborne sound insulation**

Some airborne insulation values are reported below for some blocks:

<table>
<thead>
<tr>
<th>Block Type</th>
<th>D2mnTx</th>
<th>Rw</th>
</tr>
</thead>
<tbody>
<tr>
<td>DII 25/14</td>
<td>53.0 dB</td>
<td>(secondo EN ISO 140-5:2000 e ISO 717-1)</td>
</tr>
<tr>
<td>DIII 30/5</td>
<td>55.0 dB</td>
<td>(secondo EN ISO 140-5:2000 e ISO 717-1)</td>
</tr>
<tr>
<td>DIII 38/13 NS</td>
<td>54.0 dB</td>
<td>(secondo EN ISO 140-3:2006 e ISO 717-1)</td>
</tr>
<tr>
<td>HB 25/16</td>
<td>56.0 dB</td>
<td>(secondo EN ISO 10140-2:2010 e ISO 717-1)</td>
</tr>
<tr>
<td>HB 30/19</td>
<td>55.0 dB</td>
<td>(secondo EN ISO 140-3:2006 e ISO 717-1)</td>
</tr>
<tr>
<td>HB 44/15:2 NS</td>
<td>60.0 dB</td>
<td>(secondo EN ISO 10140-2:2010 e ISO 717-1)</td>
</tr>
<tr>
<td>DIII (HDIII) 44/18</td>
<td>53.0 dB</td>
<td>(secondo EN ISO 140-3:2006 e ISO 717-1)</td>
</tr>
</tbody>
</table>

For all the type of blocks not listed above the “No Performance Determined” option was adopted, as envisaged in ETAG 009 Edition 2002 table 3.

### 2.2.6 ER 6: ENERGY ECONOMY AND HEAT RETENTION

**Thermal resistance**

The insulating materials are cutted from CE marked boards according to the products standard (EN 13163 and EN 13170) and they are delivered in form of elements to be inserted in to the blocks:

<table>
<thead>
<tr>
<th>Material</th>
<th>Standard</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS</td>
<td>EN 13163</td>
<td>EPS – EN 13163 – T2 – L2- W2-S2-P4-DS(N)2-BS115-CS(10) 70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Only on demand EPS – EN 13163 – T1 – L1- W1-S1-P3-DS(N)5-BS115-CS(10) 150</td>
</tr>
<tr>
<td>EPS graphite</td>
<td>EN 13163</td>
<td>EPS – EN 13163 – T2 – L2- W2-S2-P4-DS(N)2-BS115-CS(10) 70-TR100-WL(T)2</td>
</tr>
<tr>
<td>Cork</td>
<td>EN 13170</td>
<td>ICB - EN 13170 – T2 – L1- W1-CS(10)110 WS</td>
</tr>
</tbody>
</table>

Tab.3: Insulating materials requirements
The hollow blocks are made in wood-chips aggregate concrete; the thermal conductivity has been determined on samples taken from different blocks and the results are given only for information to CE marking. Concerning thermal resistance, influence of the moisture transfer on insulating capacity of the wall and thermal inertia a wood-chips aggregate concrete thermal conductivity of 0.104 W/(m K) has been used.

In addition, the value of resistance (R) and transmittance (U) of some blocks. The values in Table 4, related to HDIII blocks, are gained by calculation considering a bi-dimensional structure according to EN 6946. The values in Table 5 are gained by calculation considering finished 3D elements according to EN 10211-1.

For the calculation the following values of thermal conductivity of different material used for the inside thermal insulation and concrete have been used:

<table>
<thead>
<tr>
<th>Material</th>
<th>λ (W/mK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPS</td>
<td>0.039</td>
</tr>
<tr>
<td>EPS graphite</td>
<td>0.031</td>
</tr>
<tr>
<td>Cork</td>
<td>0.037</td>
</tr>
<tr>
<td>Concrete</td>
<td>1.91</td>
</tr>
</tbody>
</table>

Temperature external $T_e=0^\circ C$
Temperature internal $T_i=20^\circ C$
Area $S=0.0616$ m$^2$

<table>
<thead>
<tr>
<th>Material, Type</th>
<th>R (m$^2$K/W)</th>
<th>U (W/m$^2$K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDIII 30-7 (EPS+graphite)</td>
<td>3.31</td>
<td>0.30</td>
</tr>
<tr>
<td>HDIII 33-10 (EPS+graphite)</td>
<td>4.28</td>
<td>0.23</td>
</tr>
<tr>
<td>HDIII 38-14 (EPS)</td>
<td>4.74</td>
<td>0.21</td>
</tr>
<tr>
<td>HDIII 38-14 (EPS+graphite)</td>
<td>5.67</td>
<td>0.18</td>
</tr>
<tr>
<td>HDIII 44-18 (EPS+graphite)</td>
<td>7.15</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Tab. 4: $R$ and $U$ values calculation considering a bi-dimensional structure

<table>
<thead>
<tr>
<th>Material, Type</th>
<th>R (m$^2$K/W)</th>
<th>U (W/m$^2$K)</th>
<th>R'' (m$^2$K/W)</th>
<th>U'' (W/m$^2$K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIII 25-4 (EPS + graphite)</td>
<td>1.75</td>
<td>0.57</td>
<td>1.98</td>
<td>0.51</td>
</tr>
<tr>
<td>DIII 25-6 (EPS + graphite)</td>
<td>2.06</td>
<td>0.48</td>
<td>2.28</td>
<td>0.44</td>
</tr>
<tr>
<td>DIII 30-7 (EPS + graphite)</td>
<td>2.47</td>
<td>0.40</td>
<td>2.69</td>
<td>0.37</td>
</tr>
<tr>
<td>DIII 33-9 (EPS+ graphite)</td>
<td>2.89</td>
<td>0.35</td>
<td>3.11</td>
<td>0.32</td>
</tr>
<tr>
<td>DIII 38-12 (EPS +corck)</td>
<td>3.40</td>
<td>0.29</td>
<td>3.62</td>
<td>0.28</td>
</tr>
<tr>
<td>DIII 38-13 (EPS)</td>
<td>3.52</td>
<td>0.28</td>
<td>3.74</td>
<td>0.27</td>
</tr>
<tr>
<td>DIII 38-13 (EPS + graphite)</td>
<td>3.88</td>
<td>0.26</td>
<td>4.11</td>
<td>0.24</td>
</tr>
<tr>
<td>HDIII 30-7 (EPS + graphite)</td>
<td>2.68</td>
<td>0.37</td>
<td>2.90</td>
<td>0.34</td>
</tr>
<tr>
<td>HDIII 33-10 (EPS+ graphite)</td>
<td>3.41</td>
<td>0.29</td>
<td>3.64</td>
<td>0.27</td>
</tr>
<tr>
<td>HDIII 38-14 (EPS)</td>
<td>3.94</td>
<td>0.25</td>
<td>4.16</td>
<td>0.24</td>
</tr>
<tr>
<td>HDIII 38-14 (EPS+ graphite)</td>
<td>4.47</td>
<td>0.22</td>
<td>4.61</td>
<td>0.21</td>
</tr>
<tr>
<td>HDIII 44-14 (EPS+ graphite)</td>
<td>4.44</td>
<td>0.22</td>
<td>4.66</td>
<td>0.21</td>
</tr>
<tr>
<td>HDIII 44-16 (EPS+ graphite)</td>
<td>4.92</td>
<td>0.20</td>
<td>5.14</td>
<td>0.19</td>
</tr>
<tr>
<td>HDIII 44-18 (EPS+ graphite)</td>
<td>5.45</td>
<td>0.18</td>
<td>5.73</td>
<td>0.17</td>
</tr>
<tr>
<td>HDIII 44-20 (EPS+ graphite)</td>
<td>5.92</td>
<td>0.16</td>
<td>6.14</td>
<td>0.16</td>
</tr>
<tr>
<td>HB 25-16</td>
<td>0.94</td>
<td>1.06</td>
<td>1.26</td>
<td>0.79</td>
</tr>
<tr>
<td>HB 30-19</td>
<td>1.16</td>
<td>0.86</td>
<td>1.47</td>
<td>0.68</td>
</tr>
<tr>
<td>HB 44 15-2</td>
<td>1.56</td>
<td>0.64</td>
<td>1.78</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Tab.4: $R$ and $U$ values calculation considering finished 3D elements
Where:
R is thermal resistance limitars included of the block
U is global thermal transmittance of the block
R' is thermal resistance limitars included (Rse + Rsi = 0.17 m²K/W) of the wall with 2 cm mortar rendering
U'' is global thermal transmittance limitars included (Rse + Rsi = 0.17 m²K/W) of the wall with 2 cm mortar rendering.
For all the type of blocks not listed in the table 4 the “No Performance Determined” option was adopted, as envisaged in ETAG 009 Edition 2002 table 3.

Assessment of moisture
For different climatic conditions, some cases have been evaluated with calculation in accordance to UNI EN ISO 13788 and Glaser method and no moisture accumulation in the inner and on surface wall has been relived.

Thermal Inertia
The heat capacity of wood-chip aggregate concrete can be assumed to be 1,50 kJ/(kg K) as shown at § 5.2.8.2 in EN 15498.
The values for the heat capacity of the concrete, expanded polystyrene and cork are also tabulated in the standard EN ISO 10456:2008.
In addition, for some blocks the influence of the Inertia has been calculated according to UNI EN ISO 13786 and UNI EN ISO 13791.

<table>
<thead>
<tr>
<th>Hollow block type</th>
<th>Time Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIII 30-7 (EPS + graphite)</td>
<td>12h 11'</td>
</tr>
<tr>
<td>DIII 33-9 (EPS+ graphite)</td>
<td>12h 32'</td>
</tr>
<tr>
<td>DIII 38-13 (EPS + graphite)</td>
<td>14h 14'</td>
</tr>
<tr>
<td>HDIII 44-18 (EPS+ graphite)</td>
<td>15h 34'</td>
</tr>
</tbody>
</table>

Tab.6: Summer shift data

2.2.7 ASPECTS OF DURABILITY AND SERVICEABILITY

Physical agents
Since the thermal expansion coefficient of wood-chip concrete is not higher than normal weight concrete, the hollow blocks do not have dimensional variations higher than 0.07% after exposition for 48 h at 70°C. The hollow blocks, as required in EN 15498:2008 were tested (EN 14474:2005) both with distilled water and with 3%NaCl, showed a loss of less than 0.5%.
The requirements according to ETAG 009 Edition 2002 chapter 6.7.1.1 are met satisfactorily.

Chemical agents
The hollow blocks contain no steel parts where corrosion could occur.
The requirements according to ETAG 009 Edition 2002 chapter 6.7.1.2 is met satisfactorily.
Finishes are not part of the ETA.

Biological agents
The ETA Holder demonstrated that, if the walls are protected by standard finishes in relation with the conditions of use of the building, the application of the wood-chips aggregate concrete as thermal insulating materials sufficiently protects against fungi, bacteria, algae and insects.
Wood-chips aggregate concrete and the used thermal insulating materials do not provide a food value and in general it does not contain voids suitable for habitation by vermin.
The requirements according to ETAG 009 Edition 2002 chapter 6.7.1.3 are met satisfactorily.
2.2.8 RESISTANCE TO NORMAL USE DAMAGES

Normal use impacts
As the finishes of the walls are not part of the ETA, determination of this property was not possible. No Performance Determined.

Incorporation of the ducts
The voids for horizontal passing ducts are made on site; the diameter of the voids shall coincide with the diameter of the ducts; the ducts must be installed in the voids before filling in with the concrete.
The requirements according to ETAG 009 Edition 2002 chapter 6.7.2.2 are met satisfactorily.

Fixing of objects
Fixing of objects in the shuttering leaves is not possible; for what concerns the mechanical resistance of the fixing devices, only their part inserted in the concrete can be considered.
The requirements according to ETAG 009 Edition 2002 chapter 6.7.2.3 are met satisfactorily.

3. EVALUATION OF CONFORMITY AND CE MARKING

3.1 Attestation of conformity system
Considering the Euroclass B for the reaction to fire and that no stage in production process has been identified that corresponds to an improvement of the reaction to fire classification, the system of Attestation of Conformity specified by the European Commission is System 2+ described in the Council Directive 89/106/EEC Annex III, 2 (i), First possibility and described as follows:
Declaration of Conformity of the product by the manufacturer on the basis of:

a) Tasks of the manufacturers:
1. Initial type testing of the product
2. Factory Production Control, including testing of samples taken at the factory in accordance with a control plan.

b) Tasks of the Notified Body:
3. Certification of Factory Production Control on the basis of:
   - Initial inspection of the factory and of factory production control;
   - Continuous surveillance, assessment and approval of Factory Production Control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer
3.2.1.1 Initial Type testing (system 2+)
For Initial Type Testing, the results of the test performed as part of the assessment for this European Technical Approval shall be used unless there are changes in the production line or plant. In such cases, the necessary new initial type testing has to be agreed between ITC-CNR and the Notified Body involved. These tests could be taken over by the Manufacturer for Declaration of Conformity.

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8 The control plan has been deposited at ITC-CNR and is only made available to the Notified Bodies involved in the conformity attestation procedure.
3.2.1.2 Factory production control

The ETA Holder has a Factory Production Control system in his plant (manufacturing of the hollow blocks) and exercises permanent internal control of production, including testing samples in accordance with his control plan.

For the components of “ISOTEX” which the ETA Holder does not manufacture by himself, he makes sure that a proper Factory Production Control carried out by the other manufacturers gives the guaranty of the components compliance with the European Technical Approval. In this aim:

- he relies on national certification bodies, and
- has specified through contracts with his suppliers the awaiting characteristics, the needed controls and the frequencies, and
- he carries out by himself controls on these components.

The control plan and the provisions taken by the ETA Holder for components not produced by himself have been agreed with the Approval Body and deposited with ITC-CNR where it is only made available to the Notified Body involved in the Conformity attestation procedure. This control plan will be given to the Notified Body chosen by the ETA Holder to perform the foreseen tasks on attestation of conformity.

The manufacturer only uses raw materials supplied with the relevant inspection documents as laid down in the control plan. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.

All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written processes and procedures. This production control system ensures that “ISOTEX” and its components are in conformity with this European Technical Approval.

The results of Factory Production Control are recorded and evaluated. The records include, among the others, the following information:

- designation of the product, raw materials and components;
- type of control or testing;
- date of the product’s manufacture and date of testing of the product or raw materials and components;
- results of controls and testing and, if appropriate, comparison with requirements;
- signature of person responsible for Factory Production Control.

The records shall be presented to the inspection body during the continuous surveillance. On request, they shall be presented to ITC-CNR.

Details of the extent, nature and frequency of testing and controls to be performed within the Factory Production Control shall correspond to the control plan which is part of the technical documentation of this European Technical Approval.

3.2.2. Tasks of the Notified Bodies

3.2.2.1 Initial inspection of factory and Factory Production Control

The Notified Body shall ascertain that, in accordance with the control plan, the factory (in particular the employees and the equipment) and the Factory Production Control are suitable to ensure continuous and orderly manufacturing of the components according to the specifications mentioned in clause 2 of this ETA.

3.2.2.2 Continuous surveillance, assessment and approval of factory production control

The Notified Body should visit the factory at least once a year for surveillance. It has to be verified that the system of Factory Production Control and the specified manufacturing process are maintained taking into account the deposited control plan. Continuous surveillance and assessment of Factory Production Control have to be performed in accordance with the control plan.
During each visit, the Notified Body shall utilize an ad-hoc check list and shall examine, among the others:
- the control registers of raw materials, products in course of manufacture and finished products,
- the document attesting the respect of the control frequencies,
- the conformity of the products subjected to this ETA.
In cases where the provisions of the European Technical Approval and the control plan are no longer fulfilled, the conformity certificate should be withdrawn.

3.3. CE Marking
The CE Marking shall be affixed on the packaging or on accompanying commercial documents (DDT). The symbol «CE» shall be accompanied by the following information:
- identification number of the Notified Body,
- name or identifying mark of the ETA Holder and name of his manufacturing plant,
- legal address of the ETA Holder,
- the last two digits of the year in which the CE-marking was affixed,
- number of the EC Certificate of conformity,
- number of this European Technical Approval,
- “ISOTEX”,

4. ASSUMPTIONS UNDER WHICH THE FITNESS OF THE PRODUCT FOR THE INTENDED USE WAS FAVOURABLY ASSESSED

4.1 Manufacturing
The “ISOTEX” blocks shall correspond, as far as their composition and manufacturing process is concerned, to the products subject to the approval tests. Manufacturing process scheme is deposited with ITC-CNR.

4.2 Installation
4.2.1. General
It is the responsibility of the ETA Holder to guarantee that the information about design and installation of the system “ISOTEX” are effectively communicated to the concerned people. These information can be given using reproductions of the respective parts of this European Technical Approval. Besides, all the data concerning the execution shall be indicated clearly on the packaging and/or on the enclosed instruction sheets using one or several illustrations.
In any case, it is suitable to comply with national regulations and particularly concerning fire.

5 RECOMMENDATIONS

5.1 Packaging, transport and storage
The blocks are tied up by plastic (polypropylene) bends. The manufacturer takes measures to avoid damage during storage and transport.

5.2 Maintenance and repair of the product
As finishes are not included in this ETA, no maintenance works are foreseen. Repairs of localized damage due to accidents should be effected rapidly.

The original version is signed by
arch. Roberto Vinci
(ITC Director)
Annex 1 of European Technical Approval 08/0023: “ISOTEX”

ISOTEX normal elements “DII” and “HDII”

"ISOTEX"

Annex 1
of European Technical Approval 08/0023:
Shuttering system “ISOTEX”
Annex 2 of European Technical Approval 08/0023: “ISOTEX”

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<thead>
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Annex 3 of European Technical Approval 08/0023: “ISOTEX”

DII 30/16, 30/22, DIII 30/7, 30/8

DII 33/25 e DIII 33/9

DII 38/28, DIII 38/13 e DIII 38/12

DII 25/18 e DIII 25/4

HDII 30/7

HDII 33/10

HDII 38/14

HDII 44/20

HDII 44/18

HDII 30/22

HDII 33/25

HDII 38/29

HDII 44/33

HDII 44/16

HDII 44/14

"ISOTEX"

ISOTEX standard elements “D” and “HD” front and lateral views

Annex 3
of European Technical Approval 08/0023:
Shuttering system “ISOTEX”
Annex 4 of European Technical Approval 08/0023: “ISOTEX”

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HB 15

HB 17.5

HB 30/19

HB 20

HB 25/16

HB 44/15-2
Annex 5 of European Technical Approval 08/0023: “ISOTEX”

DIII 38/13 TS spalla

DIII 30/7 TS

DIII 33/9 TS

HDIII 30/7 TS

HDIII 33/10 TS

DIII 38/13 TS

DIII 30/7 UNI angolo

DIII 33/9 UNI angolo

DIII 30/7 PASS

DIII 33/9 UNI spalla

“ISOTEX”

ISOTEX special elements

Annex 5
of European Technical Approval 08/0023:
Shuttering system “ISOTEX”
Annex 6 of European Technical Approval 08/0023: “ISOTEX”

HB 20 UNI

DIII 25/4 UNI

DIII 38 UNI (corner)

DIII 25/4 TS (half block)

HDIII 44/18 Spalla

HDIII 44/18 Pass Sx

HDIII 44/18 UNI

HDIII 44/18 Pass Dx
Annex 8 of European Technical Approval 08/0023: “ISOTEX”

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ISO 25/18 NS

ISO 25 S4 NS

ISO 30 S10 NS

ISO 30 S4 NS

ISO 30/22 NS

FRONT AND LATERAL VIEW

ISO 30

ISO 25
Annex 9 of European Technical Approval 08/0023: “ISOTEX”

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<td>special elements</td>
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Annex 9

of European Technical Approval 08/0023:
Shuttering system “ISOTEX”
Annex 10 of European Technical Approval 08/0023: “ISOTEX”

PIL 30

PIL 33

PIL 38

PIL 44

“ISOTEX”

ISOTEX column elements

Annex 10

of European Technical Approval 08/0023:
Shuttering system “ISOTEX”
Annex 11 of European Technical Approval 08/0023: “ISOTEX”

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<td>ISOTEX example of wall corners</td>
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Annex 11 of European Technical Approval 08/0023: Shuttering system “ISOTEX”