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1. Technical description of the product

This European Technical Assessment (ETA) applies to the lightweight panel with trade name ISOLPRO, hereafter referred to as ISOLPRO panel. The ETA holder is ultimately responsible for the product specified in this ETA.

The ISOLPRO panel is made of lightweight mortar of cement, sand and granulated EPS, reinforced by a glass fibre mesh connected to an internal galvanised steel railing, that is positioned at a half panel thickness (see Annex 1). The characteristics of the ISOLPRO panel constituents are identified in Table 1.

TABLE 1
Identification and characteristics of the ISOLPRO panel constituents

Constituents	Characteristics	Reference document
Cement	CEM II type Characteristic value of the compressive strength at 28 days ≥ 42.5 MPa	EN 197-1
Granulated EPS	Nominal size range: 2 to 7 mm Nominal density: 16 kg/m ³	Supplier product documentation
Glass fibre mesh	Nominal thickness: 0.82 mm Nominal mesh opening dimension (Warp × Weft): 74.4 mm × 7.9 mm Nominal mass per surface unit: 0.22 kg/m ² Minimum tensile strength value, before ageing (Warp, Weft): 52 N/mm, 42 N/mm Minimum tensile strength value, after ageing (Warp, Weft): 26 N/mm, 21 N/mm Maximum elongation at fracture value, before ageing (Warp, Weft): 5.0%, 5.0% Maximum elongation at fracture value, after ageing (Warp, Weft): 3.5%, 3.5%	Supplier product documentation
Steel railing ¹	DX51D grade Characteristic value of the yield strength ≥ 140 MPa	EN 10346

¹ Nominal mass of the hot-dip zinc coating at least of 275 g/m²

The dosages of the different constituents to produce the lightweight mortar are given in the ETA holder's technical documentation concerning the ISOLPRO panel.

The steel railing is made of eight perforated cold-formed steel angle bracket elements (two longitudinal and six transversal, see Annex 1) with a nominal thickness equal to 0.5 mm. The minimum nominal value of the steel railing cover is equal to 7.5 mm.

The ISOLPRO panel is produced in standardised dimensions in factory conditions, using a semi-automated production line. The ISOLPRO panel shall not have chases or openings.

The nominal values of the external dimensions of the ISOLPRO panels are (see Annex 1):

- Thickness (t): 40 mm.
- Length (L): 1800 mm.
- Width (B): 500 mm.

The ISOLPRO panel is intended to be fixed longitudinally to a series of transverse cold-formed steel structural elements, by means of self-drilling screws driven through the internal steel railing at specified discrete locations. Table 2 provides the requirements for these elements, which are not part of the product.

TABLE 2
Identification and characteristics of the connecting elements and support structural elements

Elements	Characteristics	Reference document
Self drilling screws	Nominal diameter: 6.3 mm Nominal length: 63 mm Hardness ≥ 560 HV Torsion resistance ≥ 14 N.m	EN ISO 15480
Support structural elements	Cold-formed elements with C or Σ cross-sections (see Annex 2) S280GD or S320GD steel	EN 10346

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

The ISOLPRO panel is intended for use as non-load bearing or load bearing element for planking or stiffening steel framed external and internal walls of buildings, typically single- or medium-rise residential buildings, in particular those using light steel framing (LSF) technology. The ISOLPRO panels are fixed to thin-walled steel beams, spaced by 600 mm. The ISOLPRO panel may also be used in composite floors. See Annex 3 for application examples.

The application of the ISOLPRO panel in composite floors may require the use of an additional layer of an adequate material in order to satisfy the safety and serviceability criteria (see EN 1990).

Each ISOLPRO panel shall be self-supporting, resisting the self-weight and any variable actions applied directly to its surface. Combinations of actions to be considered shall be selected from EN 1990.

The contribution of the ISOLPRO panels to the resistance of the building other than the racking resistance should not be accounted for in the design of the structural elements of the building.

Based on the present ETA it cannot be considered that the product dissipates energy in seismic areas.

Included are structures subjected to fire regulation.

It is the responsibility of the ETA holder to ensure that all necessary information on design and installation is provided to those responsible for design and execution of the works incorporating the ISOLPRO panels.

The provisions made in the ETA are based on an assumed intended working life for the ISOLPRO lightweight panels of 50 years, when installed in the works, provided that the ISOLPRO panels are subject to appropriate installation, use and maintenance. When ISOLPRO panels are used as structural elements in floor solutions additional verifications may be applicable concerning long-term behaviour (e.g. long-term flexural resistance and creep behaviour).

The indications given on the working life cannot be interpreted as a guarantee given by the product ETA holder or by the Technical Assessment Body, but are to be regarded as a means for choosing the appropriate product in relation to the expected economically reasonable working life of the works¹.

Design

Verification of stability of the works is not subject to the ETA and should be carried out according to the national regulations applicable.

The following conditions shall be observed:

- Design of the ISOLPRO panel applications is carried under the responsibility of an engineer experienced in these elements.
- The ISOLPRO panels are installed correctly.

Installation

The ISOLPRO panels shall be installed according to the ETA holder's instructions.

Installation of ISOLPRO panels shall be carried out by qualified personnel with specific training for this type of work according to the ETA holder's instructions and the rules of the applicable regulations in place.

The substructure must be clean, without irregularities and deviations from the horizontal and/or vertical.

During and after installation the ISOLPRO panels shall show no permanent deformation and excessive surface cracking.

Use, maintenance and repair

The assessment of the product is based on the assumption that maintenance is not required during the assumed intended working life.

Should repair prove necessary this is treated on an individual basis relative to the specific application and/or damage.

It is the responsibility of the ETA holder to ensure that the information on these provisions is given to those who are concerned.

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

Sampling, conditioning, testing and the assessment for the intended use of the ISOLPRO panels according to the Basic Requirements were carried out in compliance with the EAD N.º 010013-00-0301.

Table 3 presents the relevant performance of the product and the corresponding methods used in its assessment.

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works are subjected, as well as on the particular conditions of design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than the assumed working life.

TABLE 3

Performance of the product and methods used for its assessment

Basic requirement	Essential characteristic	Assessment method	Type of expression of product performance (level, class, description)
BWR 1 Mechanical resistance and stability		Same as for BWR 4	
BWR 2 Safety in case of fire	Reaction to fire	EN 13823 EN ISO 11925-2 EN 13501-1	Class B-s1,d0
	Resistance to fire	EN 1363-1 EN 1364-1 EN 13501-2	EI 120 ¹
BWR 4 Safety and accessibility in use	Flexural resistance at ambient temperature	EAD – section 2.2.3.1	Characteristic value of bending moment resistance ² Pressure: 0.099 kN.m Suction: 0.219 kN.m
	Flexural resistance at elevated temperature	EAD – section 2.2.3.2	Performance not assessed
	Flexural resistance at negative temperature	EAD – section 2.2.3.3	Performance not assessed
	Flexural resistance at long-term	EAD – section 2.2.3.4	Performance not assessed
	Resistance to shear	EAD – section 2.2.4	Characteristic value ² 3.78 kN
	Racking resistance and stiffness	EAD – section 2.2.5	Characteristic value of racking resistance One panel: 5.28 kN Three panels: 6.50 kN
			Characteristic value of racking stiffness One panel: 1502 kN/m Three panels: 932 kN/m
	Creep coefficient	EAD – section 2.2.6	Performance not assessed
	Impact resistance	EOTA Technical Report TR 001	Outer or inner faces of exterior or interior walls Safety: No collapse, penetration and projection for soft body impact (50 kg): 700 J hard body impact (1 kg): 10 J Serviceability: No penetration and degradation for soft body impact (50 kg): 130 J hard body impact (0.5 kg): 6 J
	Durability against corrosion	EN 990	No corrosion (Method 2) detected for the zinc coated steel railing in accordance with TABLE 1
Pull-out resistance of connections at ambient temperature	EAD – section 2.2.9.1	Characteristic value per connecting element ² 1.45 kN	
Pull-out resistance of connections at elevated temperature	EAD – section 2.2.9.2	Performance not assessed	

TABLE 3
Performance of the product and methods used for its assessment (*continued*)

Basic requirement	Essential characteristic	Assessment method	Type of expression of product performance (level, class, description)
BWR 4 Safety and accessibility in use (<i>continued</i>)	Pull-out resistance of connections at negative temperature	EAD – section 2.2.9.3	Performance not assessed
	Resistance to shear of connections	EAD – section 2.2.10	Characteristic value per connecting element ² 2.97 kN
	Durability against freeze-thaw	EN 12091	Performance not assessed
	Water absorption of the lightweight mortar	EN 1609	Water absorption by partial immersion W_p : 3.45 kg/m ² (average value)
	Dimensional stability of the lightweight mortar	EN 1367-4	Cross-section 40 mm × 40 mm: 1.56% (average value)
BWR 5 Protection against noise	Airborne sound insulation	EN ISO 10140-2 EN ISO 717-1	Performance not assessed
	Impact sound insulation	EN ISO 10140-3 EN ISO 717-2	Performance not assessed
	Sound absorption	EAD – section 2.2.16	Performance not assessed
BWR 6 Energy economy and heat retention	Thermal conductivity of the lightweight mortar	EN 12667	$\lambda_{10, dry}$: 0.233 W/(m.K) (average value) $\lambda_{10, 23, 50}$: 0.267 W/(m.K) (average value) $\lambda_{10, 23, 80}$: 0.272 W/(m.K) (average value)
	Thermal resistance of the ISOLPRO panel	EN ISO 6946 EN ISO 10211	R = 0.13 m ² .°C/W (average value)

1 The resistance to fire depends on the specific end use wall or floor built up solutions. The classes E and I given are valid only for the tested solution, that reproduces a typical wall built up solution with increased fire performance incorporating the ISOLPRO panels. The details of the tested solution are given in the manufacturer's technical documentation.

2 Excluding the effect of the self-weight of the ISOLPRO panel.

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

For the product covered by this ETA, the applicable European legal act is: Decision 1999/94/EC as amended by Decision 2012/202/EU.

The systems are: 2+ / 4

1 / 3 / 4 for reaction to fire

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

5.1 General

The ETA is issued on the basis of agreed data/information, deposited with LNEC, which identifies the product that has been assessed. It is the manufacturer's responsibility to make sure that all those who use the product are appropriately informed of the specific conditions laid down in this ETA, including its annexes.

Changes to the ISOLPRO panel including its constituents or changes to its production process should be notified to LNEC before the changes are introduced. LNEC will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

5.2 Tasks for the manufacturer

Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed.

This production control system shall ensure that the product is in conformity with this ETA.

The manufacturer may only use constituents and elements stated in the technical documentation of this ETA. The incoming raw materials are subjected to verifications by the manufacturer before acceptance.

For the constituents of the ISOLPRO panel which the manufacturer does not manufacture by himself, he shall make sure that the factory production control carried out by the other manufacturers gives the guarantee of the constituents compliance with the ETA.

The factory production control shall be in accordance with the Control Plan², which is part of the Technical Documentation of this ETA. The Control Plan has been agreed between the manufacturer and the LNEC and is laid down in the context of the factory production control system operated by the manufacturer and deposited within LNEC. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

Other tasks for the manufacturer

The manufacturer shall, on the basis of a contract, involve a body (bodies) which is (are) notified for the tasks referred to in section 4 in the field of the ISOLPRO panel in order to undertake the actions laid down in this clause. For this purpose, the Control Plan shall be handed over by the manufacturer to the notified body (bodies) involved.

For assessing the product, the results of the tests performed as part of the assessment for the ETA shall be used unless there are changes in the production line or plant. In such cases the necessary testing has to be agreed with LNEC.

The declaration of performance of the ISOLPRO panel to be drawn up by the manufacturer following the issuing of this ETA shall include its reference number and issuing date.

5.3 Tasks for the notified body (bodies)

Notified bodies undertaking tasks under system 1 shall consider the European Technical Assessment issued for the product as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 1.2(b)(i) of Annex V of Regulation (EU) no. 305/2011, unless there are changes in the manufacture or manufacturing plant. In such cases, the necessary assessment and verifications have to be agreed between LNEC and the notified product certification body.

Within the scope of the initial inspection of factory and of factory production control, the notified body (bodies) 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 ISOLPRO panel according to the specifications mentioned in this ETA.

Within the scope of continuous surveillance, assessment and evaluation of factory production control, the notified body (bodies) shall visit the factory at least once a year for surveillance. It has to be verified that the factory production control is maintained in suitable conditions.

² The Control Plan is a confidential part of this European Technical Assessment and is only handed over to the notified body or bodies involved in the procedure of assessment and verification of constancy of performance. See section 5.3.

These tasks shall be performed in accordance with the provisions laid down in the Control Plan.

The notified body (bodies) shall retain the essential points of its (their) actions referred to above and state the results obtained and conclusions drawn in a written report.

Under systems 1 and 2+ the notified certification body(ies) involved by the manufacturer shall issue respectively a certificate of constancy of performance of the kit and a certificate of conformity of the factory production control on the basis of the assessments and verifications carried out by that (those) body(ies).

In cases where the provisions of the ETA and its control plan are no longer fulfilled, the notified certification body(ies) shall withdraw the certificate(s) issued and inform LNEC without delay.

Issued in Lisbon on 08/01/2020

By

Laboratório Nacional de Engenharia Civil (LNEC)

The Board of Directors

A handwritten signature in blue ink, appearing to read 'Carlos Pina', is written over a faint, illegible background.

Carlos Pina
President

Annex 1

Characteristics of the ISOLPRO lightweight panel

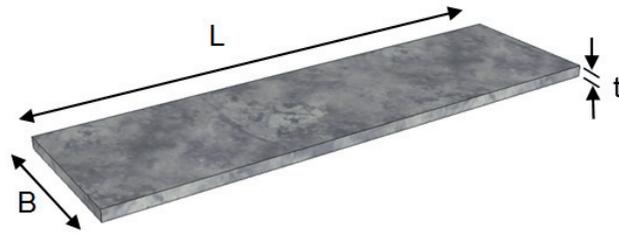


Illustration of the ISOLPRO lightweight panel dimensions

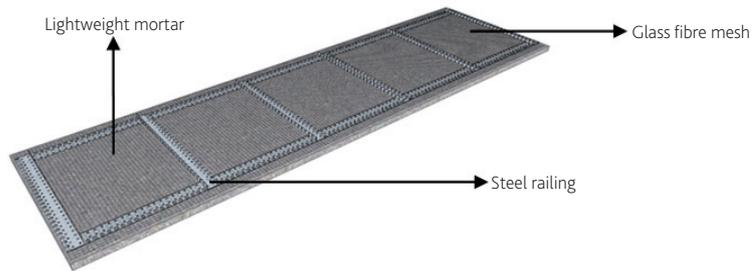


Illustration of the ISOLPRO lightweight panel constituents

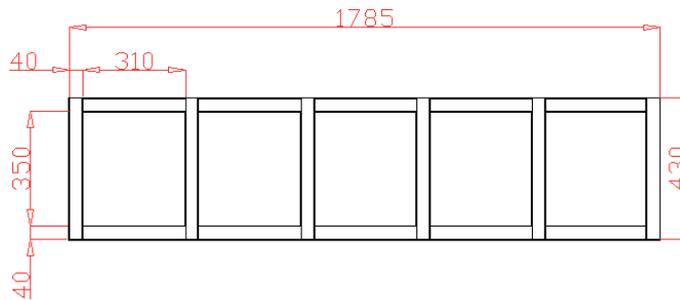


Illustration of the steel railing nominal dimensions (dimensions in mm)

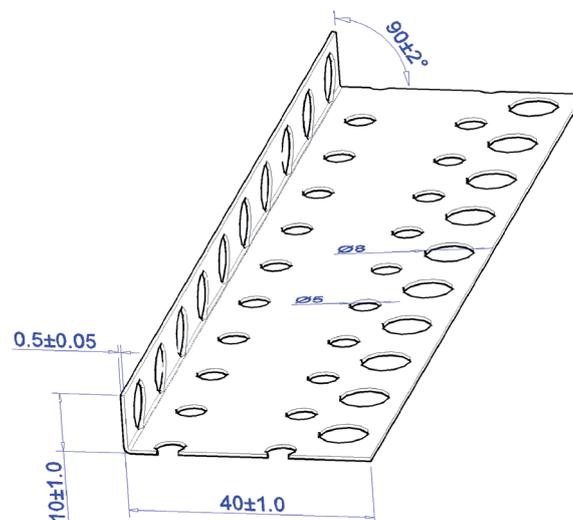
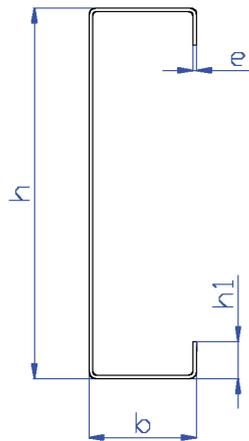


Illustration of the dimensions for the L-shaped steel elements (dimensions in mm)

Annex 2

Geometrical dimensions of the support structural elements



Dimensions:

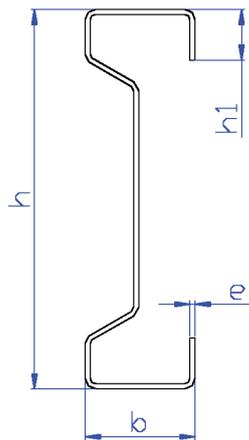
h – height from 150 mm up to 300 mm

h1 – reinforcing flap height from 15 mm up to 25 mm

b – width from 43 mm up to 70 mm

e – thickness from 1.5 mm up to 3.0 mm

Illustration of the cold-formed elements with C cross-section



Dimensions:

h – height from 150 mm up to 300 mm

h1 – reinforcing flap height from 15 mm up to 25 mm

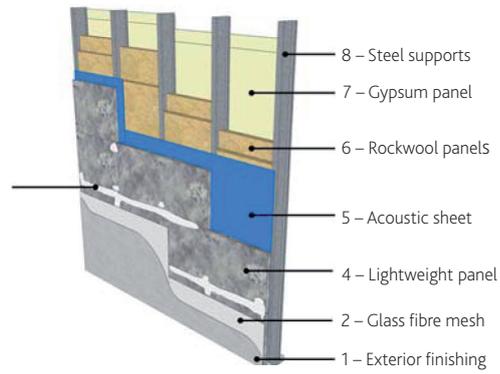
b – width from 43 mm up to 70 mm

e – thickness from 1.5 mm up to 3.0 mm

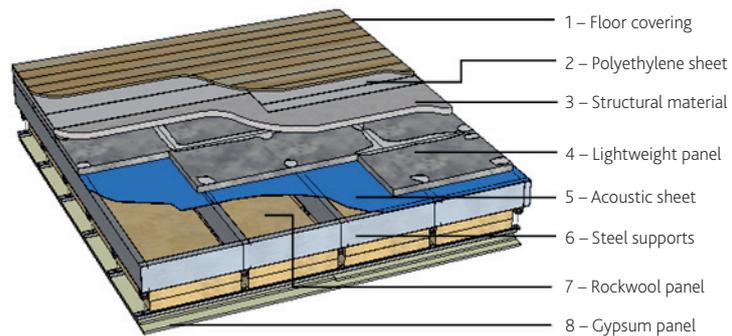
Illustration of the cold-formed elements with Σ cross-section

Annex 3

Examples of installation of the ISOLPRO lightweight panel



Example of installation of the ISOLPRO panel in external walls



Example of installation of the ISOLPRO lightweight panel in a floor

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