itecons

Rua Pedro Hispano, s/n
3030-289 Coimbra

Tel: (+351) 239 79 89 49
itecons@itecons.uc.pt
www.itecons.uc.pt

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Member of EOTA
www.eota.eu

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General Part

Technical Assessment Body issuing the European Technical Assessment: Itecons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade	
Trade name of the construction product	ISOPLAC CEM®
Product family to which the construction product belongs	Internal and External Wall and Ceiling Finishes Product area code: 21
Manufacturer	ISOLANA C. de San José Artesano, 18 28108 Alcobendas, Madrid Spain
Manufacturing plant	Zona Industrial de Vagos, Lote 50 – 52 3840-385 Vagos Portugal
This European Technical Assessment contains	9 pages including 2 Annexes which form an integral part of the assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	EAD 210024-00-0504 – *Cement-Bonded Board*

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Specific parts

1. Technical description of the product

ISOPLAC CEM® panels are composed of a blend of cements and aggregates, bound and reinforced with alkali resistant glass fibre mesh. The product has formed edges and the ends are cut square.

ISOPLAC CEM® is type NT (Non-asbestos Technology).

The nominal dimensions of the boards are:

- Length: 2400 mm
- Width: 1200 mm
- Thickness: 12.5 mm

ISOPLAC CEM® can be classified in Category B according EN 12467, which is intended for applications where the boards may be subjected to heat, moisture and occasional frost.

ISOPLAC CEM® complies with the minimum modulus of rupture (MOR) for the bending strength perpendicular to the plane according to EN 12467, clause 5.4.4, of 2 MPa and with the minimum density of 625 kg/m^3.

ISOPLAC CEM® shall be used with one of the following fixing elements:

- Screw ISOPLAC CEM® PN – Needle Point with CE marking;
- Screw ISOPLAC CEM® SD – Drill Point with CE marking.

More details about screw ISOPLAC CEM® PN and screw ISOPLAC CEM® SD are presented in Annex A and B.

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

2.1. Intended use

ISOPLAC CEM® is intended to be used for lining non-structural internal and external walls, for the manufacture of floor construction elements, for structural applications for the planking and lining of walls and for stiffening timber or steel framed walls, ceilings and roof truss structures

The provisions made in this European Technical Assessment are based on an assumed working life for the intended use of 50 years as minimum according to the EAD provided, when installed in the works provided that the conditions laid down for the installation, packaging, transport and storage as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, his representative, EOTA nor Itecons, but are to be regarded only as a mean for choosing the right product in relation to the expected economically reasonable working life of the works.

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

The assessment of ISOPLAC CEM® according to the Basic Work Requirements (BWR) was carried out in compliance with EAD 210024-00-0504. The characteristics of the components shall correspond to the respective values laid down in the technical documentation of this ETA, checked by Itecons.

3.1. Performance of the assembled system (kit)

3.1.1. Mechanical resistance and stability (BWR 1)

3.1.1.1. Thickness

The thickness was determined according to EN 12467, clause 7.2.

The nominal thickness of ISOPLAC CEM® with nominal dimensions of 2400 mm x 1200 mm (length x width) is *e* = 12.5 mm ± 1.25 mm.

3.1.1.2. Dimension (Length and width)

The dimension *a* (*l* (length) and *w* (width)) was determined according to EN 12467, clause 7.2.

The nominal dimension *a* of ISOPLAC CEM® is *l* = 2400 mm ± 5 mm and w = 1200 mm ± 3.6 mm (level I).

3.1.1.3. Straightness of edges

The straightness of edges (*ste*) was determined according to EN 12467, clause 7.2.3.3.

The straightness of edges of ISOPLAC CEM® is *ste* = 0.1% (Level I according to EN 12467)

3.1.1.4. Squareness of edges

The squareness of edges (*sqe*) was determined according to EN 12467, clause 7.2.3.4.

The squareness of edges of ISOPLAC CEM® is *sqe* = 4 mm/m (Level II according to EN 12467).

3.1.1.5. Density

The density (*ρ*) was determined according to EN 12467, clause 7.3.1.

The mean value of density of ISOPLAC CEM® is ρ_m = 1060 kg/m^3.

3.1.1.6. Moisture content

The moisture content (*H*) was determined according to EN 322 by storing the specimens at a standard climate (20ºC / 65% air humidity).

The moisture content of ISOPLAC CEM® is *H* = 9.1%.

3.1.1.7. Water impermeability

The water impermeability (*WI*) was determined according to EN 12467, clause 7.3.3.

The ISOPLAC CEM® in no instance showed formation of drops of water, therefore, *WI* = passed.

3.1.1.8. Dimensional stability

The dimensional stability ($\delta l_{65,30}$, $\delta l_{65,85}$) was determined on the basis of shrinkage and swelling behaviour of the board. The shrinkage and swelling were tested according to EN 318.

The dimensional stability parameters of ISOPLAC CEM® are as follow:

- $\delta l_{65,30}$ = -0.3 mm/m;
- $\delta l_{65,85}$ = 0.1 mm/m;

3.1.1.9. Modification factor

No performance assessed.

3.1.1.10. Deformation factor

No performance assessed.

3.1.1.11. Bending strength/bending modulus of elasticity

No performance assessed.

3.1.1.12. Tensile strength and tensile modulus of elasticity in plane of the board

No performance assessed.

3.1.1.13. Compressive strength and compressive modulus of elasticity

The compressive strength ($f_{c,0,k}$; $f_{c,90,k}$) and compressive modulus of elasticity ($E_{c,0,mean}$; $E_{c,90,mean}$) perpendicular to the plane and in the plane of the board were tested according to EN 789.

The compressive strength and the compressive modulus of ISOPLAC CEM®, with nominal thickness of 12.5 mm, are as follow:

- $f_{c,0,k}$ = 2.275 N/mm^2;
- $f_{c,90,k}$ = 2.319 N/mm^2;
- $E_{c,0,mean}$ = 2233 N/mm^2;
- $E_{c,90,mean}$ = 1800 N/mm^2.

3.1.1.14. Shear strength and shear modulus in the plane of the board

No performance assessed.

3.1.1.15. Shear strength and shear modulus perpendicular to the plane of the board

No performance assessed.

3.1.1.16. Embedment strength

No performance assessed.

3.1.1.17. Pull through resistance

The pull through resistance ($f_{head,\alpha,k}$) of ISOPLAC CEM® with screw ISOPLAC CEM® PN (4.2 mm x 25 mm) and screw ISOPLAC CEM® SD (3.9 mm x 25 mm) was determined according to EN 1383.

The pull through resistance of ISOPLAC CEM® with screw ISOPLAC CEM® PN $f_{head,\alpha,k}$ = 2.76 N/mm^2.

The pull through resistance of ISOPLAC CEM® with screw ISOPLAC CEM® SD $f_{head,\alpha,k}$ = 11.18 N/mm^2.

3.1.1.18. Influence of the edge distance of the fasteners on the embedment strength and slip modulus of the fasteners

No performance assessed.

3.1.1.19. Racking resistance and stiffness

No performance assessed.

3.1.1.20. Impact resistance

No performance assessed.

3.1.1.21. Water absorption

The water absorption (W_a) was determined according to EAD 210024-00-0504, clause 2.2.21.

The water absorption of ISOPLAC CEM® is W_a = 11.0 %.

3.1.1.22. Freeze thaw resistance

The freeze-thaw resistance was determined according to EN 12467, clause 7.4.1.

The freeze-thaw resistance for category B of ISOPLAC CEM® is $R_{L,\,ftc}$ = 0.93.

3.1.1.23. Heat-rain resistance

The heat-rain resistance was determined according to EN 12467, clause 7.4.2.

The test specimen consisted of ISOPLAC CEM® built to fit within a standard metallic frame, resulting in an external dimension of 2.80 m x 2.80 m (W x H). In order to build the specimen, ISOPLAC CEM® boards with nominal dimensions of 2400 mm x 1200 mm x 12.5 mm (length x width x thickness) were fixed to omega shaped galvanised steel profiles of thickness of 0.55 mm. ISOPLAC CEM® PN 4.2 mm x 40 mm screws were used to attach ISOPLAC CEM® to the profiles. The frame profiles were applied to a plastered masonry wall with a spacing of 600 mm. A space of 3 mm was left between the sheet joints. The treatment of the joints was carried out with 160 g/m^2 fiberglass mesh and a joint filler and skim coat. The joints were installed in both directions of the test specimen and the attachments have the maximum spacing.

The results obtained confirm that this system is able to resist hygrothermal cycles to Category B – since it didn't show any visible cracks, delamination, warping and bowing or other defects in the sheets that could affect their performance.

3.1.1.24. Warm water resistance

The warm water resistance was determined according to EN 12467, clause 7.3.5.

The warm water resistance for category B of ISOPLAC CEM® is $R_{L,\ WW}$ = 0.76.

3.1.1.25. Soak-dry resistance

The soak-dry resistance was determined according to EN 12467, clause 7.3.6.

The soak-dry resistance for category B of ISOPLAC CEM® is $R_{L,\ SD}$ = 0.84.

3.1.1.26. Durability

The ISOPLAC CEM® PN screw and the ISOPLAC CEM® SD screw can be used for external application if the screw head is permanently sealed against moisture after installation.

3.1.2. Safety in case of fire (BWR 2)

3.1.2.1. Reaction to fire

The reaction to fire was tested according to ISO 1182:2010, ISO 1716:2010 and EN 13823:2010+A1:2014. ISOPLAC CEM®, with nominal thickness of 12.5 mm, meets the requirements of class A1.

3.1.3. Hygiene, health and the environment (BWR 3)

3.1.3.1. Vapour permeability

The vapour permeability (μ) was determined according to EN ISO 12572, clause 7.3.

The mean value of the vapour permeability of ISOPLAC CEM® is μ = 40.9.

3.1.3.2. Content, emission and/or release of dangerous substances

No performance assessed.

3.1.4. Safety and accessibility in use (BWR 4)

Not relevant.

3.1.5. Protection against noise (BWR 5)

Not relevant.

3.1.6. Energy economy and heat retention (BWR 6)

3.1.6.1. Thermal conductivity

The thermal conductivity at 10 °C and under dry condition was determined according to EN 12664.

The thermal conductivity of ISOPLAC CEM® is $\lambda_{10,tr}$ = 0.223 W/(m°C).

3.1.6.2. Air permeability

ISOPLAC CEM® is not permeable to air.

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

According to the Decision 1998/437/EC of European Commission and amended by 2001/596/EC the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) applicable is 3.

In addition, with regard to reaction to fire for products covered by the EAD 210024-00-0504 the applicable European legal act is: 1998/437/EC, as amended by 2001/596/EC. The systems to be applied are: 1, 3 and 4.

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

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

Changes to the kit or the components or their production process should be notified to Itecons before the changes are introduced. Itecons will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

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By

Technical Assessment Unit of

Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade

Andreia Gil
Senior Official

(*Technical Assessment Unit Coordinator*)

Validated document

(*Administration*)

Annex A – Screw ISOPLAC CEM® PN 4.2 mm x 25/40 mm (needle point)

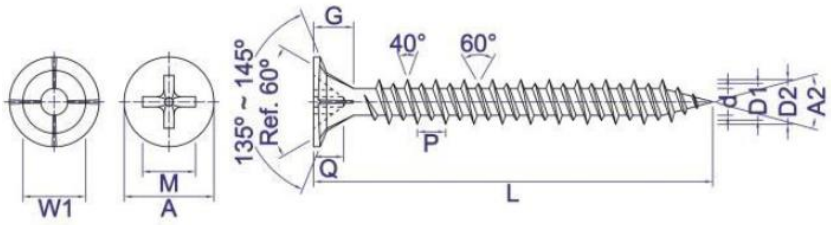

Table A1: Mechanical description of screw ISOPLAC CEM® PN

Parameter	A	M	G	W1	Q	P	D1	D2	d	A2	L
Min. value (mm)	8.50	Ref.	Ref.	Mini	2.80	---	3.50	4.10	2.60	25°	25/40
Max. value (mm)	9.50	5.32	4.00	6.30	3.20	2.84	3.70	4.50	2.70	35°	+0, -1.27

Base material: Carbon steel C-1022

Coating material: Yellow zinc

Head type: Big Wafer

Torque (kg-cm): ≥45

Hardening thickness (mm): 0.15-0.23

Screw drive: Phillips

Thread: Medium

Point: Nail

Surface hardness (HV): 600

Core hardness (HV): 320-425

CE marking according to EN 14566:2008+A1:2009

Annex B – Screw ISOPLAC CEM® SD 3.9 mm x 25/40 mm (drill point)

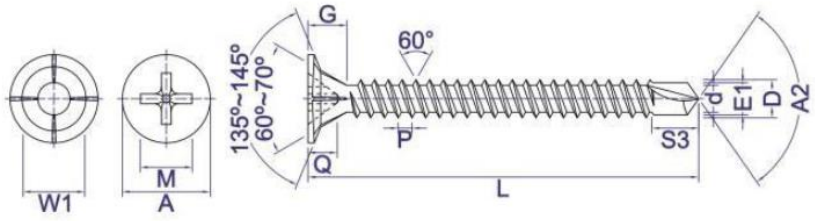

Table A1: Mechanical description of screw ISOPLAC CEM® SD

Parameter	A	M	G	W1	Q	d	D	P	E1	A2	S3	L
Min. value (mm)	8.50	Ref.	Ref.	Mini	2.80	2.65	3.73	---	3.20	100°	4.50	25/40
Max. value (mm)	9.50	5.25	3.95	6.55	3.20	2.75	3.91	1.41	3.30	110°	4.80	+0, -1.00

Base material: Carbon steel C-1022

Veneering material: Yellow zinc

Head type: Big Wafer

Torque (kg-cm): ---

Hardening thickness (mm): 0.15-0.28

CE marking according to EN 14566:2008+A1:2009

Screw drive: Phillips

Thread: Fine

Point: Drilling (D)

Surface hardness (HV): 580-780

Core hardness (HV): 325-425