



# European Technical Assessment

## ETA 23/0407 of 31/05/2023



English version prepared by Itecons

### General Part

#### Technical Assessment Body issuing the European Technical Assessment:

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

<b>Trade name of the construction product</b>	Cortex 0270 Class A1 Score'N'Snap Cement Board
<b>Product family to which the construction product belongs</b>	Internal and External Wall and Ceiling Finishes Product area code: 21
<b>Manufacturer</b>	OBEX Protection Ltd. Unit 12, Horn Hill Road, Nunnery Park, Worcester WR4 0SX United Kingdom
<b>Manufacturing plant</b>	Zona Industrial de Vagos, Lote 50 – 52 3840-385 Vagos Portugal
<b>This European Technical Assessment contains</b>	9 pages including 2 Annexes which form an integral part of the assessment
<b>This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of</b>	EAD 210024-00-0504 – <i>Cement-Bonded Board</i>

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## Specific parts

### 1. Technical description of the product

Cortex 0270 Class A1 Score'N'Snap Cement Board 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.

Cortex 0270 Class A1 Score'N'Snap Cement Board is type NT (Non-asbestos Technology).

The nominal dimensions of the boards are:

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

Cortex 0270 Class A1 Score'N'Snap Cement Board 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.

Cortex 0270 Class A1 Score'N'Snap Cement Board 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<sup>3</sup>.

Cortex 0270 Class A1 Score'N'Snap Cement Board shall be used with one of the following fixing elements:

- Cortex 0290 Self-Taping Screws – Needle Point with CE marking;
- Cortex 0290 Self-Drilling Screws – Drill Point with CE marking.

More details about Cortex 0290 Self-Taping Screws and Cortex 0290 Self-Drilling Screws 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

Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board with nominal dimensions of 2400 mm x 1200 mm (length x width) is  $e = 12.5 \text{ mm} \pm 1.25 \text{ mm}$ .

##### **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 Cortex 0270 Class A1 Score'N'Snap Cement Board is  $l = 2400 \text{ mm} \pm 5 \text{ mm}$  and  $w = 1200 \text{ mm} \pm 3.6 \text{ mm}$  (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 Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board is  $sqe = 4 \text{ mm/m}$  (Level II according to EN 12467).

##### **3.1.1.5. Density**

The density ( $\rho$ ) was determined according to EN 12467, clause 7.3.1.

The mean value of density of Cortex 0270 Class A1 Score'N'Snap Cement Board is  $\rho_m = 1060 \text{ kg/m}^3$ .

##### **3.1.1.6. Moisture content**

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

The moisture content of Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board in no instance showed formation of drops of water, therefore,  $WI = \text{passed}$ .

##### **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 Cortex 0270 Class A1 Score'N'Snap Cement Board are as follow:

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

#### **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 Cortex 0270 Class A1 Score'N'Snap Cement Board, with nominal thickness of 12.5 mm, are as follow:

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

#### **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 Cortex 0270 Class A1 Score'N'Snap Cement Board with Cortex 0290 Self-Taping Screws (4.2 mm x 25 mm) and Cortex 0290 Self-Drilling Screws (3.9 mm x 25 mm) was determined according to EN 1383.

The pull through resistance of Cortex 0270 Class A1 Score'N'Snap Cement Board with Cortex 0290 Self-Taping Screws  $f_{head,\alpha,k} = 2.76 \text{ N/mm}^2$ .

The pull through resistance of Cortex 0270 Class A1 Score'N'Snap Cement Board with Cortex 0290 Self-Drilling Screws  $f_{head,\alpha,k} = 11.18 \text{ N/mm}^2$ .

#### **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 Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board 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, Cortex 0270 Class A1 Score'N'Snap Cement 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. Cortex 0290 Self-Taping Screws 4.2 mm x 40 mm screws were used to attach Cortex 0270 Class A1 Score'N'Snap Cement Board 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<sup>2</sup> 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 Cortex 0270 Class A1 Score'N'Snap Cement Board 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 Cortex 0270 Class A1 Score'N'Snap Cement Board is  $R_{L,SD} = 0.84$ .

#### **3.1.1.26. Durability**

The Cortex 0290 Self-Taping Screws and the Cortex 0290 Self-Drilling Screws 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. Cortex 0270 Class A1 Score'N'Snap Cement Board, 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 ( $\mu$ ) was determined according to EN ISO 12572, clause 7.3.

The mean value of the vapour permeability of Cortex 0270 Class A1 Score'N'Snap Cement Board is  $\mu = 40.9$ .

### 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 Cortex 0270 Class A1 Score'N'Snap Cement Board is  $\lambda_{10,tr} = 0.223 \text{ W}/(\text{m}^\circ\text{C})$ .

#### 3.1.6.2. Air permeability

Cortex 0270 Class A1 Score'N'Snap Cement Board 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.

Issued in Coimbra on 31.05.2023

By

Technical Assessment Unit of

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



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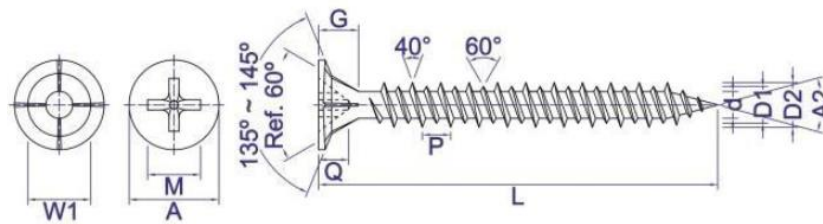
(Technical Assessment Unit Coordinator)



Validated document

(Administration)

**Annex A – Cortex 0290 Self-Taping Screws 4.2 mm x 25/40 mm (needle point)**



**Table A1:** Mechanical description of Cortex 0290 Self-Taping Screws

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

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

Screw drive: Phillips

Thread: Medium

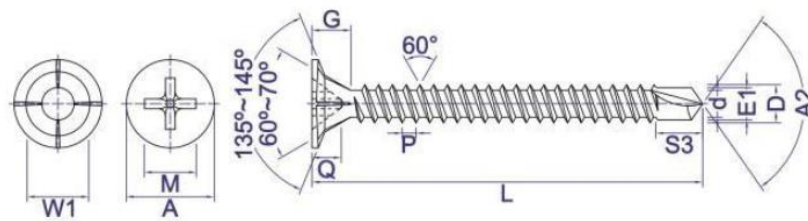
Point: Nail

Surface hardness (HV): 600

Core hardness (HV): 320-425



**Annex B – Cortex 0290 Self-Drilling Screws 3.9 mm x 25/40 mm (drill point)**



**Table A1: Mechanical description of Cortex 0290 Self-Drilling Screws**

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