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European Technical Assessment + Evaluation report

ETA 23/0178 of 4/4/2023

General Part

Technical Assessment Body issuing the ETA	**Eurofins Expert Services Oy**
Trade name of the construction product	**Cem Rock** **Cem-Rock eXtreme X4** **Cem-Rock eXtreme Floor**
Product family to which the construction product belongs	Fire stopping, fire sealing and fire protective products
Manufacturer	**Greenspan System Sales Ireland Ltd.** **Ballyhahill, Co. Limerick** **V94 Y2C6** **Ireland**
Manufacturing plants	**Annex N**
This European Technical Assessment contains	9 pages
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) 350142-00-1106 - Fire protective board, slab and mat products and kits

Specific Part

1. Technical description of the product

Cem-Rock is magnesium oxide board with EPS beads. Cem-Rock eXtreme X4 and Cem-Rock eXtreme FLOOR are magnesium oxide boards. All boards are reinforced with fiberglass mesh and faced with non-woven cloth.

Dimensions and density of the boards are given in Table 1.

Table 1. Dimensions and density of Cem-Rock, Cem-Rock eXtreme X4, Cem-Rock eXtreme FLOOR

	Nominal value		
	Cem-Rock	Cem-Rock eXtreme X4	Cem-Rock eXtreme FLOOR
Density	950 kg/m^3	935 kg/m^3	1100 - 1200 kg/m^3
Thickness	12 mm	12 mm	20 mm
Width	1200 mm 1220 mm	1200 mm 1220 mm	600 mm, 1100 mm, 1200 mm 1220 mm tongue and groove 1200 mm
Length	2400 - 3000 mm	2400 - 3050 mm	2400 - 3050 mm

The fasteners specified in Annex 1 are not covered by this ETA and cannot be CE marked on the basis of it.

Assessment

The manufacturer delivered technical specification of the product that corresponds to the scope of EAD 350142-00-1106.

Conclusion

Requirements set in clause 1.1 of EAD 350142-00-1106 are met.

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

Cem-Rock, Cem-Rock eXtreme X4 and Cem-Rock eXtreme FLOOR boards are intended to be used as fire protective boards that contribute to the fire resistance of fire separating walls and floors as specified in Table 2.

Table 2. Intended use of Cem-Rock, Cem-Rock eXtreme X4 and Cem-Rock eXtreme FLOOR

Product	Use category	Protection of	Climatic conditions use category
Cem-Rock	Type 8	Fire separating assemblies with no load bearing requirements	Type X, Y, Z_1, Z_2
Cem-Rock eXtreme X4 Cem-Rock eXtreme FLOOR	Type 8	Fire separating assemblies with no load bearing requirements	Type Y [1)] and Z_2 [1)]

[1)] Provided only accidental wetting is to be expected.

The provisions made in this European Technical Assessment are based on an assumed intended working life of 25 years provided that the products are subject to climatic conditions as specified in Table 2, appropriate installation and maintenance.

Assessment

Assessment is based on the following test reports:

File No.	Laboratory	Date of Issue	Test standard	Test specimens
211124003SHF-001	Intertek	17/02/2022	EN 12467:2012 + A2:2018	Cem-Rock eXtreme x4: - Freeze/thaw: category B (25 cycles), ratio RL:0.95 - Soak-dry: category B (25 cycles), ratio RL 0.86

200817003SHF-003	Intertek	28/02/2022	EN 12467:2012 + A2:2018	Cem-Rock eXtreme x4: - Dimensional stability - Bending strength - Heat/rain: category A, 50 cycles
160222001SHF-BP-1	Intertek	23/02/2016	EN 12467:2012 + A2:2018	Cem-Rock Cement board - Bending strength - Freeze/thaw: category A, RL 0.96, 100 cycles - Heat/rain: category A, 50 cycles - Resistance to deterioration caused by water, category A, RL 0.92 - Soak/dry: category A, RL 0.95, 50 cycles

The indication given on the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by the Technical Assessment Body issuing this ETA, but is to be regarded only as a means for expressing the expected economically reasonable working life of the product.

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

Table 3. Basic requirements for construction works and essential characteristics

Basic requirement and essential characteristics	EAD clause	Performance
BWR 2. Safety in case of fire		
Reaction to fire	2.2.2.1	Clause 3.1
Resistance to fire	2.2.2.2	Clause 3.2
Durability and serviceability	2.2.2.3 - 2.2.2.7	Clause 3.3
BWR 3. Hygiene, health and the environment		
Water permeability	2.2.2.8	Clause 3.4
BWR 4. Safety and accessibility in use		
Flexural strength	2.2.2.9	Clause 3.5
Dimensional stability	2.2.2.10	Clause 3.6
BWR 6. Energy economy and heat retention		
Thermal resistance	2.2.2.11	No performance assessed
Water vapour transmission coefficient	2.2.2.12	Clause 3.7

3.1. Reaction to fire

Cem-Rock, Cem-Rock eXtreme X4 and Cem-Rock eXtreme FLOOR boards have been tested according to the methods referred to in EN 13501-1 and classified according to Commission Delegated Regulation (EU) No 2016/364. Reaction to fire class of the products is A1.

Assessment

Cem-Rock eXtreme X4, Cem-Rock eXtreme FLOOR: Test report 211019016SHF-06, November 22, 2021 by Intertek Testing Services.

Cem-Rock: Classification report 960/45/204 by Crepim

Conclusion: Requirements set in clause 2.2.2.1 of EAD 350142-00-1106 are met.

3.2. Resistance to fire

Resistance to fire of constructions incorporating Cem-Rock, Cem-Rock eXtreme X4 and Cem-Rock eXtreme FLOOR boards has been tested according to EN 1364-1:2015, EN 1363-1:2020 and EN 1365-2:2014 and classified according to EN 13501-2:2016. Description of the tested construction is presented in Annexes 1 and 2. Results are given in Tables 4 – 7.

Table 4. Steel-stud partition wall with Cem-Rock board on one side and one gypsum board on the other side of the construction

Tested construction	Performance
Asymmetrical non-loadbearing partition wall consisting of steel studs, mineral wool insulation, Cem-Rock building board on one side and gypsum board on one side. Test result is valid for both sides of the construction.	EI 60

Composition of construction:

- Steel frame sole/head track: Steel Formed Sections Ltd. SFS104T4012 Track, dimensions 40 x 104 x 40 mm, thickness 1,2 mm, affixed with No. 8x2" long steel woodscrews c/c 500 mm
- Vertical studs: Steel Formed Sections Ltd. SFS100S12, dimensions 50 x 100 x 50 mm, thickness 1,2 mm, spacing 600 mm, affixed to the sole and head track with No. 8 x 2" steel woodscrews c/c 500 mm
- Gypsum board: British Gypsum FireLine, thickness 15 mm, fixings Ø 3,5 x 25 mm steel countersunk drywall screws c/c 300 mm. Joints scrim taped and skimmed with gypsum joint cement
- Fixing plate backing up the horizontal gypsum board joints: Steel Formed Sections Ltd. Go Frame GFXP-24, dimensions (h x t) 100 x 1,2 mm
- Mineral fibre insulation fitted between the studs: Rockwool Rollbatt 100 mm stone wool insulation, density 25 kg/m^3, thickness 100 mm
- Cem-Rock, thickness 12 mm, fixings Ø 3,9 x 39 mm SB39 steel self-drilling screws c/c 300 mm
- Vertical edge of the frame and the partition sealed with Unifrax Insufrax S mineral fibre blanket, density 128 kg/m^3
- The periphery on both faces of the partition capped with Firewise Intumescent & Acoustic Acrylic Sealant
- Test specimen height x width x thickness: 3000 mm x 2975 mm x 127 mm, installed directly into the restraint frame
- Tested without accessories

Assessment

Assessment is based on the following test reports:

File No.	Laboratory	Date of Issue	Test standard	Tested structure
CFR1601111 CFR1602041	Cambridge Fire Research Ltd	05/02/2016 18/03/2016	EN 1364-1:2015	Non-loadbearing steel-stud partition comprising of steel studs, thermal insulation and gypsum board on one side and Greenspan Cem-Rock cement board on one side.

Conclusion: Requirements set in clause 2.2.2.2 of EAD 350142-00-1106 are met.

Table 5. Steel-stud partition wall with Cem-Rock board on one side and two gypsum boards on the other side of the construction

Tested construction	Performance
Asymmetrical non-loadbearing partition wall consisting of steel studs, mineral wool insulation, Cem-Rock building board on one side and a double layer of gypsum boards on one side. Test result is valid for both sides of the construction.	EI 90

Composition of construction:

- Steel frame sole/head track: Steel Formed Sections Ltd. SFS U 154 mm, dimensions 40 x 154 x 40 mm, thickness 1,2 mm, affixed with Ø 4.2 x 65 mm steel screws c/c 600 mm.
- Vertical studs: Steel Formed Sections Ltd. SFS C 150 mm, dimensions 50 x 150 x 50 mm, thickness 1,2 mm, affixed with Ø 4,2 x 65 mm steel screws c/c 600 mm.
- Gypsum board: a double layer of British Gypsum FireLine gypsum boards, thickness 15 mm, fixings steel countersunk drywall screws: inner layer Ø 3,5 x 25 mm c/c 300 mm, outer layer Ø 3,5 x 38 mm c/c 300 mm. Joints scrim taped and skimmed with gypsum jointing compound
- Backing strap behind the horizontal joints on the outer boards: Steel Formed Sections Ltd. SFS1 Steel strap, dimensions (h x t) 70 x 0,5 mm
- Stone wool insulation fitted between the studs: density 22 kg/m^3, thickness 150 mm
- Cem-Rock, thickness 12 mm, fixings Ø 3,5 x 38 mm steel countersunk drywall screws c/c 200 mm adjacent to a vertical joint, c/c 300 mm elsewhere
- Vertical edge of the frame and the partition sealed with Unifrax Insufrax S mineral fibre blanket, density 128 kg/m^3
- The periphery on both faces of the partition capped with Firewise Intumescent & Acoustic Acrylic Sealant
- Test specimen height x width x thickness: 3000 mm x 2975 mm x 196 mm, installed directly into the restraint frame
- Tested without accessories

Assessment

Assessment is based on the following test reports:

File No.	Laboratory	Date of Issue	Test standard	Tested structure
CFR1706191, Rev1 CFR1706201	Cambridge Fire Research Ltd	22/06/2017 22/06/2017	EN 1364-1:2015	Non-loadbearing steel-stud partition comprising of steel studs, thermal insulation and a double layer of gypsum boards on one side and Greenspan Cem-Rock cement board on one side.

Conclusion: Requirements set in clause 2.2.2.2 of EAD 350142-00-1106 are met.

Table 6. Steel-stud partition wall with Cem-Rock eXtreme X4 board on one side and gypsum board on one side of the construction

Tested constructiontt	Performance
Asymmetrical non-loadbearing partition wall consisting of steel studs, mineral wool insulation, Cem-Rock eXtreme X4 building board on one side and gypsum board on one side. Test result is valid for both sides of the construction.	EI 60

Composition of construction:

- Sole track: SFS 94T1240, thickness 1,2 mm, dimensions 40 x 90 x 40 mm, fixed to the frame with Ø 6 x 45 mm concrete screws
- Head track: SFS 94T2070, thickness 2,0 mm, dimensions 70 x 94 x 70 mm, fixed to the frame with Ø 6 x 45 mm concrete screws
- Vertical studs: SFS90S12, thickness 1,2 mm, dimensions 50 x 90 x 50 mm, spacing 600 mm, fixed with Ø 5,5 x 25 mm steel screws
- Gypsum board: Siniat GTEC Fire Board, thickness 15 mm, density 924 kg/m^3, fixed to the studs with Ø 3,5 x 35 mm drywall screws c/c 300 mm. Horizontal joints: 100 mm wide steel strap fixed to the studs with Ø 5,5 x 25 mm steel screws. In board joints paper joint tape adhered with PANEL REY jointing compound. Jointing compound applied over screw heads and test specimen and test frame joint
- Mineral fibre insulation fitted between the studs: Rockwool Rollbatt stone wool insulation, density 28 kg/m^3, thickness 100 mm
- Cem-Rock eXtreme X4, thickness 12 mm, affixed with SB39 cement board screws c/c 300 mm
- SOUDAL Firecryl FR intumescent acrylic sealant applied on both faces along the periphery between the fixed edges of the metal profiles and the test frame
- Test specimen height x width x thickness: 3000 mm x 2970 mm x 121 mm
- Supporting construction: rigid, high density
- Tested without accessories

Permitted modifications:

1. The construction may be applied up to a height of 4 m, provided that the expansion tolerances increase proportionally

2. Results are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability:

- decrease in height
- increase or decrease wall width
- increase in the thickness of the wall
- increase the thickness of component materials
- decrease the linear dimensions of boards or panels but not thickness
- decrease in stud spacing
- decrease in distance of fixing centres
- increase in the number of horizontal and vertical joints of the type tested

Inclusion of accessories is not allowed

The test result is applicable to high density rigid supporting construction with at least the same fire resistance as the test specimen.

Assessment

Assessment is based on the following reports:

File No.	Laboratory	Date of Issue	Test standard	Tested structure
Test reports 10128/22 10128/22-3 Classification reports	Afiti-Licof	 14/02/2022 14/02/2022 14/02/2022	EN 1364-1:2015	Non-loadbearing steel-stud partition comprising of steel studs, thermal insulation and a double layer of gypsum boards on one side and

10128/22-2 10128/22-4		14/02/2022		Greenspan Cem-Rock eXtreme X4 on one side.

Conclusion: Requirements set in clause 2.2.2.2 of EAD 350142-00-1106 are met.

Table 7. Floor construction including Cem-Rock eXtreme FLOOR board

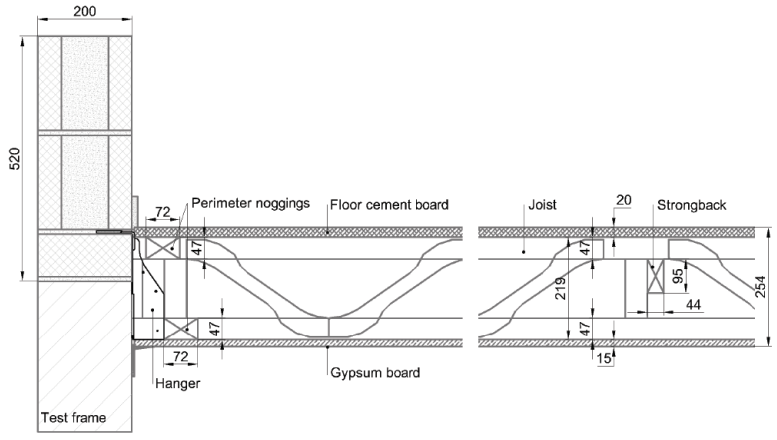
Tested construction	Performance
Wooden floor joist construction made of Cem-Rock eXtreme FLOOR board, SpeceJoists and gypsum plasterboard.	REI 45

Composition of construction from the top (exposed side) to bottom:

- Floor board: Cem-Rock eXtreme FLOOR, thickness 20 mm, edge type tongue and groove, fixed on top of the joists using Cem-Rock FLOOR PU adhesive (used also in all joints) and Ø 4,2 x 60 mm screws c/c 200 mm at the edges and c/c 300 mm at the mid support
- Joist hangers: JHI-75-225
- Joists: SpaceJoist^{TM}, dimensions (l x w x h) 4000 mm x 219 mm x 72 mm, distance between joist 418 mm, fixed to the hangers with Ø 3,8 x 30 mm square twisted joist nails, one nail to each hole on both sides of the hanger
- Strongback: timber, 2950 (length) x 95 (height) x 44 (width), perpendicular to joists direction and to the middle upstand of the joists, fixed to each joist with two Ø 5 x 100 mm timber screws per joist
- Perimeter noggins: timber, 346 (length) x 44 (height) x 75 (width), on top and bottom, located on both edges between each joist, fixed to each joist with Ø 5 mm x 100 mm timber screws per joist
- Gypsum board: SINIAT GTEC 15,0 mm TE Standard Board, thickness 15 mm, density 657 kg/m^3, fixed to the bottom of the joist with Ø 3,5 x 38 mm drywall screws c/c 150 mm. Horizontal joints: 100 mm wide steel strap fixed to the studs with Ø 5,5 x 25 mm steel screws. In board joints paper joint tape adhered with USG SHEETROCK PLUS 3 jointing compound. Jointing compound applied over screw heads and test specimen and test frame joint

Test specimen length x width x thickness: 4000 mm x 2950 mm x 254 mm

Test specimen was loaded with additional load of 153 kg/m^2



Permitted modifications: The maximum moment and shear forces, which when calculated on the same basis as the test load, shall not be greater than those tested.

Assessment

Assessment is based on the following test reports:

File No.	Laboratory	Date of Issue	Test standard	Tested structure
Test report 10094/21	Afiti-Licof	17/11/2021	EN 1365-2:2014	Asymmetrical wooden floor joist construction made of Cem-Rock eXtreme

Classification report 10094/21-2		17/11/2021		FLOOR board, SpeceJoists and gypsum plasterboard ceiling. Cem-Rock eXtreme FLOOR board on the exposed side.

Conclusion: Requirements set in clause 2.2.2.2 of EAD 350142-00-1106 are met.

3.3. Durability and serviceability

Working life of the boards is 25 years in the intended uses related to climatic conditions given in Table 2 provided no more than accidental wetting of products Cem-Rock eXtreme and Cem-Rock Extreme Floor is to be expected.

Assessment

Assessment is based on test reports given in chapter 2.

Conclusion: Requirements in clause 2.2.2.3 - 2.2.2.7 of EAD 350142-00-1106 are met.

3.4. Water permeability

Water permeability of the Cem-Rock boards has been tested according to EN 12467, clause 7.3.3. Board are water impermeable.

Assessment

Assessment is based on:
Cem-Rock: Intertek Testing Services, report no 160222001SHF-BP-1, 23/02/2016. Test result: traces of moisture appeared on the under face of the sheet, no formation of drops of water
Cem-Rock eXtreme X4, Cem-Rock eXtreme FLOOR: Intertek Testing Services, report no 2001817003SHF, 28/02/2022: Test result: traces of moisture appeared on the under face of the sheet, no formation of drops of water.

Conclusion: Requirements in clause 2.2.2.8 of EAD 350142-00-1106 are met.

3.5. Flexural strength

Flexural strength of the boards has been tested according to EN 12467, clause 7.3.2. Results are given in Table 8.

Table 8. Flexural strength of Cem-Rock boards

Cem-Rock board	Thickness	Flexural strength, MOR - wet condition
Cem-Rock	12 mm	6,2 MPa
Cem-Rock eXtreme X4	12 mm	16,8 MPa
Cem-Rock eXtreme FLOOR	20 mm	16,8 MPa

Assessment

Assessment is based on:
Cem-Rock: report no 160222001SHF-BP-1, 23/02/2016 by Intertek Testing Services,
Cem-Rock eXtreme X4, Cem-Rock eXtreme FLOOR: report no 2001817003SHF, 28/02/2022 by Intertek Testing Services

Conclusion: Requirements in clause 2.2.2.9 of EAD 350142-00-1106 are met.

3.6. Dimensional stability

Dimensional stability of Cem-Rock eXtreme X4 and Cem-Rock eXtreme FLOOR boards has been determined according to EN 12467. The change in product length and width is 0,1 %.

Assessment

Test report 200817003SHF-003, 28/02/2022, by Intertek Testing Services

Conclusion: Requirements in clause 2.2.2.10 of EAD 350142-00-1106 are met.

3.7. Water vapour transmission coefficient

Water vapour transmission coefficient (μ) for products Cem-Rock eXtreme X4 and Cem-Rock eXtreme Floor has been tested according to EN ISO 12572, condition C. Result: μ = 19,8.

Assessment

Test report 200817003SHF-003,28/02/2022, by Intertek Testing Services

Conclusion: Requirements in clause 2.2.2.12 of EAD 350142-00-1106 are met.

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

According to the European Commission Decision 99/454/EC as amended, the system of assessment and verification of constancy of performance is System 1.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Eurofins Expert Services Oy.

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by Eurofins Expert Services Oy

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