ROK-ON™

Insulated Building Systems

Specification Document

ROK-ON™ Structural Insulated Sheathing (SIS)

- **ROK-ON™ Structural Fiberglass Reinforced Ceramic Cement Sheathing (FRCC)**
- **ROK-ON™ Structural Insulated Sheathing (SIS)**

Revision 2021

ROK-ON™ Structural Insulated Sheathing (SIS)

1.01. Summary:

Section includes:

ROK-ON™ Fiberglass Reinforced Ceramic Cement Sheathing (FRCC),
ROK-ON™ Structural Insulated Sheathing. (SIS)

All work shall meet applicable codes and standards, the Occupation & Health Safety Act, manufacturers recommendations and good building practice.

1.02. System Description:

ROK-ON™ FRCC is a structural sheathing made from a proprietary formulation of fiberglass reinforced magnesium oxide ceramic cement. Unlike OSB, the product is fire resistant, won't support mold or mildew, is water resistant, bug-proof, freeze/thaw, and impact resistant. ROK-ON™ FRCC can be used as a structural sheathing, skirting, or as backer board for tile, counter tops etc. and competes directly with OSB, DensGlass®, Cement Board, Drywall, and Hardie® Plank, depending on the application. It is available in ¼" (6mm) and ½" (12mm) in 4x8 and 4x9 sheets.

It accepts direct applications of stucco, brick, stone, paint etc. No build-up. It requires no special tools or construction methods. It is fully tested, safe to use, silicate free, hyper-allergenic, inert, has no off gassing, is recyclable, and green.

ROK-ON™ Structural Insulated Sheathing (SIS) is made by laminating an EPS core between 6mm and 12mm ROK-ON™ FRCC which is attached directly to the exterior wall framing. It is a high impact structural sheathing that can be finished directly, with no additional build-up. In most cases can be used as an attachment base for exterior finishes. It can be used both above and below grade.

ROK-ON™ SIS incorporates all of the properties of ROK-ON™ FRCC, yet provide superior insulation and value compared to competing systems.

1.03 Price and Payment Procedures:

ROK-ON™ is manufactured by GDR Global LLC and is a product supplier into projects. Price and payment terms are negotiated on a project-by-project basis. Contact ROK-ON™ for details.

1.04 References:

ROK-ON™ Fiberglass Reinforced Ceramic Cement Sheathing (FRCC)

ASTM E 136-09	Combustibility
ASTM E 84-05	Surface Burning Characteristics
ANSI 2.5	
NFPA 255	
UBC 8-1	
UL 723	
CAN/ULC S124	Surface Burning Over Foam Plastics
ASTM C1185-08	ICC-ES-AC386 Flexural Strength
ASTM C666	Freeze / Thaw Cycling
ASTM 473-07	Humid Deflection
ASTM C1186	Dimension and Tolerance
ASTM C1185-08	ICC-ES-AC386 Moisture Movement
ASTM C1185-08	ICC-ES-AC386 Water Absorption
ASTM E96/E96M	Water Vapor Transmission
ASTM D1037-99	ICC-ES-AC386 Nail Pull Through
ASTM D2394	ICC-ES-AC386 Compression Indentation
ASTM D1037-99	ICC-ES-AC378 Lateral Nail Resistance
ASTM D1037-99	ICC-ES-AC378 Falling Ball Impact
ASTM E 119-08A	Wall Panel Fire Endurance (per assembly)
UL 263	
ASTM E72-05	Structural Wall Assembly (Steel and Wood Studs)

ROK-ON™ Structural Insulated Sheathing (SIS)

ASTM E 136-09	Combustibility
ASTM E 84-05	Surface Burning Characteristics
UL 723	
UBC 8-1	
NFPA 255	
ASTM E84-10 B	Surface Burning Characteristics Over Foam Plastics
CAN/ULC S102	
NFPA 285	Multi Story Fire Test
ASTM E 119-16A	Wall Panel Fire Endurance (per assembly)
CAN/ULC S101-14	
UL 263	
ASTM D1037-99	ICC-ES-AC386 Nail Pull Through
ASTM D1037-99	ICC-ES-AC378 Lateral Nail Resistance
ASTM D2559	Adhesive test
ASTM C271/C272	Foam Test
ASTM 1037-99	Fastener Pull-out Test
ASTM E564-06	Monotonic Shear Steel Stud Assembly
ASTM E2126-11	Cyclic Shear Steel Stud Assembly
ASTM E72-15	Transverse Loading Steel Stud Assembly

Material Data Sheet – ROK-ON™ FRCC/ Panel Systems
All Test reports are available upon request. See below or ROK-ON™ testing overview for results.

1.05. System Description- Testing Results

Physical Properties ROK-ON™ FRCC

BIOLOGICAL PROPERTIES:
Rating of 0 fungus. Incubated for 28 days (ASTM G21-96)
Fungus Resistance of 10 out of 10. Incubated for 28 days (ASTM D3273)
Non-Asbestos
No known carcinogen.
Non-Toxic dust when cut.

MECHANICAL PROPERTIES: (ASTM E-96)
Water Resistant, even submerged will not damage the board.

WATER ABSORPTION (ICC-ES AC 386, ASTM C1185-08)
29.80%

MOISTURE MOVEMENT: (ICC-ES AC 386, ASTM C1185-08)
0.02%

WATER VAPOR TRANSMISSION (ASTM E-96 / E-96M-05)
2.46 Perms

HUMIDIFIED DEFLECTION
Requirement <0.3125 in. Achieved. 053in.

FREEZING / THAWING: (ASTM C 666-B), E-96
25 cycles requirement, Result 50 cycles tested with no damage

FLEXURAL STRENGTH: (ICC-ES AC386, ASTM C1185-08)

Dry Parallel	Requirement 580 Psi	Achieved 1576 Psi
Dry Perpendicular	Requirement 580 Psi	Achieved 2251 Psi
Wet Parallel	Requirement 580 Psi	Achieved 1291 Psi
Wet Perpendicular	Requirement 580 Psi	Achieved 2041 Psi

FLEXURAL STRENGTH: (ASTM C1325-04, ASTM C947-03)

Dry Parallel	Requirement 750 Psi	Achieved 1910 Psi
Dry Perpendicular	Requirement 750 Psi	Achieved 1880 Psi
Wet Parallel	Requirement 750 Psi	Achieved 1763 Psi
Wet Perpendicular	Requirement 750 Psi	Achieved 1934 Psi

NAIL-HEAD PULL THROUGH RESISTANCE OF 125 LB. ASTM D1037-06A, C1325-08 Requirement >90 lb Achieved 292 lb

Physical Properties – FRCC Cont'd

LATERAL NAIL RESISTANCE (ASTM D1037-99) ICC-ES AC378

Dry 3/8" depth:	Requirement 90 lb	Achieved 196 lb
Wet 3/8" depth:	Requirement 90 lb	Achieved 113 lb
Dry 1/2" depth:	Requirement 90 lb	Achieved 261 lb
Wet 1/2" depth:	Requirement 90 lb	Achieved 157 lb
Dry 3/4" depth:	Requirement 90 lb	Achieved 337 lb
Wet 3/4" depth:	Requirement 90 lb	Achieved 209 lb

IMPACT RESISTANCE, COMPRESSION INDENTATION: ICC-ES AC386, ASTM D2394-05 Requirement 1250 Psi at 0.05 in. Achieved 1736 Psi at 0.05 in.

SHEAR BOND STRENGTH: ICC-ES AC386, ANSI A118.1

Dry Set Strength	Requirement > 50 Psi	Achieved 53.7 Psi
Latex Portland Strength	Requirement > 50 Psi	Achieved 58.6 Psi

CHEMICAL PROPERTIES:
Will not react with salty water.
Will not react with bleach.
Contains no heavy metal salts.
Will be damaged if in contact with Hydrochloric Acid

FIRE TEMPERATURE RAISE AND FLAMING ASTM E136-09A
Rated non-combustible, temperature rise within norm and no flaming on all samples.

SURFACE BURNING CHARACTERISTICS: ASTM E-84-05
Flame Spread: 0
Smoke: 0
Test specimens never ignited. Class A rating

FIRE RATED ENDURANCE ASTM E119-08A
WOOD STUDS - 2-hour assembly.
STEEL STUDS - 2-hour assembly.
UL 263
CAN/ULC S102

THERMAL PROPERTIES:

Thermal resistance m^2K/W	0.46
Calculated R-Value	1.5 per ½ inch of thickness.

TRANSVERSE LOAD Positive Pressure: ASTM E72-05

4'x8' w/ 2x4 Steel Studs	237 PSF
4'x8' w/ 2x6 Wood Studs	260 PSF

TRANSVERSE LOAD Negative Pressure: ASTM E72-05

4'x8' w/ 2x4 Steel Studs	102 PSF
4'x8' w/ 2x6 Wood Studs	201 PSF

WET RACKING SHEAR (per assembly) ASTM E72-05

4'x8'w/ 2x4 Steel Studs	7,494 LBS 936.7 PLF
4'x8' w/ 2x6 Wood Studs	5,270 LBS 658.6 PLF

QUALITY CONTROL - Manufactured under approved QC program with inspections by IAS accredited inspection agency (Intertek). Warnock Hershey Certified.

Physical Properties – ROK-ON™ SIS

SURFACE BURNING CHARACTERISTICS: ASTM E-84-10B (30 min)
Flame Spread: 0 Smoke: 0
Over foam plastic test specimens never ignited.

FIRE TEMPERATURE RAISE AND FLAMING ASTM E136-09A
Rated non-combustible, temperature rise within norm and no flaming on all samples. 30-minute test.

MULTI-STORY FIRE TEST NFPA 285 (40 min test)
The assembly met and exceeded all requirements of the standard.

FIRE RATED ENDURANCE ASTM E119-08A Both directions. STEEL STUDS – 2-hour assembly (rainscreen) 1-hour assembly (panel only)
UL 263
CAN/ULC S102

LATERAL NAIL RESISTANCE (ASTM D1037-99) ICC-ES AC378

Dry 3/8" depth:	Requirement 90 lb	Achieved 196 lb
Wet 3/8" depth:	Requirement 90 lb	Achieved 113 lb
Dry 1/2" depth:	Requirement 90 lb	Achieved 261 lb
Wet 1/2" depth:	Requirement 90 lb	Achieved 157 lb
Dry 3/4" depth:	Requirement 90 lb	Achieved 337 lb
Wet 3/4" depth:	Requirement 90 lb	Achieved 209 lb

NAIL-HEAD PULL THROUGH RESISTANCE OF 125 LB. ASTM D1037-06A, C1325-08 Requirement >90 lb Achieved 292 lb

SCREW PULL-OUT RESISTANTANCE. ASTM D1037-06A #12 – 14 Hex Tek screw. Average Pull out - 220.9 lb. 301 lb (dependent on fastener type)

TRANSVERSE FLEXURAL LOAD: ASTM E72-15

350S150-33	3.5" 20 ga. Steel Stud	183.1 psf
350S150-43	3.5" 18 ga. Steel Stud	261.2 psf

WIND AND SEISMIC SHEAR: ASTM E564-06/ASTM 2126-11 AVERAGE PEAK LOAD (PLF)
350S162-33 3.5" 20 ga. (33 KSI) Steel Stud

Wind	831 plf.
Seismic	943

QUALITY CONTROL
Manufactured under approved QC program with inspections by IAS accredited inspection agency. (Intertek) Warnock-Hershey Criteria.

1.06. Administrative Requirements

1. Review of project plans with Architect / Engineer / General Contractor to review engineering requirements and use within the building.
2. Pre-meeting with architect/engineer on connection details.
3. Written confirmation from engineer that ROK-ON™ meets the local design and structural requirements for the project.
4. Pre-installation meeting with all installers prior to work beginning to review connection and finishing details.
5. Confirmation of delivery.

1.07. Submittals

Material Data Sheets ROK-ON™
Material Data Sheets Foam Mfg.
Material Data Sheets Adhesive Mfg.
Test Results - Intertek, QAI, NTA, TCNA Laboratories
ROK-ON™ Installation and Reference Manual
ROK-ON™ Product Brochure
ROK-ON™ Warranty document
ROK-ON™ panel samples – as requested
Product Liability Insurance Certificate (supplied upon request)

1.08 Quality Assurance

ROK-ON™ uses a robust quality control process in its plants. Each panel of ROK-ON™ SIS is stamped with its quality assurance mark. This certifies that ROK-ON™ has passed its stringent quality control program.

This certifies ROK-ON™ as non-combustible (ASTM-136) and that it has passed Intertek's stringent *independent* quality control specifications. All ROK-ON LLC products are subject to a quality audit process that is monitored quarterly.

1.09. Delivery Storage and Handling

1. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
2. Off-load products from truck and handle using forklift or other means to prevent damage.

3. All ROK-ON™ products should be stored horizontally and shall be fully supported in storage and prevented from contact with the ground. Stack on pallets or on 4" supports with a minimum of 4 per stack. Stack no more than 3 pallets vertically.
4. All products shall be fully protected from weather. Protect against exposure to rain, water, dirt, mud, and other residue that may affect performance. Cover with breathable protective wraps. Products shall be stored in a protected area.
5. Wear approved eye protection and dust mask when cutting. Use approved eye protection when installing the panels.

1.10. Field Conditions

1. While there are no harmful ingredients in ROK-ON™ it does provide dust when cutting.
2. Ensure product is cut in a well-ventilated area. Always wear eye protection and dust mask when cutting panels.
3. Make sure panels are free from dirt or debris before installation. Panels can simply be rinsed off.
4. Ensure panels are dry before installation of any finish material.
5. Ensure panels are free from dust prior application of any finish material.
6. Do not proceed with application of finish materials prior to, or immediately after inclement weather conditions, nor if adverse weather is forecast within the next 24 hours.

1.11. Warranty:

ROK-ON™ is warrantied against product defects and workmanship for a period of 20 years. Warranties concerning the installation of the material are solely the responsibility of the applicator / contractor. See warranty information.

PART 2 - PRODUCTS

2.01. Manufacturers, Suppliers, and Certified Distributors.

All components of the ROK-ON™ Building System shall be manufactured and or distributed by GDR Global LLC or one of its authorized distributors. No substitute of materials is authorized without prior written approval of GDR Global LLC.

ROK-ON™ Building Systems

1420 West Walnut Hill Lane Suite 2. Irving, Texas USA 75038

775-750-2142

SIS Plant Addresses:

Silver Springs Nevada, USA
600 Lake Street
Silver Springs, NV. 89502

Ensenada, Mexico
Km 103.7 Carretera Ensenada – Tecate
Lomas De Sauzal
Ensenada, BC 22760 Mexico

2.02. Materials

SIS consist of the following:

- 12mm ROK-ON™ FRCC.
- 6mm ROK-ON™ FRCC
- Certified EPS core complying with ASTM C 578 standard. (Third party foam mfg.to supply testing documents). Alternative phenolic foam core available upon request.
- Adhesives shall be in conformance with ICC ES A05 – Acceptance criteria for sandwich panel.

2.03. Panel Types

1. ROK-ON™ FRCC (4'x8')

Thickness	1/2"
Weight	80 lbs
R-Value	R-1.5

2. ROK-ON™ SIS (4'x8')

Thickness	2.75"
Weight	120 lbs
EPS Core (1# Density)	2"
R-Value	R-10.5

2.04. FABRICATION - FASTENERS

Connection and Fastenings

1. ROK-ON™ accepts common fasteners. Pneumatic and power tools are recommended. See ROK-ON™ product guides for specifications.
2. ROK-ON™ FRCC (12mm) is connected to a steel frame using ¾" #8 galvanized self-tapping countersinking screws w/ nibs. See Installation guidelines for screw pattern, window, and opening details.
3. ROK-ON™ FRCC (12mm) is connected to a wood frame using 2" #8 galvanized self-tapping countersinking wood screws w/ nibs. See Installation guidelines for screw pattern, window, and opening details.

4. ROK-ON™ SIS Panels are connected to steel frame using 3 1/2" # 12 galvanized self-tapping counter-sinking screws w/ nibs. See Installation guidelines for screw pattern, window, and opening details.

PART 3 - EXECUTION

3.01. Job Conditions

1. ROK-ON™ FRCC and SIS systems can be installed over steel or wood studs, above or below grade. See ROK-ON™ FRCC or SIS installation details.

3.02. Examination

1. Examine panels for any defects prior to installation. Pull any damaged panels for return back to ROK-ON™.
2. Ensure framing is free from debris prior to installation.
3. Ensure that flashing at all openings, roof/wall intersections, terminations and other areas as required, have been installed prior to the installation of the panel onto the frame.
4. Ensure panel is free from dust before applying any finish material to it.
5. Do not start work until conditions are corrected.

3.03. Preparation

1. Ensure ROK-ON™ panels are free from dirt, dust and debris prior to installation.
2. Ensure proper ventilation is available where panels will be cut.
3. Co-operate and co-ordinate with other trades abutting to the work of this trade. Ensure components of other trades are in place before application of ROK-ON™ begins.

3.04. ROK-ON™ SIS Installation (See installation manual for additional details)

The installation guidelines herein are only informational in nature and may not be appropriate for use in all applications. It is the sole responsibility of the architect, or specifier to identify risks associated with any particular building design and to make any appropriate adjustments, or modifications to the installation guidelines below. ROK-ON™ installation and any modifications should always be done according to appropriate building codes. ROK-ON™ requires the final finish be installed within 180 days of its installation. Contact ROK-ON™ representative for more information.

Install ROK-ON™ in strict accordance with approved mock-up, ROK-ON™ installation guidelines, and shop drawings.

Cutting ROK-ON™ SIS / FRCC

1. All ROK-ON™ products can be cut using common construction tools, including power saws.
2. Cutting ROK-ON™ produces dust. Always cut in a well-ventilated area, and/or use vacuum to capture dust while cutting.
3. Always wear a proper dust mask when cutting or drilling ROK-ON™. While there are no harmful ingredients in the product, dust can be harmful.
4. Eye protection and gloves are recommended to prevent injuries.

Drilling ROK-ON™ SIS

1. Openings can be made with most common tools, including power drills, jig saws, RotoZips, routers, and key-hole saws. There are no special requirements. Use carbide-tipped blades when possible.
2. Always wear a proper dust mask when cutting or drilling ROK-ON™. While there are no harmful ingredients in the product, dust can be harmful.
3. Eye protection and gloves are recommended to prevent injuries.

Fastening Details

1. ROK-ON™ SIS can be installed on both conventional wood and steel framing.
2. ROK-ON™ has a ½" (12mm) front face and a ¼" (6mm) back face. The panel should ***always*** be installed so that the 6mm face is next to the studded frame and the 12mm face is towards the exterior of the wall. This is to ensure maximum fire protection while providing the best wind load characteristics.
3. Fastener dimensions are dependent on the thickness of the ROK-ON™ SIS to be installed and the substrate (wood or steel framing). Always ensure adequate penetration to the framing material. Use fastener manufacturers' recommendation for penetration details.

Fastener Schedule for 2 ¾" ROK-ON Structural Insulated Sheathing

Location	Structure	Fastener Type	Spacing
Exterior Wall	Wood Framing	4 ½" #12 Galvanized self-tapping, course thread, wood screw with nibs	6" Perimeter 12" Field or as engineered for wind loads.
Exterior Wall	Steel Framing	3 ½" # 10 Galvanized Self-Drilling Counter-sinking Screw w/ Nibs.	6" Perimeter 12" Field or as engineered for wind loads.

Positioning and attachment to framing. Contact ROK-ON™ representative with questions.

1. Work left to right when possible when installing. (not required)
2. Start with initial panel leveled and screwed into studs.
3. Panels can be placed either vertically or horizontally on a frame.
4. The vertical joint between panels can fall on a stud or between studs.
   a. Where the joint meets a stud, the panel must be supported by a full stud for attachment.
   b. Joint detail to follow below.
4. Attach panel to frame using specified fasteners according to specified attachment schedule and engineering specifications for wind loads.
5. Position fasteners no closer than 3/8" from the edge of the panel.

6. The use of power drills is preferred in fastening. Set the torque so that the fastener is driven just past flush with the panel surface but not allowed to penetrate entirely through the FRCC face.
7. Use ROK-ON™ approved fasteners only.
8. As next panel is attached, ensure the panels are butted together with no gap wherever possible.

Joint Preparation – Front of framed assembly.

There are many different panel-to-panel joint details depending on the wall assembly, finishing details and location. This is for demonstration purposes only. Contact ROK-ON™ representative for specific question on joint detailing.

1. All joints and penetrations must be properly sealed for water penetration according to the specific details for each project.
2. The panel is now ready to finish, depending on the architectural details and finishing elements required by the architect. Brick veneer, stone veneer, acrylic stucco, metal panels can be attached directly to the panel. Reference the specific manufacturer's specification, installation, and warranty requirements.

3.05. Maintenance

Once the panel is installed according to ROK-ON™ specifications, no further maintenance should be required other than to ensure the finish joints and penetrations continue to be water sealed according the final finish manufacturers specifications and warranty requirements.

Any openings or cracks that appear over time need to be repaired to eliminate water penetration. Reference manufacturers specification, installation and warranty details.

Contact ROK-ON™ for questions
Richard Chase
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