Specifier Note: The purpose of this guide specification is to assist the Specifier in correctly specifying Innovation MgOTM floor underlayment sheathing and its installation. The Specifier needs to edit these guide specifications to fit the needs of specific projects. Contact US MgO Company to assist in appropriate product selections. Throughout the guide specification, there are Specifier Notes to assist in editing the file. Red text in brackets indicates a selection needs to be made by the Design Professional. It is not intended to be a stand-alone document. This guide specification will need to be carefully reviewed for appropriateness for the given project and edited accordingly to comply with project-specific requirements.

Innovation MgOTM Floor Panels can replace fire-retardant-treated plywood, OSB, cementitious, and gypsum sheathing panels, amongst others. Innovation MgOTM Floor Panels can be used in fire-resistant assemblies. Floor assemblies that are required to be fire-resistant rated and/or load-bearing need to be installed per the published ESL from ICC-ES.

Visit our website for supporting documentation: [www.USMgO.co](http://www.USMgO.co).

**SECTION 06 16 26 – UNDERLAYMENT**

1. GENERAL
	1. SECTION INCLUDES
		1. Flooring underlayment panels, manufacturer, components, and accessories.
	2. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* - Delete any paragraphs below not applicable to project manual.

* + 1. Section 05 20 00 – Metal Joists
		2. Section 05 40 00 – Cold Formed Metal Framing
		3. Section 06 11 00 – Wood Framing
		4. Section 06 10 00 – Rough Carpentry
		5. Section 09 10 00 – Metal Support Assemblies
		6. Section 09 30 00 - Tile
		7. Section 09 60 00 - Flooring
	1. REFERENCE STANDARDS
		1. ASTM E84 - “Standard Test Method for Surface Burning Characteristics of Building Materials”.
		2. ASTM D1037 - “Standard Test Method for Evaluating Properties of Wood-based Fiber and Particle Panel Materials”, Section 15: Nail Head Pull Through.
		3. Testing Application Standard (TAS) 203-94 - “Criteria for Testing Products Subject to Cyclic Wind Pressure Loading”.
		4. ASTM E72 - “Standard Test Method of Conducting Strength Tests of Panels for Building Construction”.
		5. ASTM E96 - “Test Method for Water Vapor Transmission of Materials”.
		6. ASTM G21 - “Standard Test Method for Determining Resistance of Synthetic Polymeric Materials to Fungi”.
		7. ASTM D1761 - “Standard Test Methods for Mechanical Fasteners in Wood, Modified for Shear”.
		8. ASTM E119 - “Standard Test Methods for Fire Tests of Building Construction and Materials”.
		9. ICC-ES Acceptance Criteria (AC) 386 – “Acceptance Criteria for Fiber-Reinforced Magnesium-Oxide-Based Sheets”.
		10. ANSI/AISI S100 – “North American Specification for the Design of Cold-Formed Steel Structural Members”.
		11. ANSI/AISI S210 – “North American Specification for Cold-Formed Steel Framing – Floor and Roof System Design”.
		12. ANSI/AISI S214 – “North American Specification for Cold-Formed Steel Framing – Truss Design”.
		13. ANSI/AISI S230 – “Standard for Cold-Formed Steel Framing – Prescriptive Method for One- and Two-Family Dwellings”.
	2. ACTION SUBMITTALS
		1. See Section 01 30 00 – Administrative Requirements for submittal procedures.
		2. Manufacturer’s Product Data: Submit data sheets for structural sheathing and accessories. Include instructions for handling, storage, installation, and protection.
		3. Manufacturer’s Installation Instructions: Indicate special handling criteria, installation sequence, cleaning procedures, and standard installation procedures. Include manufacturer’s standard details of joints, corners, and penetrations.
		4. Evaluation Reports and Listings: From ICC-ES for sheathing products.
		5. Product Certifications: From manufacturer indicating that sheathing products comply with indicated Performance Criteria.
		6. [Delegated Design for load-bearing assembly, including calculations and details signed and sealed by the properly licensed professional responsible for their design.]
		7. Warranty: Sample unexecuted copy of manufacturer’s product warranty.
	3. CLOSEOUT SUBMITTALS
		1. Warranty: Executed copy of manufacturer’s product warranty.
	4. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Manufacturer shall be a company that regularly manufactures and assembles structural sheathing in its own fabrication and owned facilities.
		2. Field Quality Control Plan:
			1. Visually inspect structural subfloor prior to beginning installation. Ensure tolerance and conditions are acceptable prior to beginning installation.
			2. Photographically document observations and maintain record of observations.
		3. Installer Qualifications: Company specializing in performing the work of this Section with minimum [3] [4] [5] years of experience.
	5. DELIVERY, STORAGE, AND HANDLING
		1. Transport and handle items in accordance with manufacturer’s instructions.
		2. Coordinate deliveries to avoid delay in, or impediment of, progress of the work.
		3. Store packaged materials in original containers in a horizontal orientation with seals unbroken and labels, including grade seal, intact until time of use, in accordance with manufacturer’s instructions. Do not stack beyond manufacturer’s specific requirements.
		4. Store installation system materials in a dry location and handle in a manner to prevent chipping, breakage, and contamination.
		5. Store structural sheathing boards off ground, under cover, and keep dry. Pallets shall sit on even gravel or concrete surface when able.
		6. Maximum pallet stack height shall be six (6) pallets.
		7. Long term panel storage shall be kept in a warehouse condition.
		8. Protect latex additives, organic adhesives, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.
		9. Outdoor storage prior to installation requires a waterproof tarpaulin and elevated storage above ground level a minimum of four (4) inches if removed from factory pallet shipping platform.
	6. SEQUENCING
		1. Coordinate with the installation of subflooring and framing as specified.
		2. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
		3. Sequence the installation of panels for underlayment with related work specified in other sections to ensure that the floor assemblies are protected against damage or abuse during and after construction.
	7. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.
		2. Do not install products under environmental conditions outside manufacturer's absolute limits. Project site should be kept clean. Frequently blow off floors, walls, tools, and other areas that may collect dust residue from cutting.
		3. Framing shall be structurally sound, free from bows, twists, or other malformations, installed correctly, and in compliance with local building code requirements and project specifications. Damaged or incorrect framing shall be replaced before installation of panels.
		4. Subfloor structural panels shall be installed to framing with appropriate fasteners, adhesives, and methodology as described by subfloor manufacturer. The floor shall be cleaned and free of debris prior to installation of underlayment.
		5. Do not install boards that are frozen or contain frost. If adhesive is being used temperature shall follow limitations of adhesive manufacturer.
		6. Prior to the application of toppings, acoustical mats and finished flooring, panels must be conditioned at the same temperature and conditions as required by each respective product manufacturer for at least 48 hours.
		7. Panels shall be regularly cleared of snow, ice, and standing water during open jobsite conditions. Use caution not to gouge, scrape or damage panels.
		8. Do not use salt or other chemicals for anti or de-icing purposes.
1. PRODUCTS

	1. BASIS OF DESIGN
		1. US MgO Company: Wilmington, NC 28401. [www.USMgO.co](http://www.USMgO.co). 1-855-MgO4YOU (646-4968). Info@USMgO.co.

\*\* NOTE TO SPECIFIER \*\* - Delete any paragraphs below not applicable to project manual.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.
	1. PERFORMANCE REQUIREMENTS

\*\* NOTE TO SPECIFIER \*\* - Delete any paragraphs below not applicable to project manual.

\*\* NOTE TO SPECIFIER \*\* - Innovation MgOTM Floor Panels for underlayment, as a product, are fire-resistant and can be used as a component of a tested fire-resistant assembly. A similar assembly can be used to meet or exceed STC/IIC requirements for dwelling separation. Contact US MgO Company to obtain a current list of tested assemblies or refer to Innovation MgOTM Fire and Sound Assemblies handbook for assemblies that include finished floor options with STC, IIC, and HIIC values.

Fire resistance assembly and sound rating information is for example only. Coordinate project specific requirements, and coordinate with other specification sections to include each assembly component. Include graphic assembly in drawings. ICC-ES design numbers listed below are for Innovation MgOTM Floor Panels.

* + 1. Component of Fire-Resistant Assembly in accordance with the ASTM E119.
	1. MAGNESIUM OXIDE UNDERLAYMENT SHEATHING PANELS
		1. Physical Characteristics:
			1. ICC-ES Classified and Audited Production.
			2. Type: Magnesium Oxide (MgO) Board.
			3. Thickness: Nominal 1/2” (12 mm).
			4. Panel Size: Nominal 48 inches (1220 mm) by 96 inches (2440 mm).
			5. Panel Edges: Square profile.
		2. Panels identified with stamp or label including report holder, manufacturing facility, production date, and ICC-ES report number.
		3. Surface burning characteristics tested in accordance with ASTM E84 to be Class A.
			1. Flame Spread Index: 0 – 25
			2. Smoke Developed Index: 0 – 450
		4. Mold Resistance: No mold growth observed per ASTM G21.
		5. Weather Exposure: Resists weathering when left exposed for up to 180 days.
		6. Flexural Strength tested in accordance with ASTM C1185 to have the minimum values:
			1. Machine Direction: 2,855 psi (dry); 2,980 psi (wet)
			2. Cross Direction: 3,410 psi (dry); 3,049 psi (wet)
	2. PANEL FASTENERS
		1. Fasteners:
			1. Shall be approved panel fasteners by manufacturer.
			2. Fasteners are corrosion resistant type with bugle countersunk heads.
				1. Install with head flush with board. Do not overdrive fasteners.
			3. Fasteners must be spaced a minimum of 3/8-in. from all edges and no closer than 2-in. from a corner.
			4. Fasteners must be spaced a minimum of 3/8-in. from all edges and no closer than 2-in. from a corner.
		2. Nails:
			1. Nails must be minimum 0.113 x 2-in. (50.8 mm) Ring shank nails with a maximum of 24-in. o.c. with fasteners spaced a maximum of 6-in. o.c. around the perimeter of the panel, and 12-in. o.c. at the intermediate stud locations in the field of the panel.

\*\* NOTE TO SPECIFIER \*\* - Subflooring should be selected based on the required design loads with a minimum floor span rating of 24 inches on center and a performance category of 23/32. Subflooring is frequently included in Section 06 16 00 – but may be included elsewhere. Edit Section reference according to specific project, and appropriately specify structural wood subflooring.

Refer to Section 06 16 00 - Sheathing.

* 1. ACCESSORIES
		1. Adhesives: Panels may have a 1/4" bead of adhesive applied before placement over joist as desired. Do not allow adhesive to skin over. Use ASTM D 3498 compliant adhesives. Approved manufacturers:
			1. PEMCO 5100 non-flammable, solvent free, zero V.O.C., polyurethane adhesive.
			2. BOSTICH Heavy Duty Construction Adhesive.
			3. OSI SF450 Heavy Duty Subfloor & Construction Adhesive.
			4. LOCTITE PL 400 Subfloor Adhesive/ Loctite PL Premium Polyurethane Adhesive.
1. EXECUTION
	1. EXAMINATION
		1. Examine wood structural panel subfloor installation to determine that work is ready to receive underlayment. Proceed with underlayment work once conditions meet requirements.
		2. Verify that surfaces and conditions are ready to accept the work of this section.
		3. Do not begin installation until framing members have been properly prepared.
	2. PREPARATION
		1. Protect surrounding area from possible damage during installation of structural sheathing.
		2. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
		3. If deficiencies exist, consult Architect. Correct deficiencies in accordance with manufacturer’s recommendations.
		4. Beginning installation constitutes Contractor’s acceptance of existing conditions.
	3. INSTALLATION
		1. Install in accordance with manufacturer’s instructions, requirements of applicable evaluation reports and fire-resistant assemblies, and requirements of authorities having jurisdiction.
		2. Comply with applicable building codes for wind, seismic, vibration, snow, concentrated, impact, and uniformly distributed live-loads and other loading requirements as determined by the project architect and engineer.
		3. Install underlayment boards in accordance with manufacturer's written instructions, requirements of applicable [Evaluation Reports;] [Fire-Resistant Assembl*y;*] [Sound rated assembly], and requirements of authorities having jurisdiction.
		4. Fully support underlayment panels on wood structural panel subflooring.
		5. Maintain designed expansion joints through underlayment. Do not bridge designed expansion joints in structural panel subfloor.
		6. Underlayment Installation:
			1. Glue and nail to wood structural subflooring and framing beyond per manufacturer's approved installation instructions.
			2. Apply adhesive in accordance with manufacturer’s instructions.
				1. Place underlayment with smooth side exposed. Butt underlayment tight to adjacent panels.
				2. Offset underlayment edges a minimum of (4) inches from structural subflooring edges.
				3. Ensure full contact between structural floor panels for underlayment.
			3. Mechanically fasten underlayment board.
				1. Space Fasteners: 6 inches on center at all edges and 12 inches on center in the field.
				2. Locate fasteners 1/2 inches from board edges and 2 inches from panel corners.
				3. Fasten underlayment to subfloor and framing beyond.
				4. Ensure fasteners sit flush or slightly below panel surface,

\*\* NOTE TO SPECIFIER \*\* - Coordinate fastener spacing with requirements of assembly. Indicated spacing MUST be adjusted accordingly to meet shear and/or fire requirements.

* 1. PROTECTION
		1. Protect installed products until completion of project.
		2. Cover the top and edges of unfinished sheathing work to protect it from the weather and to prevent accumulation of water in the panels.
		3. Wet panels shall be allowed to completely dry prior to application of any covering materials or treatments.
		4. Repair or replace damaged products before Substantial Completion.
	2. PREPARATION OF FINISH FLOOR COVERINGS

\*\* NOTE TO SPECIFIER \*\* - Floor flatness requirements may vary depending on type of flooring. Identify project specific requirements for flooring materials and include in each finish section affected by Underlayment Section. Wording of this Preparation Article can be included in each associated finish Section.

* + 1. Remove dust, dirt and debris from underlayment surface. Ensure panel surface is free from water, oil, grease and other contaminants.
		2. Verify underlayment mechanical fasteners are flush with panel face or slightly below.
		3. Identify and correct imperfections in the surface and repair damage as indicated above.
		4. Proceed with specific finish preparation prior to installation of flooring finish.

END OF SECTION 06 16 26