

**Use of FastenMaster® HeadLOK® Fasteners
to Attach Cladding and/or Furring to Wood Framing
through Foam Sheathing**

TER No. 1009-01

**OMG, Inc.
d/b/a/ FastenMaster**

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DIVISION: 06 00 00 – WOOD, PLASTICS, AND COMPOSITES

Section: 06 02 00 – Design Information
Section: 06 05 23 – Wood, Plastic, and Composite Fastenings
Section: 06 11 00 – Wood Framing
Section: 06 12 00 – Structural Panels
Section: 06 12 19 – Shear Wall Panels
Section: 06 16 00 – Sheathing
Section: 06 17 00 – Shop-Fabricated Structural Wood

1. Product Evaluated:

- 1.1. FastenMaster® HeadLOK® Heavy Duty Flathead Fasteners
- 1.2. For the most recent version of this Technical Evaluation Report (TER), visit drjengineering.org. For more detailed state professional engineering and code compliance legal requirements and references, visit drjengineering.org/statelaw. DrJ is fully compliant with all state professional engineering and code compliance laws.
- 1.3. This TER can be used to obtain product approval in any country that is an IAF MLA Signatory (all countries found [here](#)) and covered by an [IAF MLA Evaluation](#) per the [Purpose of the MLA](#) (as an example, see [letter to ANSI](#) from the Standards Council of Canada). Manufacturers can go to jurisdictions in the U.S., Canada and other [IAF MLA Signatory Countries](#) and have their products readily approved by authorities having jurisdiction using [DrJ's ANSI accreditation](#).
- 1.4. Building code regulations require that evaluation reports are provided by an approved agency meeting specific requirements, such as those

DrJ is a Professional Engineering Approved Source

 **Learn more about DrJ's Accreditation**

- DrJ is an ISO/IEC 17065 accredited product certification body through ANSI Accreditation Services.
- DrJ provides certified evaluations that are signed and sealed by a P.E.
- DrJ's work is backed up by professional liability insurance.
- DrJ is fully compliant with IBC Section 1703.

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found in [IBC Section 1703](#). Any agency accredited in accordance with ANSI ISO/IEC 17065 meets this requirement within ANSI's scope of accreditation. For a list of accredited agencies, visit ANSI's [website](#). For more information, see [drjcertification.org](#).

- 1.5. Requiring an evaluation report from a specific private company (i.e. ICC-ES, IAPMO, CCMC, DrJ, etc.) can be viewed as discriminatory and is a violation of international, federal, state, provincial and local anti-trust and free trade regulations.
- 1.6. DrJ's code compliance work:
 - 1.6.1. Conforms to code language adopted into law by individual states and any relevant consensus based standard such as an ANSI or ASTM standard.
 - 1.6.2. with accepted engineering practice, all professional engineering laws and by providing an engineer's seal DrJ takes professional responsibility for its specified scope of work.

2. Applicable Codes and Standards:¹

- 2.1. 2012, 2015 and 2018 International Building Code (IBC)
- 2.2. 2012, 2015 and 2018 International Residential Code (IRC)
- 2.3. AWC/TR12 – General Dowel Equations for Calculating Lateral Connection Values
- 2.4. ASCE/SEI 7 – Minimum Design Loads for Buildings and Other Structures
- 2.5. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- 2.6. ASTM A510 – Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel
- 2.7. NDS – National Design Specification for Wood Construction

3. Performance Evaluation:

- 3.1. The HeadLOK[®] fasteners were evaluated, using their tested allowable design values described below, as an alternate means of attaching cladding systems over exterior mounted rigid foam insulation. The following properties were evaluated:
 - 3.1.1. Dowel bending strength of HeadLOK[®] fasteners for use as an alternative to wood screws or lag screws in shear, where the fasteners are applied horizontally and the load is applied vertically.
 - 3.1.2. Withdrawal strength of HeadLOK[®] fasteners for use as an alternative to wood screws or lag screws in tension where the fasteners are applied horizontally and the load is applied vertically causing the fastener to pull out.
 - 3.1.3. Head pull through strength of HeadLOK[®] fasteners for use as an alternative to wood screws or lag screws in tension where the fasteners are applied horizontally and the load is applied vertically causing the fastener head to pull through.
 - 3.1.4. Shear strength of the HeadLOK[®] fasteners for use as an alternative to wood screws or lag screws in shear where the fasteners are applied horizontally and the load is applied vertically either parallel or perpendicular to wood grain.
- 3.2. Any code compliance issues not specifically addressed in this section are outside the scope of this evaluation.

4. Product Description and Materials:

- 4.1. HeadLOK[®] fasteners are manufactured with carbon steel wire conforming to ASTM A510 with a minimum ultimate tensile strength of 60 ksi.
- 4.2. HeadLOK[®] fasteners are manufactured using a standard cold-formed process followed by a heat-treating process.

¹ Unless otherwise noted, all references in this code compliant technical evaluation report (TER) are from the 2018 version of the codes and the standards referenced therein, including, but not limited to, ASCE 7, SDPWS and WFCM. This product also complies with the 2000-2015 versions of the IBC and IRC and the standards referenced therein. As required by law, where this TER is not approved, the building official shall respond in writing, stating the reasons this TER was not approved. For variations in state and local codes, if any see [Section 8](#).

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- 4.3. Fasteners are approved for use in exterior conditions and in pressure-treated wood. The proprietary coating has been tested and found to exceed the protection provided by code approved hot-dipped galvanized coatings meeting ASTM A153 ([IBC Section 2304.10.5²](#) and [IRC Section R317.3](#)).
- 4.4. Fasteners are approved for use in interior conditions.
- 4.5. Fasteners are approved for use in fire-retardant-treated lumber, provided the conditions set forth by the fire-retardant-treated lumber manufacturer are met, including appropriate strength reductions.
- 4.6. In-plant quality control procedures under which the HeadLOK[®] fasteners are manufactured are audited through an inspection process performed by an approved agency.
- 4.7. HeadLOK[®] fasteners are available in the styles and sizes³ shown in [Table 1](#).

Product Availability		
Length	Product SKU	Quantity per Box
2 ⁷ / ₈ "	FMHLGM278 -250	500
3 ³ / ₄ "	FMHLGM334 -250	250
4 ¹ / ₂ "	FMHLGM412 -250	250
5"	FMHLGM005 -250	250
5 ¹ / ₂ "	FMHLGM512 -250	250
6"	FMHLGM006 -250	250
6 ¹ / ₂ "	FMHLGM612 -250	250
7"	FMHLGM007 -250	250
7 ¹ / ₂ "	FMHLGM712 -250	250
8"	FMHLGM008 -250	250
8 ¹ / ₂ "	FMHLGM812 -250	250
9"	FMHLGM009 -250	250
9 ¹ / ₂ "	FMHLGM912 -250	250
10"	FMHLGM010 -250	250
11"	FMHLGM011 -250	250
12"	FMHLGM012 -250	250
13"	FMHLGM013 -250	250
14"	FMHLGM014 -250	250
15"	FMHLGM015 -250	250
16"	FMHLGM016 -250	250
18"	FMHLGM018 -250	250

Table 1: HeadLOK[®] Fastener Availability

5. Applications:

- 5.1. HeadLOK[®] fasteners are used to attach wall sheathing, furring and/or cladding to the wall framing through an intermediate layer of foam sheathing to provide resistance to transverse loads in conventional light-frame wood construction.
 - 5.1.1. See [Table 2](#) for a prescriptive solution to fastener spacing requirements for various installation conditions.
- 5.2. HeadLOK[®] fasteners are used to support the dead load of wall sheathing, furring and/or cladding when connected to the wall framing through an intermediate layer of foam sheathing.

² [2012 IBC Section 2304.9.5](#).

³ This TER only evaluates the use of HeadLOK[®] fasteners when connecting through up to 4" of foam sheathing into wood framing. Connections through greater than 4" of foam sheathing require special design. When connecting to steel framing members, contact FastenMaster[®] for installation instructions.

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5.2.1. See [Table 2](#) for fastening requirements for various siding weight and framing conditions.

5.3. Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience and technical judgment.

5.4. Design Procedure:

5.4.1. Calculate the fastener spacing.

Step 1: Determine the spacing between studs or framing members, either 16" or 24" o.c.

Step 2: Calculate the correct thickness of rigid foam, up to 4", needed to obtain the required insulation effect or R-value.

Step 3: Choose the furring or sheathing (substrate) material that the cladding will be affixed to:

1. Minimum $\frac{3}{4}$ " x $3\frac{1}{2}$ " wood or Wood Structural Panel (WSP) furring
2. Minimum $\frac{3}{8}$ " WSP sheathing

Ensure that the substrate allows for cladding connections that are compliant with the cladding manufacturer's installation and connection instructions and meet the applicable building code.

Step 4: Determine the actual weight for the cladding materials being installed, per square foot, as given by the cladding manufacturer's specifications.

Note:

1. Typical cladding weights are 1.3 psf for vinyl siding, 2.5 psf for cement board siding, 11 psf for Portland cement stucco, and 25 psf for adhered masonry veneer; use actual weights for materials installed.
2. Wood furring may add up to 1 psf of additional weight; wood sheathing may add up to 1.5 psf, depending on thickness.

Step 5: Using these four values together, find the proper fastening pattern of between 6" and 24" o.c. using [Table 2](#).

Recommended Fastener Spacing														
Stud Spacing (in.)	Foam Thickness (in.)	Maximum Allowable Cladding Weight (psf) to be Supported												
		10	15	20	25	30	10	15	20	25	30			
		Fastener Spacing (in.) When Using Minimum $\frac{3}{4}$ " x $3\frac{1}{2}$ " Wood or WSP Furring ³					Fastener Spacing (in.) When Using Minimum $\frac{3}{8}$ " WSP Sheathing ³							
16	1													
	1.5	24 o.c.		16 o.c.		12 o.c.		12 o.c.						
	2				12 o.c.					8 o.c.				
	3			12 o.c.		8 o.c.					6 o.c.			
	4	16 o.c.		12 o.c.				6 o.c.				NA		
24	1	24 o.c.		16 o.c.		12 o.c.								
	1.5				12 o.c.					12 o.c.		8 o.c.		
	2	16 o.c.		12 o.c.		8 o.c.		6 o.c.					6 o.c.	
	3						6 o.c.				8 o.c.		6 o.c.	
	4	12 o.c.				6 o.c.		NA		8 o.c.		6 o.c.		NA

1. Wood framing (studs) shall be a minimum of 2" nominal thickness.
2. Wood framing and furring shall be minimum Spruce-Pine-Fir or any species with specific gravity, G, of 0.42 or greater.
3. Wood framing, furring, and sheathing shall be designed by others and shall be of adequate size, species, and grade to resist design loads and requirements in accordance with the applicable building code.
4. Furring may be installed vertically or horizontally and shall be installed at the same on-center spacing as the studs. All fasteners shall be installed through the furring and into the studs with a minimum 2" of penetration. Alternately, where the furring is installed horizontally, and where the required fastener spacing is 8" o.c. or 12" o.c., the furring may be installed at 16" o.c. or 24" o.c., respectively, provided two (2) fasteners are installed at stud location. Likewise, where the fastener spacing is 6" o.c., the furring may be installed horizontally at 12" o.c. and two (2) fasteners used at each stud. Where multiple fasteners are used, furring or sheathing (substrate) shall be of adequate size to provide proper edge, end, and fastener spacing distances.
5. Maximum allowable cladding weight shall include weight of furring, sheathing, cladding and other supported materials.

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6. Furring type and thickness shall be selected based on the cladding manufacturer's installation requirements (e.g., required fastener penetration into furring).
7. When using horizontal furring or where durability of the furring is a concern due to moisture between the cladding and the sheathing, consideration should be given to using preservative treated furring.

Table 2: Recommended Fastener Spacing for Various Thicknesses of Foam Sheathing, Stud Spacing & Cladding Weight when Connected to Wood Studs Using HeadLOK® Fasteners^{4,5}

5.4.2. Check for wind resistance.

Step 1: Using the information derived from Steps 1-5 in [Section 5.4](#), determine the allowable design wind pressure using HeadLOK® fasteners from [Table 3](#).

Allowable Design Wind Pressure														
Furring or WSP Installation Condition	Min. 1x4 Wood Furring ² 16" o.c. studs				Min. 1x4 Wood Furring ² 24" o.c. studs				Min. 3/8" WSP ² 16" o.c. studs			Min. 3/8" WSP ² 24" o.c. studs		
HeadLOK® Fastener Spacing in Furring or Sheathing (in.)	24	16	12	8	24	16	12	8	12	8	6	12	8	6
Connection Allowable Design Wind Pressure (PSF)⁵	49	73	98	147	33	49	65	98	49	73	98	33	49	65
<p>1. Wood framing and furring shall be minimum Spruce-Pine-Fir or any species with specific gravity, G, of 0.42 or greater.</p> <p>2. Wood framing, furring, and sheathing shall be designed by others and shall be of adequate size, species, and grade to resist design loads and requirements in accordance with the applicable building code.</p> <p>2. Connection allowable design wind pressure applies to connection resistance only and shall meet or exceed design wind pressure.</p> <p>3. Where required by the applicable building code, adequate resistance of connections and materials to seismic forces shall be provided based on local seismic ground motion hazard and the weight of the supported cladding system.</p> <p>4. For use with the Allowable Stress Design load combinations of ASCE 7-10.</p>														

Table 3: Allowable Design Wind Pressure for Connections Using HeadLOK® Fasteners

Step 2: Based on the design wind speed (110-150 mph) and wind exposure category (B-D) specific to your region, determine the design wind pressure to be resisted for your application from [Table 4](#).

Example Design Wind Loads						
Design Wind Speed (V_{ult}) (mph) & Exposure	110/B	115/B	120/B	130/B	140/B	150/B
	-	-	-	110/C	120/C	130/C
	-	-	-	-	110/D	120/D
Design Negative Wind Pressure Load to be Resisted (psf)⁶	17.5	19.1	20.8	24.4	29.1	34.5
<p>1. Mean roof height shall not exceed 30' (measured vertically from grade plane to middle of roof slope).</p> <p>2. Refer to applicable building code for wind exposure descriptions (B = typical suburban/wooded terrain; C = open flat terrain; D = ocean/lake exposure).</p> <p>3. Where topographic effects occur (e.g., wind speed up due to hill-top exposure), refer to the building code for wind load.</p> <p>4. Tabulated wind pressures are from ASCE 7-10, for wall corner zones. For lesser values away from wall corners, refer to the building code.</p> <p>5. Tabulated wind pressures assume 100% of wind load is resisted by the cladding/foam sheathing or furring/foam sheathing layer and are not otherwise distributed or shared with other wall assembly layers.</p> <p>6. Wind pressures are given as 0.6W as defined in ASCE 7-10 for comparison to the allowable Design Wind Pressure of the fasteners as shown in Table 3.</p>						

Table 4: Example of Components & Cladding Design Wind Loads

Step 3: Verify that the allowable design wind pressure using HeadLOK® fasteners ([Table 3](#)) meets or exceeds the design wind pressure for your project ([Table 4](#)).

5.4.3. Design Example:

Given

Foam Sheathing Thickness:	3"
Cladding Material:	Fiber cement lap siding
Cladding Weight from Manufacturer Data:	3 psf
Design Wind Speed/Exposure:	120/B

⁴ For cladding system weights exceeding 25 psf with any thickness of foam sheathing, a design professional should be consulted.

⁵ [Table 2](#) solutions are limited to 4" maximum thickness of foam sheathing. Special design required for thicknesses of foam sheathing greater than 4". For cladding attachment over foam sheathing exceeding a 4" thickness, a design professional should be consulted.

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Seismic Design Category:

B (exempt)

Wood Framing:

2x6 at 24" o.c.

Solution

Step 1: Choose the furring type and orientation that will be used. We'll use 1x4 (min.) wood furring in a vertical orientation over studs in this example ([Figure 1a](#)).

Step 2: Consult siding manufacturer data for siding weight (3 psf) and add 1 psf for furring. Total = 4 psf.

Step 3: Using [Table 2](#), min. 1x4 wood furring at 24" o.c. attached to studs at 24" o.c. supporting up to 10 psf requires maximum 16" o.c. fastener spacing.

Step 4: From [Table 3](#), the connection allowable design wind pressure resistance is 49 psf.

Step 5: Check the applicable building code to verify the wind pressure resistance required. [Table 4](#) gives an example of the *IBC* wind pressures (*ASCE 7-10*), and this example's connection resistance of 49 psf exceeds the required resistance of 34.5 psf for wind speeds of 150 mph in Exposure B, 130 mph in Exposure B, and 120 mph in Exposure D.

Step 6: The minimum length of HeadLOK® fastener required is 0.75" (furring) + 3" (foam) + 2.0" (penetration) = 5.75". Select a 6" HeadLOK® fastener.

Note:

1. Add length for thickness of additional sheathing material layer behind foam, if included.
2. Verify that furring provides adequate thickness for siding fastener per code or siding manufacturer's installation instructions, or specify an appropriate siding fastener for use in ¼"-thick furring.
3. Verify that furring is adequate to resist the required design loads.

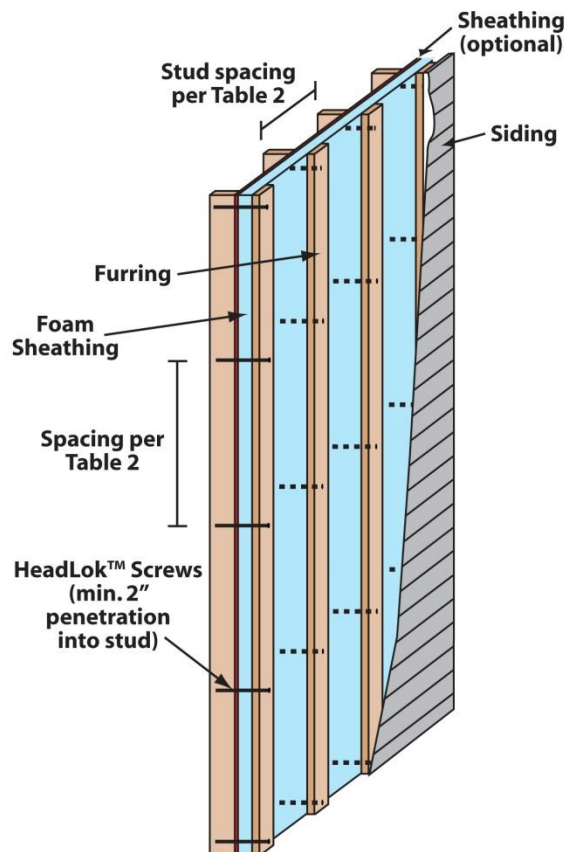


Figure 1a: Illustration of Exterior Wall Covering Assembly with Vertically Oriented Furring

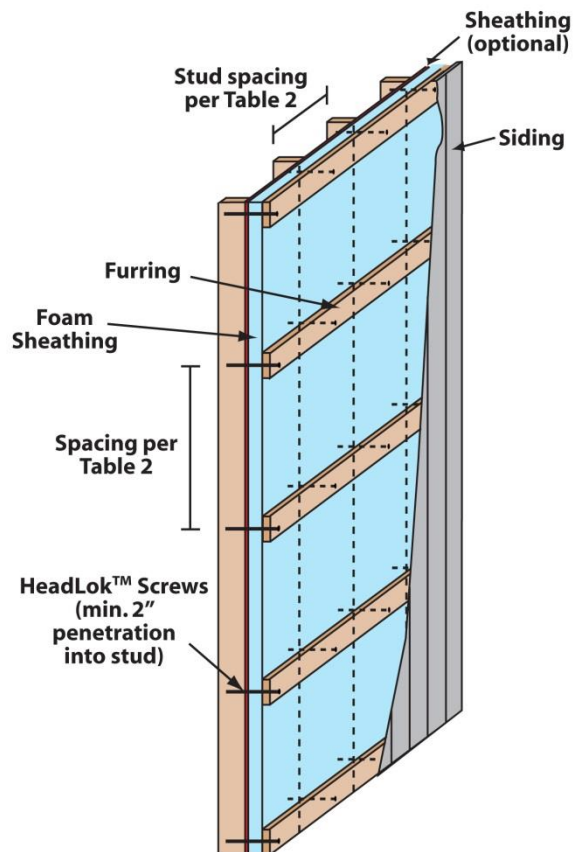


Figure 1b: Illustration of Exterior Wall Covering Assembly with Horizontally Oriented Furring

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6. Installation:

- 6.1. Installation shall comply with the manufacturer's installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.
- 6.2. Add up the total thickness of furring, rigid insulation and sheathing, then select the appropriate length of HeadLOK® fastener (see [Table 1](#)) that will attach these combined materials and provide a minimum 2" penetration into the wood framing.
- 6.3. Using a high torque ½" drill, drive the HeadLOK® through the center of the furring strip and into the insulation and wall framing.
- 6.4. Fasteners should be aligned perpendicular to the face of the wall stud so that the point engages the center of the wall stud and at a minimum distance of 3" from the end of the stud or furring material.
- 6.5. Fasteners must be installed in a manner to avoid over-driving yet snug enough to remove any gaps between the layers of materials being fastened
- 6.6. [Figure 1a](#) and [1b](#) provide example graphics of two types of furring installations as a guide.

7. Test and Engineering Substantiating Data:

- 7.1. Testing conducted for the Foam Sheathing Coalition, the Steel Framing Alliance and the New York State Energy Research and Development Authority (NYSERDA).
- 7.2. Testing conducted for the Foam Sheathing Coalition by Progressive Engineering, Inc.; *Evaluation of Siding Attachment Methods Using Various Materials*, Test Report #2010-128; dated 3/9/2010.
- 7.3. HeadLOK® fastener design property calculations for HeadLOK® Screws based on *TR-12*, *NDS* and NYSEDA reports; Crandell; 2010.
- 7.4. HeadLOK® fastener performance from the FastenMaster® Technical Bulletin for HeadLOK® fasteners.
- 7.5. FastenMaster® installation instructions for HeadLOK® fasteners.
- 7.6. *Cladding Attachment Over Thick Exterior Insulating Sheathing*; P. Baker, P. Eng, and R. Lepage, Building Science Corporation; January 2014.
- 7.7. *Initial and Long-Term Movement of Cladding Installed Over Exterior Rigid Insulation*; Peter Baker; Building Science Corporation; September 2014.
- 7.8. The product(s) evaluated by this TER fall within the scope of one or more of the model, state or local building codes for building construction. The testing and/or substantiating data used in this TER is limited to buildings, structures, building elements, construction materials and civil engineering related specifically to buildings.
- 7.9. The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This TER assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.
- 7.10. Some information contained herein is the result of testing and/or data analysis by other sources, which DrJ relies on to be accurate, as it undertakes its engineering analysis.
- 7.11. DrJ has reviewed and found the data provided by other professional sources are credible. The information in this TER conforms with DrJ's procedure for acceptance of data from approved sources.
- 7.12. DrJ's responsibility for data provided by approved sources conforms with [IBC Section 1703](#) and any relevant professional engineering law.
- 7.13. Where appropriate, DrJ relies on the derivation of design values, which have been codified into law through codes and standards (e.g., IRC, WFCM, IBC, SDPWS, NDS, ACI, AISI, PS-20, PS-2, etc.). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g. lumber, steel, concrete, etc), DrJ relies upon

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grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8. Findings:

- 8.1. When used and installed in accordance with this TER and the manufacturer's installation instructions, HeadLOK® fasteners are acceptable for use as an alternative material, design and method of construction for the attachment of furring, sheathing or cladding over foam sheathing and into wood framing.
- 8.2. HeadLOK® fasteners evaluated herein and installed in accordance with this TER meet the requirements of the listed editions of the *IRC* for positive and negative wind pressure resistance.
- 8.3. HeadLOK® fasteners evaluated herein and installed in accordance with this TER meet the requirements of the listed editions of the *IRC* for lateral shear strength to support cladding materials installed over foam sheathing.
- 8.4. HeadLOK® fasteners evaluated herein and installed in accordance with this TER meet the requirements of the listed editions of the *IBC* for positive and negative wind pressure resistance.
- 8.5. HeadLOK® fasteners evaluated herein and installed in accordance with this TER meet the requirements of the listed editions of the *IBC* for lateral shear strength to support cladding materials installed over foam sheathing.
- 8.6. Use of HeadLOK® fasteners to connect bracing materials in braced wall panels or shear walls is outside the scope of this TER.
- 8.7. [IBC Section 104.11](#) ([IRC Section R104.11](#) and [IFC Section 104.9](#) are similar) states:

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code. ... Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.
- 8.8. This product has been evaluated with the codes listed in [Section 2](#), and is compliant with all known state and local building codes. Where there are known variations in state or local codes that are applicable to this evaluation, they are listed here:
 - 8.8.1. No known variations
- 8.9. This TER uses professional engineering law, the building code, ANSI/ASTM consensus standards and generally accepted engineering practice as its criteria for all testing and engineering analysis. DrJ's professional engineering work falls under the jurisdiction of each state Board of Professional Engineers, when signed and sealed.

9. Conditions of Use:

- 9.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
- 9.2. Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the code official for review and approval.
- 9.3. Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., Owner, Registered Design Professional, etc.).
- 9.4. HeadLOK® fasteners covered by this TER shall be installed in accordance with this TER and the manufacturer's installation instructions.
- 9.5. HeadLOK® fastener spacing shall not exceed [Table 2](#) for the installation conditions considered.
- 9.6. For conditions not covered in this TER, connections shall be designed in accordance with accepted engineering practice.

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- 9.7. Manufacturer's installation instructions shall be followed as provided in [Section 6](#) and at www.fastenmaster.com/details/product/HeadLOK-heavy-duty-flathead-fastener.html.
- 9.8. HeadLOK® fasteners are produced by OMG, Inc. at their facility located in Agawam, Massachusetts.
- 9.9. HeadLOK® fasteners are produced under a quality control program subject to periodic inspections in accordance with [IBC Section 1703.5.2](#).
- 9.10. Install fasteners prior to utility installations in exterior walls to avoid accidental penetration of utilities (e.g. electrical wiring, plumbing, etc.).
- 9.11. Foam sheathing shall be minimum Type II (expanded polystyrene) or Type X (extruded polystyrene) per *ASTM C578* or Type 1 (polyiso) per *ASTM C1289*.
- 9.11.1. Types with greater compressive strength are acceptable.
- 9.12. Ensure furring or sheathing material provides adequate substrate and thickness for the application of the siding fastener per the code requirements for siding application and the siding manufacturer's installation instructions.
- 9.12.1. For example, if the siding manufacturer requires the fastener for the siding to penetrate more than ¾" into the furring, a 1" x 4" furring strip (actual dimension of ¾" x 3 ½") would not be adequate, and a thicker furring strip, such as a 2" x 4", would be required.
- 9.13. Design
- 9.13.1. Building Designer Responsibility
- 9.13.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer for the Building and shall be in accordance with [IRC Section R106](#) and [IBC Section 107](#).
- 9.13.1.2. The Construction Documents shall be accurate and reliable and shall provide the location, direction and magnitude of all applied loads and shall be in accordance with [IRC Section R301](#) and [IBC Section 1603](#).
- 9.13.2. Construction Documents
- 9.13.2.1. Construction Documents shall be submitted to the Building Official for approval and shall contain the plans, specifications and details needed for the Building Official to approve such documents.
- 9.14. Responsibilities
- 9.14.1. The information contained herein is a product, material, detail, design and/or application TER evaluated in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering practice, experience and technical judgment.
- 9.14.2. DrJ TERs provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated sections.
- 9.14.3. The engineering evaluation was performed on the dates provided in this TER, within DrJ's professional scope of work.
- 9.14.4. This product is manufactured under a third-party quality control program in accordance with [IRC Section R104.4](#) and [R109.2](#) and [IBC Section 104.4](#) and [110.4](#).
- 9.14.5. The actual design, suitability and use of this TER, for any particular building, is the responsibility of the Owner or the Owner's authorized agent, and the TER shall be reviewed for code compliance by the Building Official.
- 9.14.6. The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

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10. Identification:

- 10.1. FastenMaster® HeadLOK® Screws described in this TER are identified by a label on the board or packaging material bearing the manufacturer's name, product name, TER number, and other information to confirm code compliance.
- 10.1.1. The fasteners are identified by the designation, "HeadLOK™" on the packaging. The head of each fastener is marked with an "F" followed by a number corresponding to the length of the fastener.
- 10.1.2. The packaging shall include OMG's name and address, fastener size, third-party inspection agency, and TER number.
- 10.2. Additional technical information can be found at fastenmaster.com.

11. Review Schedule:

- 11.1. This TER is subject to periodic review and revision. For the most recent version of this TER, visit drjengineering.org.
- 11.2. For information on the current status of this TER, contact [DrJ Engineering](#).



- [Mission and Professional Responsibilities](#)
- [Product Evaluation Policies](#)
- [Product Approval – Building Code, Administrative Law and P.E. Law](#)