



CERTIFICATION



Approved. Sealed. Code Compliant.

Technical Evaluation Report

TER 1609-08

**SFS Group USA, Inc. ConnexTite™
Fasteners**

SFS Group USA, Inc.

Product:

**SFS Group USA, Inc.
ConnexTite™ Fasteners**

Issue Date:

July 10, 2017

Revision Date:

November 4, 2021

Subject to Renewal:

October 1, 2022



COMPANY
INFORMATION:

SFS Group USA, Inc.

1045 Spring St
Wyomissing, PA 19610-1747

Phone: 610-376-5751

us.construction@sfsintec.biz

us.sfs.com

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

SECTION: 06 05 23 - Wood, Plastic, and Composite Fastenings

1 PRODUCT EVALUATED¹

- 1.1 SFS Group USA, Inc. ConnexTite™ Fasteners

2 APPLICABLE CODES AND STANDARDS^{2,3}

2.1 Codes

- 2.1.1 *IBC—15, 18, 21: International Building Code®*
- 2.1.2 *IRC—15, 18, 21: International Residential Code®*

2.2 Standards and Referenced Documents

- 2.2.1 *AISI S904: Standard Test Methods for Determining the Tensile and Shear Strength of Screws*
- 2.2.2 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*
- 2.2.3 *ASTM A153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware*
- 2.2.4 *ASTM A510: Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel*
- 2.2.5 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials*
- 2.2.6 *ASTM F1575: Standard Test Method for Determining Bending Yield Moment of Nails*
- 2.2.7 *ASTM F1941: Standard Specification for Electrodeposited Coatings on Mechanical Fasteners*

3 PERFORMANCE EVALUATION

- 3.1 SFS Group USA, Inc. ConnexTite™ carbon steel fasteners were tested and evaluated to determine their structural resistance properties, which are used to develop reference design values for allowable stress design (ASD). The following conditions were evaluated:
 - 3.1.1 Withdrawal strength in accordance with *ASTM D1761*
 - 3.1.2 Bending yield in accordance with *ASTM F1575*

¹ For more information, visit drjcertification.org or call us at 608-310-6748.

² Unless otherwise noted, all references in this TER are from the 2021 version of the codes and the standards referenced therein. This material, design, or method of construction also complies with the 2000-2018 versions of the referenced codes and the standards referenced therein.

³ All terms defined in the applicable building codes are italicized.

- 3.1.3 Tensile strength in accordance with *AISI S904*
- 3.1.4 Head pull-through in accordance with *NDS*
- 3.1.5 Lateral resistance in accordance with *ASTM D1761*
- 3.2 Any code compliance issues not specifically addressed in this section are outside the scope of this TER.
- 3.3 Any engineering evaluation conducted for this TER was performed within DrJ's ANAB "accredited ICS code scope" and/or the defined professional engineering scope of work on the dates provided herein.

4 PRODUCT DESCRIPTION AND MATERIALS

- 4.1 The product evaluated in this TER is shown in Figure 1, Figure 2, Figure 3, and Figure 4.

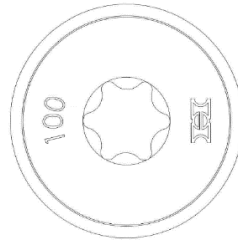


FIGURE 1. SFS GROUP USA, INC. CONNEXTITE™ FLANGE HEAD DETAIL

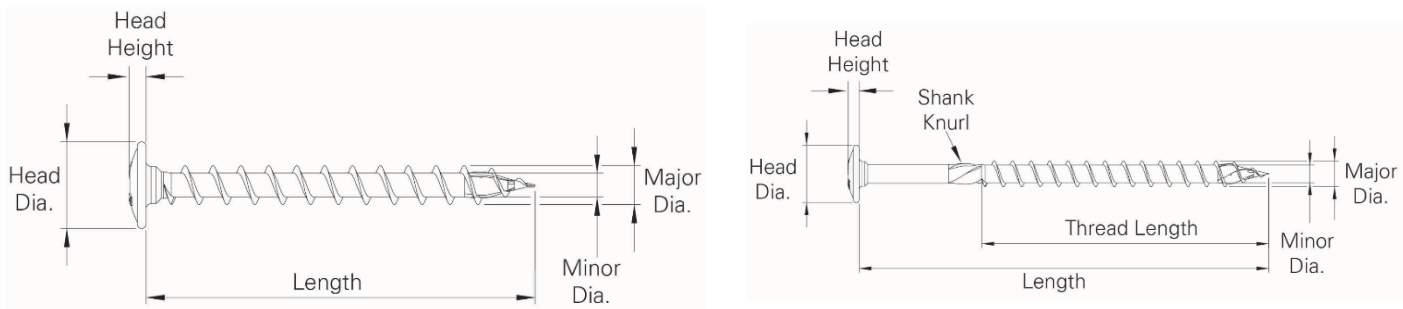


FIGURE 2. SFS GROUP USA, INC. CONNEXTITE™ FLANGE HEAD FULLY THREADED AND PARTIALLY THREADED FASTENER DETAILS

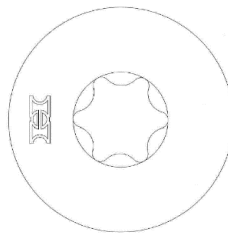


FIGURE 3. SFS GROUP USA, INC. CONNEXTITE™ COUNTERSINK HEAD DETAIL

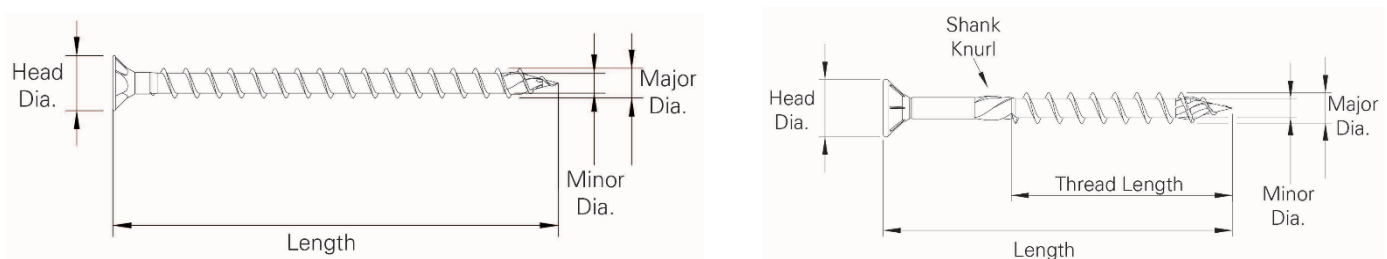


FIGURE 4. SFS GROUP USA, INC. CONNEXTITE™ COUNTERSINK HEAD FULLY THREADED AND PARTIALLY THREADED FASTENER DETAILS

- 4.2 SFS Group USA, Inc. ConnexTite™ fasteners are made of cold-formed, heat-treated, carbon steel.
- 4.3 Fasteners are available in lengths up to 19¾" inches.
- 4.4 Fasteners may be treated with either a proprietary corrosion resistant coating or a zinc plating.
- 4.5 **Corrosion Resistant Fasteners**
- 4.5.1 Fasteners are designed for exterior use and may be used where fasteners are required to exhibit corrosion resistance when exposed to adverse environmental conditions and/or in preservative treated wood subject to the limitations of Section 9.
- 4.5.2 Fasteners are coated with a proprietary coating system that meets or exceeds the corrosion protection of hot-dipped galvanizing per *ASTM A153* in accordance with *IBC Section 2304.10* and *IRC Section R317.3*.
- 4.5.3 Fasteners are alternatives to hot-dip-zinc galvanized fasteners.
- 4.5.4 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 **Zinc-plated Fasteners**
- 4.6.1 Fasteners are zinc-plated per *ASTM F1941*.
- 4.6.2 Zinc-plated fasteners are approved for interior, dry use only.
- 4.7 The fasteners evaluated in this TER are set forth in Table 1. For additional fastener sizes, refer to Appendix A.

TABLE 1. FASTENER SPECIFICATIONS

Fastener Name	Nominal Fastener Diameter (in)	Head (in)		Shank Diameter ¹ (in)	Thread Diameter (in)		Nominal Bending Yield, f_{yb} , (psi)		Allowable Fastener Strength (lbs)	
		Diameter	Height		Minor ²	Major	Transition Zone	Shank	Tensile	Shear
ConnexTite™ Flange Head	¼	0.552	0.094	0.173	0.148	0.244	201,611	237,010	970	485
	5/16	0.709	0.148	0.228	0.207	0.315	167,894	178,866	1810	905
	¾	0.877	0.161	0.279	0.253	0.393	156,064	203,056	2545	1275
ConnexTite™ Countersink Head	¼	0.457	-	0.173	0.148	0.244	201,611	237,010	970	485
	5/16	0.583	-	0.228	0.207	0.315	167,894	178,866	1810	905
	¾	0.728	-	0.279	0.253	0.393	156,064	203,056	2545	1275

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

1. Shank diameter based on manufactured thickness. Finished dimensions are larger in the plated condition due to the proprietary coatings added.

2. Minor thread diameter value is calculated as the average of the upper and lower tolerances.

5 APPLICATIONS

5.1 General

- 5.1.1 SFS Group USA, Inc. ConnexTite™ fasteners are self-tapping fasteners used for connections in conventional light-frame construction and provide resistance against withdrawal, axial, and shear loads. See Section 6 for installation requirements.
- 5.1.2 SFS Group USA, Inc. ConnexTite™ fasteners can be used in applications including timber construction work (staircase construction and interior finishing), structural and general timber construction work and on-rafter insulation and façade attachment.
- 5.1.3 SFS Group USA, Inc. ConnexTite™ fasteners are installed without lead holes, as prescribed in *NDS*.
- 5.1.4 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and good technical judgment.

5.2 Design

- 5.2.1 Design of SFS Group USA, Inc. ConnexTite™ fasteners is governed by the applicable code and the provisions for dowel-type fasteners in *NDS*.
- 5.2.2 Unless otherwise noted, adjustment of the design stresses for duration of load shall be in accordance with the applicable code.

5.3 SFS Group USA, Inc. ConnexTite™ Fastener Reference Withdrawal Design Values

- 5.3.1 The design provisions for withdrawal noted in *NDS* Table 12.2B apply to SFS Group USA, Inc. ConnexTite™ fasteners, unless otherwise noted in this TER. Reference withdrawal design values for SFS Group USA, Inc. ConnexTite™ fasteners in select lumber species are specified in Table 2.

TABLE 2. CONNEXTITE™ FASTENER REFERENCE WITHDRAWAL DESIGN VALUES FOR FACE GRAIN APPLICATIONS

Nominal Fastener Diameter (in)	Allowable Withdrawal Design Values by Species (lbs/in)		
	Species (Specific Gravity)		
	SPF (0.42)	DF (0.50)	SP (0.55)
1/4	95	135	220
5/16	120	180	255
3/8	130	205	280

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Values are stated in lbf/in of thread engagement.
- Values shall be adjusted by all applicable adjustment factors per *NDS* Section 11.3 for wood screws.
- Fastener penetration is the threaded length embedded in the main member, including the tip.

5.4 SFS Group USA, Inc. ConnexTite™ Fastener Head Pull-Through Design Values

- 5.4.1 The reference design values for head pull-through for SFS Group USA, Inc. ConnexTite™ fasteners are specified in Table 3.

TABLE 3. CONNEXTITE™ FASTENER REFERENCE HEAD PULL-THROUGH DESIGN VALUES

Min. Side Member Thickness (in)	Nominal Fastener Diameter (in)	Head Diameter Measured (in)	Allowable Head Pull-Through by Species (lbs)					
			Species (Specific Gravity)					
			SPF (0.42)		DF (0.50)		SP (0.55)	
			Flange	Countersink	Flange	Countersink	Flange	Countersink
3/4	1/4	0.552	155	130	220	185	265	225
	5/16	0.705	195	165	275	235	335	280
	3/8	0.877	250	205	355	290	430	355
1 1/2	1/4	0.552	310	265	440	370	535	450
	5/16	0.705	390	330	550	465	670	565
	3/8	0.877	500	410	710	585	860	705

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Values shall be adjusted by all applicable adjustment factors per *NDS* Section 11.3 for wood screws.



5.5 SFS Group USA, Inc. ConnexTite™ Fastener Reference Lateral Design Values – Face Grain Applications

5.5.1 The reference lateral design values for shear load perpendicular and parallel to grain for SFS Group USA, Inc. ConnexTite™ fasteners are specified in Table 4 and Table 5.

TABLE 4. CONNEXTITE™ FASTENER REFERENCE LATERAL DESIGN VALUES USING DIMENSIONAL LUMBER

Fastener Head Type	Nominal Fastener Diameter (in)	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbs)									
					Species (Specific Gravity)									
					SPF (0.42)		DF (0.50)		SP (0.55)					
					Z Para	Z Perp	Z Para	Z Perp	Z Para	Z Perp				
Flange	1/4	2 ³ / ₈	1 ¹ / ₂	7/8	115	90	140	110	160	125				
		2 ³ / ₄		1 ¹ / ₄	130	105	165	135	190	155				
		3 ¹ / ₈		1 ¹ / ₂	145	115	175	140	190	155				
		4		2 ¹ / ₂										
		≥4 ³ / ₄		3 ¹ / ₄										
	5/16	2 ³ / ₄		1 ¹ / ₄	155	125	215	170	525	550				
		3 ¹ / ₈		1 ⁵ / ₈	175	140	245	195						
		4		2 ¹ / ₂	195	155								
		4 ³ / ₄		3 ¹ / ₄										
		≥5 ¹ / ₂		4										
	3/8	3 ¹ / ₈		1 ⁵ / ₈	180	145	250	200	300	240				
		4		2 ¹ / ₂	220	175	280		315	255				
		4 ³ / ₄ "		3 ¹ / ₄										
		≥5 ¹ / ₂		4										
		Countersink		1/4	2 ³ / ₈	7/8	115		90	140	110	160	125	
2 ³ / ₄	1 ¹ / ₄				130	105	165	135	190	155				
3 ¹ / ₈	1 ⁵ / ₈				145	115	175	140						
3 ¹ / ₂	2													
≥4	2 ¹ / ₂													
5/16	3 ¹ / ₈			1 ⁵ / ₈	175	140	245	195	285	225				
	3 ¹ / ₂			2	195	155								
	≥4			2 ¹ / ₂										
3/8	3 ¹ / ₈			1 ⁵ / ₈	180	145	250	200	300	240				
	4			2 ¹ / ₂	220	175	280	220	315	255				
	≥4 ³ / ₄			3 ¹ / ₄										

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity, and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
- Values shall be adjusted by all applicable adjustment factors per NDS.

TABLE 5. CONNEXTITE™ FASTENER REFERENCE LATERAL DESIGN VALUES USING ENGINEERED LUMBER

Fastener Head Type	Nominal Fastener Diameter (in)	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbs)	
					Species (Specific Gravity)	
					LVL or LSL (0.50)	
					Z Para	Z Perp
Flange	1/4	2	1 1/4	3/4	135	105
		2 3/8		1 1/8	155	125
		2 3/4		1 1/2	165	135
		2 3/4	1 1/2	1 1/4	165	135
		4		2 1/2	175	140
		3 1/8		1 3/8	175	140
	5/16	2 3/4	1 1/4	1 1/2	215	170
		2 3/4	1 1/2	1 1/4	215	170
		4		2 1/2	245	195
		5 1/2		4	245	195
		3 1/8	1 3/4	1 3/8	235	190
		4 3/4		3	270	215
	3/8	4	1 1/2	2 1/2	280	220
		5 1/2		4	280	220
		4 3/4	1 3/4	3	300	240
Countersink	1/4	2 3/8	1 1/4	1 1/8	155	125
		2 3/4		1 1/2	165	135
		2 3/4	1 1/2	1 1/4	165	135
		3 1/2		2	175	140
		4 3/8		2 7/8	175	140
		5 7/8		4 3/8	175	140
		3 1/8	1 3/4	1 3/8	175	140
		3 1/2		1 3/4	175	140
	5/16	3 1/8	1 1/4	1 7/8	225	180
		4	1 1/2	2 1/2	245	195
		5 1/2		4	245	195
		3 1/8	1 3/4	1 3/8	235	190
		3 1/2		1 3/4	270	215
		4 3/4		3	270	215
	3/8	3 1/8	1 1/4	1 7/8	260	205
		4	1 1/2	2 1/2	280	220
		5 1/2		4	280	220
		3 1/2	1 3/4	1 3/4	280	225

Fastener Head Type	Nominal Fastener Diameter (in)	Fastener Length (in)	Side Member Thickness (in)	Min. Penetration into Main Member (in)	Lateral Design Values (lbs)	
					Species (Specific Gravity)	
					LVL or LSL (0.50)	
					Z Para	Z Perp
		4¾		3	300	240

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections where both members are of the same specific gravity, and the fastener is oriented perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
- Values shall be adjusted by all applicable adjustment factors per *NDS*.

5.6 SFS Group USA, Inc. ConnexTite™ Fastener Reference Lateral Design Values – Metal Side Plate

5.6.1 The reference lateral design values for shear load perpendicular and parallel to grain with a metal side plate for SFS Group USA, Inc. ConnexTite™ fasteners are specified in Table 6.

TABLE 6. CONNEXTITE™ FASTENER REFERENCE LATERAL DESIGN VALUES USING DIMENSIONAL LUMBER & METAL SIDE PLATE

Side Member (Metal Plate) Thickness (in)	Nominal Fastener ² Diameter (in)	Lateral Design Values ^{1,3} (lbs)	
		Species (Specific Gravity)	
		DF (0.50)	
		Zpara	Zperp
0.105 (12 gage)	5/16	565	595
0.134 (10 gage)			
0.179 (7 gage)			
0.239 (3 gage)			
0.25			

SI: 1 in = 25.4 mm, 1 lb = 4.45 N

- Reference lateral design values apply to two-member single shear connections, where the main member is wood with a specific gravity greater than or equal to 0.50, the side member is a metal side plate (*ASTM A36*), and the fastener is oriented perpendicular to grain.
- Minimum fastener length is 2¾".
- Values shall be adjusted by all applicable factors per *NDS*.

5.7 SFS Group USA, Inc. ConnexTite™ Fastener Spacing Requirements

5.7.1 Minimum fastener spacing requirements for SFS Group USA, Inc. ConnexTite™ fasteners are as follows in Table 7.

TABLE 7. CONNEXTITE™ MINIMUM FASTENER SPACING REQUIREMENTS

Nominal Fastener Diameter (in)	Shank Diameter (in)	Minimum Edge Distance (in)		Minimum End Distance (in)			Minimum On-Center Spacing (in)			
		Load Parallel to Grain	Load Perp. to Grain	Between Fasteners in a Row		Load Perp. to Grain	Between Fasteners in a Row		Between Rows	
				Load Toward Fastener	Load Away From Fastener		Parallel to Grain	Perp. to Grain	Parallel to Grain	Perp. to Grain
¼	0.173	⅜	1	1	1¼	1	1	NDS Table 12.5.1D	⅜	1¼
5/16	0.228	½	1¼	1¼	2¼	1¼	1¼		½	1⅝
⅜	0.279	⅝	1½	1½	2¾	1½	1½		⅝	2
SI: 1 in = 25.4 mm, 1 lb = 4.45 N										
<div>1. Fastener spacing follows requirements of <i>NDS</i> Section 12.5.</div> <div>2. Heavy or medium concentrated loads shall not be suspended below the neutral axis of a single sawn lumber or structural glued laminated timber beam except where mechanical or equivalent reinforcement is provided to resist tension stresses perpendicular to grain.</div> <div>3. Always space fasteners to avoid splitting of wood.</div>										

6 INSTALLATION

- 6.1 SFS Group USA, Inc. ConnexTite™ fasteners shall be installed in accordance with the applicable code, the approved construction documents, this TER, the manufacturer's installation instructions, NDS, and standard framing practice as applied to wood fasteners.
- 6.2 In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.
- 6.3 *Installation Procedure*
- 6.3.1 Installed using Torx® bit by turning. Pre-drilling of pilot holes is not required but may be used where lumber is prone to splitting.
- 6.3.2 Minimum penetration is 1" unless otherwise stated in this TER.

7 SUBSTANTIATING DATA

- 7.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 7.1.1 Withdrawal testing in accordance with *ASTM D1761*
- 7.1.2 Bending yield testing in accordance with *ASTM F1575*
- 7.1.3 Tensile strength testing in accordance with *AISI S904*
- 7.1.4 Lateral strength testing in accordance with *ASTM D1761*
- 7.2 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*
- 7.3 Information contained herein is the result of testing and/or data analysis by sources which conform to *IBC Section 1703* and/or *professional engineering regulations*. DrJ relies upon accurate data to perform its ISO/IEC 17065 evaluations.

- 7.4 Where appropriate, DrJ's analysis is based on provisions that have been codified into law through state or local adoption of codes and standards. The providers of the codes and standards are legally responsible for their content. DrJ analysis may use code-adopted provisions as a control sample. A control sample versus a test sample establishes a product as being equivalent to that prescribed in this code in quality, strength, effectiveness, fire resistance, durability, and safety. Where the accuracy of the provisions provided herein is reliant upon the published properties of materials, DrJ relies upon the grade mark, grade stamp, mill certificate, and/or test data provided by material suppliers to be minimum properties. DrJ analysis relies upon these properties to be accurate.

8 FINDINGS

- 8.1 When used and installed in accordance with this TER, the provisions of the applicable building codes, and the manufacturer's installation instructions, the product(s) listed in Section 1.1 are approved for the following:
- 8.1.1 Use as an alternative to those fasteners prescribed by the applicable code using the reference design value properties defined herein.
- 8.2 This product has been evaluated in the context of 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 applicable to this TER, they are listed here.
- 8.2.1 No known variations
- 8.3 Building codes require data from valid research reports be obtained from approved sources (i.e., licensed registered design professionals [RDPs]).
- 8.3.1 Building official approval of a licensed RDP is performed by verifying the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.
- 8.4 Agencies who are accredited through ISO/IEC 17065 have met the code requirements for approval by the building official. DrJ is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131 and employs RDPs.
- 8.5 Through ANAB accreditation and the IAF MLA, DrJ certification can be used to obtain product approval in any jurisdiction or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – “certified once, accepted everywhere.”
- 8.6 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10⁴ 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...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*.

9 CONDITIONS OF USE

- 9.1 Zinc-plated fasteners are approved for interior, dry use only.
- 9.2 Where required by the building official, also known as 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.
- 9.3 Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the AHJ for review and approval.
- 9.4 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 or RDP).
- 9.5 At a minimum, this product shall be installed per Section 6 of this TER.
- 9.6 This product has an internal quality control program and a third-party quality assurance program in accordance with IBC Section 104.4 and Section 110.4 and IRC Section R104.4 and Section R109.2.

⁴ 2018 IFC Section 104.9



- 9.7 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.
- 9.8 This TER shall be reviewed for code compliance by the AHJ in concert with IBC Section 104.
- 9.9 The implementation of this TER for this product is dependent on the design, quality control, third-party quality assurance, proper implementation of installation instructions, inspections required by IBC Section 110.3, and any other code or regulatory requirements that may apply.

10 IDENTIFICATION

- 10.1 The product(s) listed in Section 1.1 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. Individual fasteners are marked with a stylized head stamp and fastener diameter as shown in Figure 1 and Figure 3.
- 10.2 Additional technical information can be found at us.sfs.com.

11 REVIEW SCHEDULE

- 11.1 This TER is subject to periodic review and revision. For the most recent version, visit drjcertification.org.
- 11.2 For information on the current status of this TER, contact DrJ Certification.



APPENDIX A

TABLE 8. SFS GROUP USA, INC. CONNEXTITE™ FLANGE HEAD

Fastener Name	Nominal Diameter	Head		Fastener Length (in)	Thread Length (in)	Shank Diameter (in)	Thread Diameter (in)	
		Diameter (in)	Thickness (in)				Minor	Major
SFS Group USA, Inc. ConnexTite™ Flange Head	1/4	0.552	0.094	1-1/2	1-1/4	0.173	0.155	0.244
				2	1-5/8			
				2-3/8	2			
				2-3/4	2-3/8			
				3-1/8	2-3/4			
				4				
				4-3/4				
				5-1/2				
				6-1/4				
				7-1/8				
				7-7/8				
				8-5/8				
				9-3/8				
				10-1/4				
				11				
				11-3/4				
	5/16	0.705	0.148	2-3/4	1-1/2	0.228	0.214	0.315
				3-1/8	2-3/4			
				4	2-3/4			
				4-3/8	4			
				5-1/2				
				6-1/4				
				7-1/8				
				7-7/8				
				8-5/8				
				9-3/8				
				10-1/4				
				11				
				11-3/4				
				12-5/8				
				13-3/8				
				14-1/8				
				15				



Fastener Name	Nominal Diameter	Head		Fastener Length (in)	Thread Length (in)	Shank Diameter (in)	Thread Diameter (in)	
		Diameter (in)	Thickness (in)				Minor	Major
				15-3/4				
	3/8	0.877	0.161	3-1/8	2-3/4	0.279	0.262	0.393
				4	3-1/2			
				4-3/4	4			
				5-1/2				
				6-1/4				
				7-1/8				
				7-7/8				
				8-5/8				
				9-3/8				
				10-1/4				
				11				
				11-3/4				
				12-5/8				
				13-3/8				
				14-1/8				
				15				
				15-3/4				



TABLE 9. SFS GROUP USA, INC. CONNEXTITE™ COUNTERSINK HEAD

Fastener Name	Nominal Diameter	Head	Fastener Length (in)	Thread Length	Shank Diameter (in)	Thread Diameter (in)	
		Diameter (in)				Minor	Major
SFS Group USA, Inc. ConnexTite™ Countersink Head	1/4	0.457	2-3/8	1-3/8	0.173	0.155	0.244
			2-3/4	1-1/2			
			3-1/8	1-3/4			
			3-1/2	2-1/8			
			4	2-3/8			
			4-3/8				
			4-3/4				
			5-1/2				
			5-7/8				
			6-1/4				
			7-1/8				
			7-7/8				
			8-5/8				
			9-3/8				
			10-1/4				
			11				
			11-3/4				
	5/16	0.583	2-3/4	1-1/2	0.228	0.214	0.315
			3-1/8	2-3/8			
			3-1/2				
			4	2-3/4			
			4-3/4	2-3/4			
			5-1/2				
			6-1/4	4			
			7-1/8				
			7-7/8				
			8-5/8				
			9-3/8				
			10-1/4				
			11				
			11-3/4				
			12-5/8				
			13-3/8				
			14-1/8				



Fastener Name	Nominal Diameter	Head	Fastener Length (in)	Thread Length	Shank Diameter (in)	Thread Diameter (in)	
		Diameter (in)				Minor	Major
			15				
			15- ³ / ₄				
			16- ¹ / ₂				
			18- ¹ / ₈				
			19- ³ / ₄				
	³ / ₈	0.728	3- ¹ / ₈	2- ³ / ₈	0.279	0.262	0.393
			4	3- ¹ / ₈			
			4- ³ / ₄				
			5- ¹ / ₂				
			6- ¹ / ₄	4			
			7- ¹ / ₈				
			7- ⁷ / ₈				
			8- ⁵ / ₈				
			9- ³ / ₈				
			10- ¹ / ₄				
			11				
			11- ³ / ₄				
			12- ⁵ / ₈				
			13- ³ / ₈				
			14- ¹ / ₈				
			15				
			15- ³ / ₄				
			16- ¹ / ₂				
			18- ¹ / ₈				
			19- ³ / ₄				



TABLE 10. SFS GROUP USA, INC. CONNEXTITE™ COUNTERSINK HEAD, FULLY THREADED

Fastener Name	Nominal Diameter (in)	Head	Fastener Length (in)	Thread Length (in)	Shank Diameter (in)	Thread Diameter (in)	
		Diameter (in)				Minor	Major
SFS Group USA, Inc. ConnexTite™ Countersink Head, Fully Threaded	1/4	0.457	1-1/2	1-1/4	0.173	0.155	0.244
			1-3/4	1-1/2			
			2	1-3/4			
			2-3/8	2-1/8			
			2-3/4	2-3/8			
	5/16	0.583	4-3/4	4-3/8	0.228	0.214	0.315
			6-1/4	6			
			7-1/8	6-3/4			
			7-7/8	7-1/2			
			8-5/8	8-3/8			
			9-3/8	9-1/8			
			10-1/4	9-7/8			
			11	10-3/4			
			11-3/4	11-1/2			
			13-3/8	13-1/8			
			15	14-5/8			
	3/8	0.728	4-3/4	4-3/8	0.279	0.262	0.393
			6-1/4	5-7/8			
			7-7/8	7-1/2			
			8-5/8	8-1/4			
			9-3/8	9			
			10-1/4	9-7/8			
			11	10-5/8			
			11-3/4	11-3/8			
			13-3/8	13			
			15	14-5/8			