Technical Evaluation Report™ - Limit States

A Duly Authenticated Report from an Approved Agency

Report No: 1503-01

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FastenMaster® FlatLOK® Fasteners – Limit States Design

Trade Secret Report Holder:

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Additional Listees:

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

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

1 Innovative Product Evaluated[1]

1.1 FlatLOK Fasteners

2 Product Description and Materials

2.1 The innovative product evaluated in this report is shown in **Figure 1**.

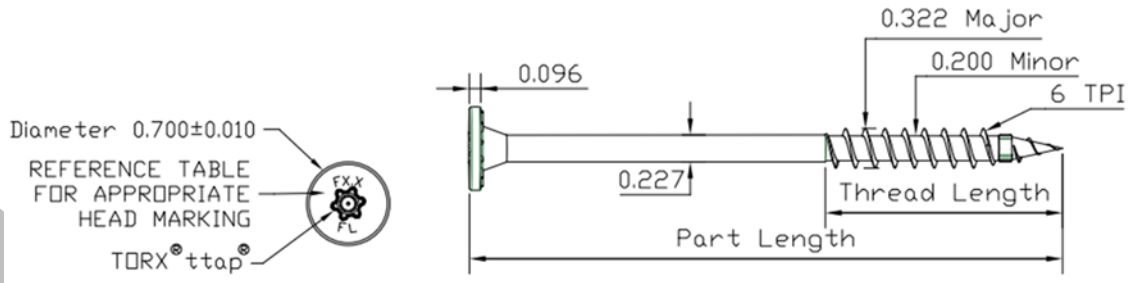


Figure 1. FastenMaster FlatLOK Fasteners

2.2 As needed, review material properties for design in **Section 4** and the regulatory evaluation in **Section 5**.

2.3 FlatLOK Fasteners are manufactured using a standard cold-formed process followed by a heat-treating process.

2.4 FlatLOK Fasteners are coated with a proprietary coating that exceeds the protection provided by hot-dipped galvanized coatings conforming to ASTM A153.

2.5 FlatLOK Fasteners are approved for use in interior conditions and in chemically treated or untreated lumber where ASTM A153 coatings are approved for use in accordance with NBC Table 5.10.1.1 and Article 9.20.16.1.

2.5.1 The proprietary coating has been tested and found to exceed the protection provided by code approved hot dipped galvanized coatings meeting ASTM A153, allowing for its use in pressure treated (ACQ) wood.

2.5.2 FlatLOK 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.

2.5.3 The innovative product evaluated in this report is set forth in **Table 1**.

Table 1. Fastener Specifications

Fastener Name	Head in (mm)			Fastener Length[1] in (mm)	Shank Diameter[2] in (mm)	Thread Length[1] in (mm)	Thread Diameter in (mm)		Nominal Bending Yield,[3] f_{yb} psi (MPa)	Allowable Fastener Strength, lbf (N)	
	Marking	Diameter	Thickness				Minor	Major		Tensile	Shear
FlatLOK	F2.8FL	0.70 (17.8)	0.095 (2.4)	2 7/8 (73)	0.227 (5.8)	1.75 (44.5)	0.200 (5.1)	0.322 (8.2)	171,600 (1,183)	1,940 (8,630)	1,230 (5,470)
	F3.5FL			3 1/2 (89)		2.00 (50.8)					
	F4.0FL			4 (102)							
	F4.5FL			4 1/2 (114)							
	F5.0FL			5 (127)							
	F6.0FL			6 (152)							
	F6.75FL			6 3/4 (171)							

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb, 1 MPa = 145 psi

1. Fastener length is measured from the underside of the head to the tip. Thread length includes tapered tip (see **Figure 1**).
2. Shank diameter is based on manufactured thickness. Finished dimensions are larger, due to the proprietary coatings added.
3. Bending yield is determined at shank diameter

3 Applicable Codes and Standards[2]

3.1 *Standards and Referenced Documents*

3.1.1 *ASME B18.6.1: Wood Screws (Inch Series)*

3.1.2 *ASTM A153: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware*

3.1.3 *ASTM A510: Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel*

3.1.4 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood*

3.1.5 *CSA O86: Engineering Design in Wood*

3.2 *Codes*

3.2.1 *NBC—10, 15, 20: National Building Code of Canada*

4 Tabulated Properties Generated from Nationally Recognized Standards

4.1 *General*

4.1.1 FlatLOK Fasteners are used to attach wood framing members in conventional light-frame construction and provide resistance to lateral and withdrawal loads applied parallel and/or perpendicular to the structural framing member. See **Section 6** for installation requirements.

4.1.2 FlatLOK Fasteners are installed without lead holes as prescribed in CSA O86 Clause 12.11.2.1, except when the relative density (G) of the wood is greater than 0.50.

4.2 *Design*

4.2.1 Design of FlatLOK Fasteners is governed by the applicable code and the provisions for fasteners in CSA O86 Clause 12.2.

4.2.2 Unless otherwise noted, adjustment of the design stresses for duration of load shall be in accordance with CSA O86 Clause 4.3.2.

4.3 *FlatLOK Fasteners Factored Lateral Design Values – Face Grain Applications*

4.3.1 The factored lateral design values for shear load perpendicular and parallel to grain for FlatLOK Fasteners as depicted in **Figure 2**, are specified in **Table 2**, **Table 3** and **Table 4**.

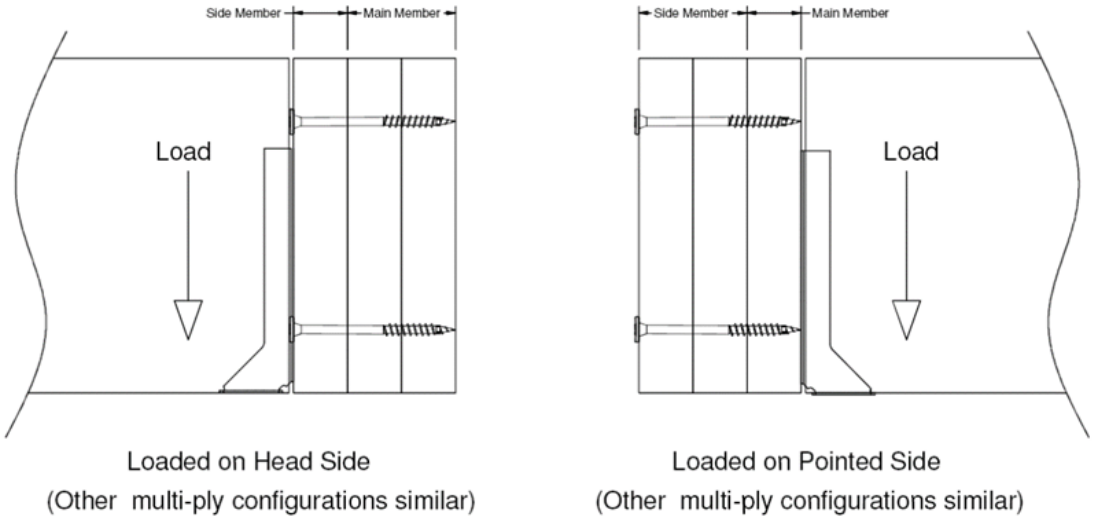


Figure 2. Loading Diagram for Shear Perpendicular to Grain

Table 2. FlatLOK Factored Lateral Design Values – Dimensional Lumber[1,2,3]

FlatLOK Fasteners	Fastener Length, in (mm)	Side Member Thickness, in (mm)	Min. Penetration into Main Member, in (mm)	Factored Lateral Design Values by Species (Specific Gravity), lbf (N)			
				N (0.35)	SPF (0.42)	HF (0.46)	DF (0.49)
FL278	2 7/8 (73)	1 1/2 (38)	1 3/8 (35)	250 (1,110)	300 (1,335)	330 (1,460)	350 (1,555)
FL312	3 1/2 (89)	1 1/2 (38)	2 (51)	305 (1,355)	365 (1,625)	400 (1,780)	425 (1,895)
FL004	4 (102)	1 1/2 (38)	2 1/2 (64)	345 (1,545)	415 (1,855)	455 (2,030)	485 (2,145)
FL412	4 1/2 (114)	1 1/2 (38)	3 (76)	370 (1,640)	425 (1,895)	460 (2,040)	485 (2,145)
		3 (76)	1 1/2 (38)	390 (1,740)	470 (2,085)	515 (2,285)	545 (2,435)
FL005	5 (127)	1 1/2 (38)	3 (76)	370 (1,640)	425 (1,895)	460 (2,040)	485 (2,145)
FL006	6 (152)	1 1/2 (38)	3 (76)	370 (1,640)	425 (1,895)	460 (2,040)	485 (2,145)
		4 1/2 (114)	1 1/2 (38)	475 (2,115)	540 (2,405)	575 (2,560)	600 (2,670)
FL634	6 3/4 (171)	1 1/2 (38)	3 (76)	370 (1,640)	425 (1,895)	460 (2,040)	485 (2,145)

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb

1. Factored 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.
2. Values shall be adjusted by all applicable adjustment factors per CSA O86 Clause 4.3.2.
3. All values are calculated using fastener bending yield and diameter at the shank.

Table 3. FlatLOK Factored Lateral Design Values – Engineered Lumber in Face Grain Applications[1,2,3]

FlatLOK Fasteners	Fastener Length in (mm)	Side Member Thickness in (mm)	Min. Penetration into Main Member in (mm)	Factored Lateral Design Values by Species (Specific Gravity) & Load Orientation, lbf (N)	
				LVL (0.50)	LSL (0.50)
FL278	2 7/8 (73)	1 1/4 (32)	1 5/8 (41)	355 (1,585)	355 (1,585)
FL312	3 1/2 (89)	1 3/4 (44)	1 3/4 (44)	435 (1,930)	435 (1,930)
FL005	5 (127)	1 3/4 (44)	3 1/4 (83)	520 (2,320)	520 (2,320)
		3 1/2 (89)	1 1/2 (38)	610 (2,710)	610 (2,710)
FL634	6 3/4 (171)	1 3/4 (44)	5 (127)	520 (2,320)	520 (2,320)
		5 (127)	1 3/4 (44)	610 (2,710)	610 (2,710)
FL634	6 3/4 (171)	3 1/2 (89)	3 1/4 (83)	610 (2,710)	610 (2,710)

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb

1. Factored 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.
2. Values shall be adjusted by all applicable adjustment factors per CSA O86 Clause 4.3.2.
3. All values are calculated using fastener bending yield and diameter at the shank.

4.4 *FlatLOK Fasteners Factored Lateral Design Values – Edge Grain Applications*

Table 4. FlatLOK Factored Lateral Design Loads – Edge Grain Applications[1,2]

FlatLOK Fasteners	Fastener Length in (mm)	Side Member Thickness in (mm)	Min. Penetration into Main Member in (mm)	Loading Direction	Factored Lateral Design Values by Species (Specific Gravity), lbf (N)				
					N (0.35)	SPF (0.42)	HF (0.46)	DF (0.49)	LSL[3] (0.50)
FL006	6 (152)	3 1/2 (89)	2 1/2 (64)	Parallel to Grain	725 (3,220)	885 (3,930)	975 (4,335)	1040 (4,635)	1065 (4,735)
				Perpendicular to Grain	645 (2,865)	745 (3,325)	805 (3,585)	850 (3,785)	865 (3,850)

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb

1. Reference lateral design values apply to two-member single-shear connections where both members are of the same specific gravity and the fastener is installed parallel or perpendicular to grain. Where the members are of different specific gravities, use the lower of the two.
2. Values shall be adjusted by all applicable adjustment factors per CSA O86 Clause 4.3.2.
3. Minimum thickness 1 1/4"

4.5 *FlatLOK Fasteners Factored Withdrawal Load*

4.5.1 The design provisions for withdrawal in CSA O86 Clause 12.11.5 apply to FlatLOK Fasteners, unless otherwise noted in this report. Factored withdrawal design values for FlatLOK Fasteners in select lumber species are specified in **Table 5** and **Table 6**.

Table 5. FlatLOK Factored Withdrawal Design Values in Face Grain Applications[1,2]

Thread Penetration into Main Member in (mm)	Factored Withdrawal Design Values by Species (Specific Gravity), lbf (N)					
	N (0.35)	SPF (0.42)	HF (0.46)	DF (0.49)	LSL (0.5)	LVL (0.5)
1 (25)	65 (290)	110 (475)	140 (610)	165 (725)	170 (765)	170 (765)
1 1/4 (32)	120 (540)	175 (770)	210 (920)	235 (1,045)	245 (1,090)	245 (1,090)
1 1/2 (38)	180 (795)	240 (1,060)	280 (1,235)	310 (1,370)	320 (1,420)	320 (1,420)
1 3/4 (44)	235 (1,045)	305 (1,355)	350 (1,545)	380 (1,695)	395 (1,750)	395 (1,750)
2 (51)	290 (1,300)	370 (1,650)	420 (1,860)	455 (2,020)	465 (2,075)	465 (2,075)

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb

1. Values shall be adjusted by all applicable adjustment factors per CSA O86 Clause 12.2 and 12.11.5 for wood screws.
2. Fastener penetration is that portion of the threaded length embedded in the main member, including the tip.

Table 6. FlatLOK Factored Withdrawal Design Values in Edge Grain Applications[1,2]

Thread Penetration into Main Member in (mm)	Factored Withdrawal Design Values by Species (Specific Gravity), lbf (N)					
	N (0.35)	SPF (0.42)	HF (0.46)	DF (0.49)	LSL (0.5)	LVL (0.5)
1 (25)	110 (485)	145 (645)	165 (745)	185 (820)	190 (850)	190 (850)
1 1/4 (32)	185 (830)	225 (1,000)	245 (1,100)	265 (1,175)	270 (1,200)	270 (1,200)
1 1/2 (38)	265 (1,170)	305 (1,350)	325 (1,455)	345 (1,530)	350 (1,555)	350 (1,555)
1 3/4 (44)	340 (1,510)	380 (1,700)	405 (1,805)	425 (1,885)	430 (1,910)	430 (1,910)
2 (51)	415 (1,855)	460 (2,055)	485 (2,160)	505 (2,240)	510 (2,265)	510 (2,265)

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb

1. Values shall be adjusted by all applicable adjustment factors per CSA O86 Clause 12.2 and 12.11.5 for wood screws.
2. Fastener penetration is that portion of the threaded length embedded in the main member, including the tip.

4.5.2 *Head Pull-Through Resistance in Accordance with CSA O86 Section 12.11.5.3:*

4.5.2.1 The factored design values for head pull-through resistance for FlatLOK Fasteners are specified in **Table 7**.

Table 7. FlatLOK Factored Head Pull-Through Resistance[1]

Side Member Thickness Minimum, in (mm)	Factored Head Pull-Through Resistance (for each fastener in a connection) Dimensional Lumber, LSL or LVL, lbf (N)
1 1/2 (38)	255 (1,145)

Imperial Units: 25.4 mm = 1 in, 1 N = 0.225 lb

1. Values for each fastener in a connection per CSA O86 Clause 12.11.5.3

4.5.3 *Edge and End Distances:*

4.5.3.1 Fastener edge and end distances shall be as specified in **Figure 3** and **Table 8**.

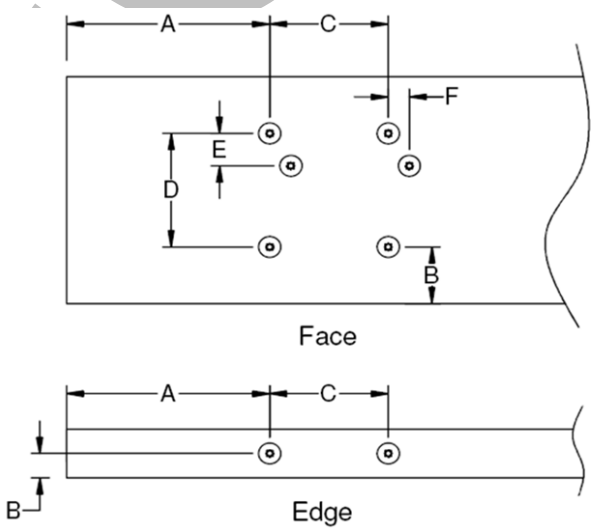


Figure 3. FlatLOK Edge and End Distance Requirements

Table 8. FlatLOK Edge and End Distance Requirements

Letter	Installed Condition	Minimum Distance or Spacing,[1] in (mm)	
		Face	Edge
A	Min. End Distance	6 (152)	6 (152)
B	Min. Edge Distance	1 3/4 (44)	3/4 (19)
C	Min. Spacing Between Fasteners in a Row	3 1/2 (89)	3 1/2 (89)
D	Min. Spacing Between Non-Staggered Rows	3 1/2 (89)	NA
E	Min. Spacing Between Staggered Rows	5/8 (16)	NA
F	Min. Stagger Between Fasteners in Adjacent Rows	5/8 (16)	NA

Imperial Units: 25.4 mm = 1 in

1. Edge distances, end distances and spacing of fasteners shall be sufficient to prevent splitting of the wood or as shown in this table, whichever is the more restrictive. These values have been determined by testing and may not correlate with CSA O86 Clause 12.9.2.1.

4.6 Where the application falls outside of the performance evaluation, conditions of use, and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

5 Regulatory Evaluation and Accepted Engineering Practice

5.1 FlatLOK Fasteners comply with the following adopted codes and/or accepted engineering practice for the following reasons:

5.1.1 FlatLOK Fasteners were tested and evaluated to determine their structural resistance properties, which are used to develop factored design values using the Limit States Design (LSD) Method in accordance with CSA O86. The following conditions were evaluated:

5.1.1.1 Withdrawal strength in accordance with ASTM D1761 and in accordance with CSA O86 Clause 12.11.5

5.1.1.2 Lateral resistance for use as an alternative to metal straps, ties or fasteners in shear (lateral) loaded applications either parallel or perpendicular to wood grain in accordance with ASTM D1761 and in accordance with CSA O86 Clause 12.11.4

5.1.1.3 Head pull-through resistance in accordance with ASTM D1761 and in accordance with CSA O86 Clause 12.11.5.3

5.2 Use in wet service conditions is outside the scope of this report.

5.3 Any engineering evaluation conducted for this report was performed on the dates provided in this report and within DrJ's professional scope of work.

5.4 Douglas Consultants Inc. has collaborated with DrJ through the review of this technical evaluation and the conformity to Canadian building codes.

5.5 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this report were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified[3] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[4] respectively.

5.6 Testing and related engineering evaluations are defined as intellectual property and/or trade secrets.[5]

5.7 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise that is also its areas of professional engineering competence.[6]

5.8 Any code specific issues not addressed in this section are outside the scope of this report.

6 Installation

6.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.

6.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

6.3 *Installation Procedure*

6.3.1 FlatLOK Fasteners shall be installed in accordance with the applicable code, the approved construction documents, this report, the manufacturer installation instructions, CSA O86, and standard framing practice as applied to wood fasteners.

6.3.2 Use a $^1/_2$" low RPM/high-torque drill to drive the fastener head flush with the surface of the framing member using the driver bit included with the fasteners.

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, lateral resistance, and head pull-through testing in accordance with ASTM D1761

7.1.2 Lateral design value calculations in accordance with CSA O86 performed by DrJ Engineering, LLC

7.2 Information contained herein is the result of testing and/or data analysis by sources that conform to the evaluation requirements of NBC Volume 1 Relationship of the NBC to Standards Development and Conformity Assessment and/or professional engineering regulations. DrJ relies upon accurate data to perform its ISO/IEC 17065 evaluations.

7.3 Where appropriate, DrJ's analysis is based on provisions that have been codified into law through provincial, territorial, or local adoption of codes and standards. The developers of these codes and standards are responsible for the reliability of published 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.

7.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, listings, certified reports, duly authenticated reports from approved agencies, and research reports prepared by approved agencies and/or approved sources provided by the suppliers of products, materials, designs, assemblies and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this report, may be dependent upon published design properties by others.

7.5 *Testing and Engineering Analysis*

7.5.1 The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.

7.6 Where additional condition of use and/or code compliance information is required, please search for FlatLOK Fasteners on the DrJ Certification website.

8 Findings

8.1 As outlined in **Section 4**, FlatLOK Fasteners have performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

8.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, FlatLOK Fasteners shall be approved for the following applications:

8.2.1 Use as an alternative to those fasteners prescribed by the applicable code

8.3 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from FastenMaster.

8.4 This innovative product has been evaluated in the context of the codes listed in **Section 3** and is compliant with all known provincial, territorial, and local building codes. Where there are known variations in provincial, territorial, or local codes applicable to this report, they are listed here:

8.4.1 No known variations

8.5 NBC Volume 1 Relationship of the NBC to Standards Development and Conformity Assessment:

> **Certification**
>
> Certification is the confirmation by an independent organization that a product, service, or system meets a requirement…Certification bodies publish lists of certified products and companies…Several organizations, including the Canadian Construction Materials Centre (CCMC), offer such evaluation services.
>
> **Evaluation**
>
> An evaluation is a written opinion by an independent professional organization that a product will perform its intended function. An evaluation is very often done to determine the ability of an innovative product, for which no standards exist, to satisfy the intent of the Code requirement...

8.6 ISO/IEC 17065 accredited third-party certification bodies,[7] including but not limited to, Standards Council of Canada (SCC)[8] and ANSI National Accreditation Board (ANAB),[9] confirm that product certification bodies have the expertise to provide technical evaluation services within their scope of accreditation. All SCC and ANAB product certification bodies meet NBC requirements to offer evaluation services for alternative solutions.[10]

8.6.1 DrJ is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131[11] and employs professional engineers.[12]

8.7 Through ANAB accreditation and the IAF Multilateral Agreements, this report 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*." IAF specifically says, "*Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope*."[13]

8.8 Product certification organizations, accredited by the SCC and ANAB, are defined as equivalent evaluation services:

8.8.1 Canada-United States-Mexico Agreement (CUSMA), Article 11.6 Conformity Assessment confirms mutual recognition by stating, "*...each Party shall accord to conformity assessment bodies located in the territory of another Party treatment no less favorable than that it accords to conformity assessment bodies located in its own territory or in the territory of the other Party*."

8.8.2 The SCC National Conformity Assessment Principles states, "*SCC is a member of a number of international organizations developing voluntary conformity assessment agreements that help ensure the international acceptance of Canadian conformity assessment results. Signatories to these agreements (like SCC) recognize each other's accreditations as being equivalent to their own*."[14]

8.9 Building official approval of a licensed professional engineer is performed by verifying the professional engineer and/or their business entity are listed by the engineering regulators of the relevant jurisdiction.

9 Conditions of Use

9.1 Material properties shall not fall outside the boundaries defined in **Section 4**.

9.2 As defined in **Section 4**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

9.3 For conditions not covered in this report, connections shall be designed in accordance with generally accepted engineering practice.

9.4 When required by regulation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:

9.4.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.

9.4.2 This report and the installation instructions shall be submitted at the time of permit application.

9.4.3 This innovative product has an internal quality control program and a third-party quality assurance program.

9.4.4 At a minimum, this innovative product shall be installed per **Section 6** of this report.

9.4.5 This report shall be reviewed for code compliance by the AHJ in concert with the duties and powers granted to the building official by the provincial regulations governing such duties and powers.

9.4.6 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspections, and any other regulatory requirements that may apply.

9.5 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 (i.e., owner).

9.6 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

10 Identification

10.1 The innovative product listed in **Section 1.1** is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.

10.2 Additional technical information can be found at www.fastenmaster.com.

11 Review Schedule

11.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.

11.2 For information on the status of this report, please contact DrJ Certification.

12 Legislation that Authorizes New Product Approval in International Markets is Found in Appendix A

12.1 FlatLOK Fasteners has been tested by an ISO/IEC 17025 accredited laboratory and/or evaluated to be in conformance with accepted engineering practice to ensure durable, livable and safe construction.

12.2 This report is published by an ISO/IEC 17065 accredited certification body with the expertise to evaluate products, materials, designs, services, assemblies and/or methods of construction.

12.3 This report meets the legislative intent and definition of a duly authenticated report, which shall be accepted by the AHJ, unless there are specific reasons why the alternative shall not be approved as provided for in writing.

Appendix A

1 Legislation that Authorizes AHJ Approval

1.1 **Competition Act:** The Competition Act is a Canadian federal law governing competition law in Canada. The Act contains both criminal and civil provisions aimed at preventing anti-competitive practices in the marketplace. The Act is enforced and administered by the Competition Bureau, whose regulations encourage the approval of NBC referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:

1.1.1 Advance innovation

1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints

1.1.3 Benefit consumers through lower prices, better quality, and greater choice

1.2 **Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, assemblies, and/or methods of construction through the Technical Barriers to Trade (TBT) agreements and the IAF Multilateral Recognition Arrangement (MLA), where these agreements proclaim the desire of both countries to have their markets open to innovation.

1.3 These agreements:

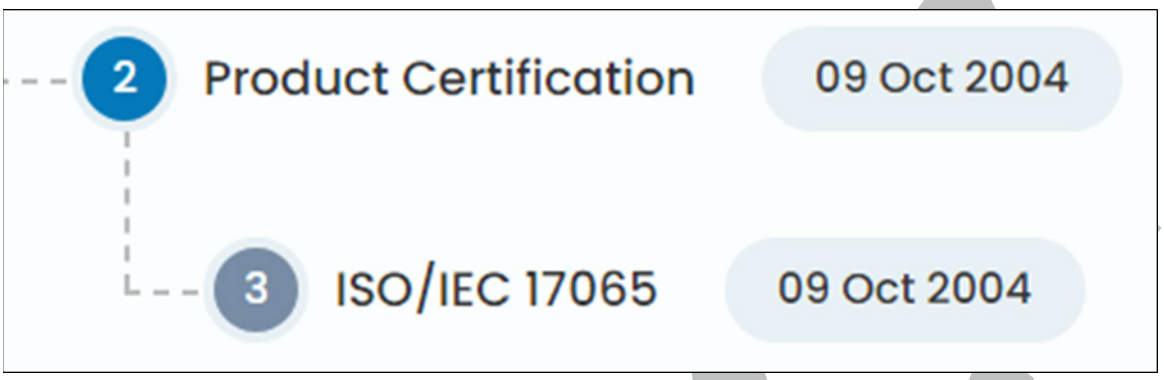
1.3.1 Permit participation of conformity assessment bodies located in the territories of other Members (defined as GATT Countries) under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country,

1.3.1 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.

1.3.2 State that conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.

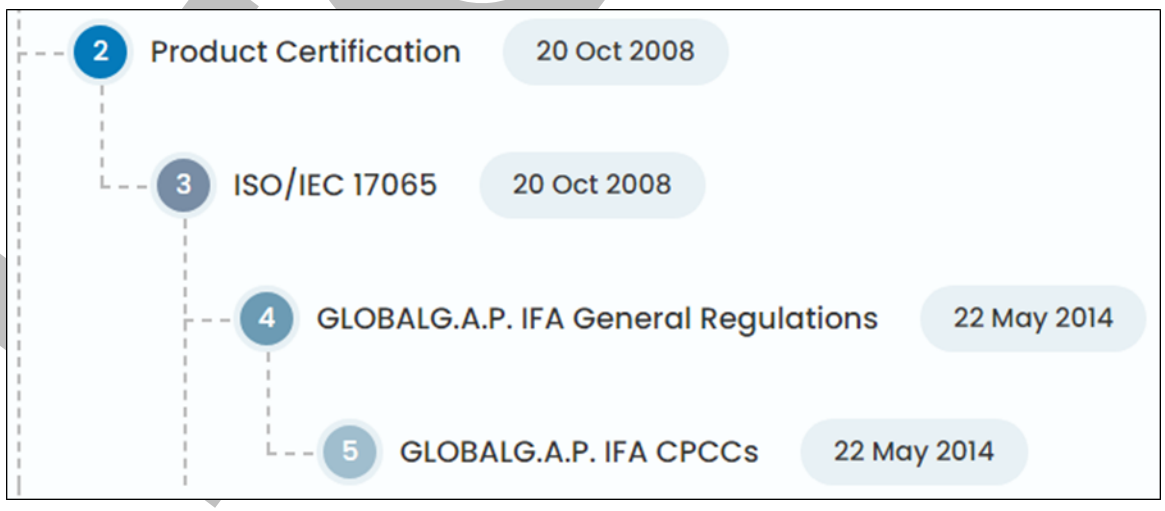
1.4 To this end, Canada operates an accreditation system as follows:

1.5 This includes ISO/IEC 17065 product certification as follows:

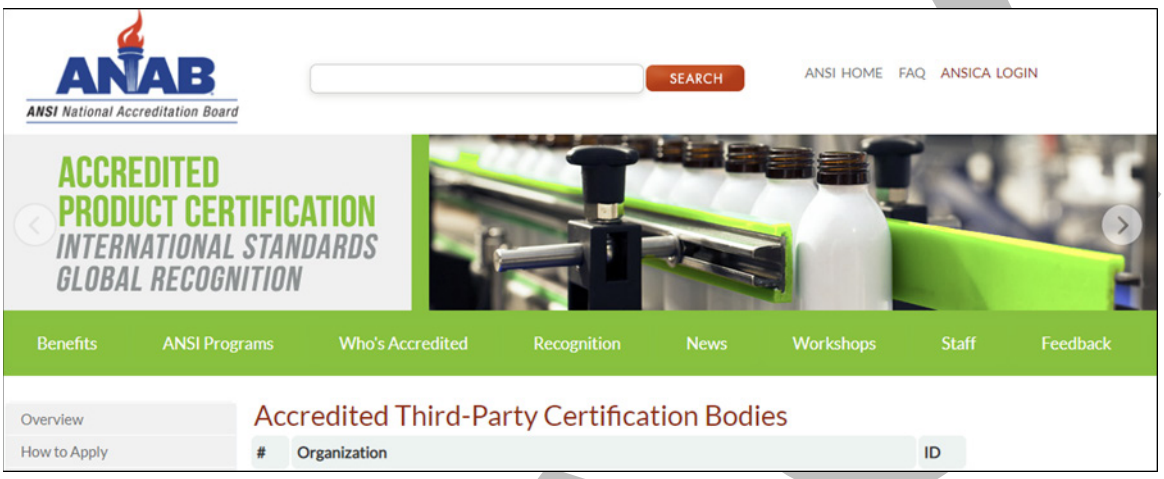


1.6 Similarly, the United States operates multiple accreditation processes with ANAB being the most prominent ISO/IEC 17065 product certification organization as follows:

1.7 This includes ISO/IEC 17065 product certification as follows:



1.8 The list of ANAB accredited ISO/IEC 17065 product certification organizations can be found at the following link: https://anabpd.ansi.org/Accreditation/product-certification/DirectoryListingAccredited?menuID=1&prgID=1



1.9 Approval is granted via International Agreement, where the purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories. Subsequent acceptance of accredited certification and validation/verification statements is required so that one accreditation can be used for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

1.10 Consequently, and as one example, these agreements permit product approval of innovative Australian and New Zealand products into US markets and vice-versa.

1.11 Finally, questions that often arises are, *"Why do these agreements exist?"* and *"Why is the ISO/IEC 17065 accredited third-party certification process so important?"*

1.11.1 The answer is that all countries desire to protect the intellectual property and trade secrets of their country's businesses.

1.11.2 In the US this protection is provided by 18 U.S. Code § 1831 Under Economic Espionage, where it states *"whoever, intending or knowing that the offense will benefit any foreign government, foreign instrumentality, or foreign agent, knowingly steals, or without authorization appropriates, takes, carries away, or conceals, or by fraud, artifice, or deception obtains a trade secret shall be fined not more than $5,000,000 or imprisoned not more than 15 years, or both."*

1.11.3 Any organization that commits any offense described shall be fined not more than the greater of $10,000,000 or three (3) times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided.[15]

1.11.4 Protection of intellectual property and trade secrets reinforces the value of the IAF MLA, the GATT/TBT and the ISO/IEC 17065 product approval process.

1.11.5 The goal is to protect the best interests of everyone, while also facilitating economic freedom and opportunity by promoting free and fair competition in the marketplace.

Notes

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

2 Unless otherwise noted, all references in this report are from the 2020 version of the NBC. This alternative solution is also approved for use with the 2010 and 2015 NBC and the standards referenced therein.

3 Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

4 https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH

5 18 U.S. Code § 1831 - Economic espionage - Whoever, intending or knowing that the offense will benefit any foreign government, foreign instrumentality, or foreign agent, knowingly steals, or without authorization appropriates, takes, carries away, or conceals, or by fraud, artifice, or deception obtains a trade secret shall be fined not more than $5,000,000 or imprisoned not more than 15 years, or both. Any organization that commits any offense described shall be fined not more than the greater of $10,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. https://www.law.cornell.edu/uscode/text/18/part-I/chapter-90.

6 ANAB is part of the USMCA and IAF MLA, where the purpose of these agreements are to ensure mutual recognition of accredited certification and validation/verification statements between agreement signatories, and subsequent acceptance of ANAB accredited certification and validation/verification statements by professional engineers based upon having one universal approval process for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction.

7 https://anabpd.ansi.org/Accreditation/product-certification/DirectoryListingAccredited?menuID=1&prgID=1

8 https://iaf.nu/en/member-details/?member_id=91

9 https://iaf.nu/en/member-details/?member_id=14

10 NBC Division A Clause A-1.2.1.1.(1)(b) provides information on code compliance via alternative solutions and defines alternative solutions as *"...achiev[ing] at least the minimum level of performance required by Division B."* NBC Division C Section 2.3 includes additional guidance for documentation of alternative solutions.

11 https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?&prgID=1&OrgId=2125&statusID=4

12 Through ANAB accreditation and the IAF MLA, DrJ certification can be used to obtain material, product, design, or method of construction approval in any jurisdiction or country that has IAF MLA Members & Signatories to meet the Purpose of the MLA – "*certified once, accepted everywhere*".

13 https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise

14 The National Conformity Assessment Principles states, "*Product regulations and standards may vary from country to country. If these are set arbitrarily, they could be deemed as protectionist. The World Trade Organization (WTO) Agreement on Technical Barriers to Trade (TBT Agreement) is intended to ensure that technical regulations, standards and conformity assessment procedures of member countries do not create unnecessary obstacles to trade. Under the TBT Agreement, members of the WTO agree to use international standards, including conformity assessment standards and guides, as a basis for their technical requirements.*"

15 https://www.law.cornell.edu/uscode/text/18/part-I/chapter-90