VALUE-ADDED SOFTWARE

Simpson Strong-Tie offers software solutions to make product selection and specification easier.
Visit ***www.strongtie.com*** to download your free versions.



Connector Selector

Finding the right connector just got easier. Input the details of your application and the Simpson Strong-Tie® Connector Selector software suggests appropriate connectors and lists them by their installed cost. The program offers solutions for solid-sawn lumber, I-joists, engineered wood and trusses, and can also take into consideration factors such as wood species and masonry type. Save, print or email your solutions as well as auto-generated job files and material lists.



Strong-Wall® Shearwall Selector

Looking for a faster way to identify shearwalls for your designs? The Strong-Wall® Shearwall Selector software suggests suitable wood or Steel Strong-Wall® solutions based upon the parameters you input for your project. The program features two design modes, engineered-design and prescriptive wall bracing, to suggest appropriate solutions based on framing and foundation preferences. Solutions for one- and two-story applications as well as for balloon-framed walls are available. Output can be saved, printed or attached to email for maximum versatility.



Strong Frame® Selector

The Strong Frame® ordinary moment frame takes a lot of the work out of specifying moment frames, and the Strong Frame® Selector software will make it even easier. The user inputs information such as size of the opening, lateral/gravity loads and drift requirements and the software suggests the appropriate solution from 368 available stock frames. Custom solutions can also be suggested if we don't offer a stock frame to match the application. Save, print or email solutions depending on your needs.

CORROSION INFORMATION

Understanding the Issues

Metal connectors, anchors, and fasteners will corrode and may lose load-carrying capacity when installed in corrosive environments or exposed to corrosive materials. There are many environments and materials which may cause corrosion including ocean salt air, fire retardants, fumes, fertilizers, preservative-treated wood, dissimilar metals, and other corrosive elements.

The many variables present in a single building environment make it impossible to accurately predict if, or when, significant corrosion will begin or reach a critical level. This relative uncertainty makes it crucial that specifiers and users be knowledgeable of the potential risks and select a product coating or metal suitable for the intended use. It is also important that regular maintenance and periodic inspections are performed, especially for outdoor applications.

It is common to see some corrosion on connectors especially in outdoor applications. Even stainless steel can corrode. The presence of some corrosion does not mean that load capacity has necessarily been affected or that a failure will occur. If significant corrosion is apparent or suspected, then the wood, fasteners and connectors should be inspected by a professional engineer or general contractor and may need to be replaced.

Preservative-treated wood formulations have changed significantly and some of the new formulations are more corrosive to steel connectors and fasteners than the traditionally used formulation of CCA-C. Simpson Strong-Tie testing has shown that ACQ-C, ACQ-D (Carbonate) and CA-B treated woods are approximately 2 times more corrosive than CCA-C, while SBX-DOT (Sodium Borate) treated woods were shown to be less corrosive than CCA-C. Refer to technical bulletin T-PTWOOD for more information.

Due to the many different preservative formulations, fluctuating retention levels, moisture content, and because the formulations may vary regionally, or change without warning, understanding which connectors and fasteners to use with these materials has become a complex task. We have attempted to provide basic knowledge on the subject here, but it is important to fully educate yourself by reviewing our technical bulletins on the topic, and also by viewing information and literature provided by others. This information pertains to Simpson Strong-Tie® connectors only. For corrosion information on other product lines, such as fasteners, see the specific Simpson Strong-Tie product line catalogs. Additionally, because the issue is evolving, it is important to get the very latest connector information on the topic by visiting our website at ***www.strongtie.com/info***.

Stainless steel is always the most effective solution to corrosion risk. However, it is also more expensive and sometimes more difficult to obtain. To best serve our customers, Simpson Strong-Tie is evaluating the options to identify the safest and most cost-effective solutions. Based on our testing and experience there are some specific applications that are appropriate for connectors and fasteners with specific levels of corrosion protection.

Because increased corrosion from some newer preservative-treated wood is a new issue with little historical data, we have to base our recommendations on the testing and experience we have to date. It is possible that as we learn more, our recommendations may change, but these recommendations are based on the best information we have at this time.

See *www.strongtie.com/info* for additional critical information.

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CORROSION INFORMATION

General Simpson Strong-Tie Recommendations

- Outdoor environments are generally more corrosive to steel. If you choose to use ZMAX® or HDG finish on an outdoor project *(i.e. deck, patio cover)*, you should periodically inspect your connectors and fasteners or have a professional inspection performed. Regular maintenance including water-proofing of the wood used in your outdoor project is also a good practice.
- For wood with actual retention levels greater than 0.40 pcf for ACQ, 0.34 pcf for MCQ, 0.21 pcf for CA-B, 0.15 pcf for CA-C and MCA or 0.14 pcf for μCA-C (Ground Contact), stainless-steel connectors and fasteners are recommended. Verify actual retention level with the wood treater.
- When using stainless-steel connectors, use stainless-steel fasteners. When using ZMAX®/HDG galvanized connectors, use fasteners with a coating that meets the specifications of ASTM A153 or equivalent coating offered on Simpson Strong-Tie® fasteners.
- Testing indicates wood installed dry (moisture content less than 19%) reduces potential corrosion. If dry wood is used, see our website for additional information.
- Using a barrier membrane can provide additional corrosion protection, see technical bulletin T-PTBARRIER *(see page 215 for details)*.

Due to the many variables involved, Simpson Strong-Tie cannot provide estimates on service life of connectors, anchors or fasteners. We suggest that all users and Designers also obtain recommendations for HDG, ZMAX® (G185), mechanically galvanized, or other coatings from the treated wood supplier for the type of wood used. However, as long as Simpson Strong-Tie recommendations are followed, we stand behind product performance and our standard warranty *(page 23)* applies.

Guidelines for Selecting the Proper Connector

1 Evaluate the Application.

Consider the type of structure and how it will be used. These recommendations may not apply to non-structural applications such as fences.

2 Evaluate the Environment.

Testing and experience indicate that indoor dry environments are less corrosive than outdoor environments. Determining the type of environment where a connector or fastener will be used is an important factor in selecting the most appropriate material and finish for use on the connectors and fasteners. To help in your decision making, consider the following general exposure information:

Interior Dry Use: Includes wall and ceiling cavities, and raised floor applications of enclosed buildings that have been designed to ensure that condensation and other sources of moisture do not develop.

Exterior – Dry: Includes outdoor installations in low rainfall environments and no regular exposure to moisture.

Exterior – Wet: Includes outdoor installations in higher moisture and rainfall environments.

Higher Exposure Use: Includes exposure to ocean-salt air, fire retardants, large bodies of water, fumes, fertilizers, soil, some preservative-treated woods, industrial zones, acid rain, and other corrosive elements. Type 316 stainless steel contains slightly more nickel than other grades, plus molybdenum, giving it better corrosion resistance in high-chloride environments.

3 Evaluate and select a suitable preservative-treated wood for the intended application and environment.

The treated wood supplier should provide all the information needed regarding the wood being used. This information should include: the specific type of wood treatment used, if ammonia was used in the treatment, and the chemical retention level. If the needed information is not provided then Simpson Strong-Tie would recommend the use of stainless-steel connectors and fasteners. You should also ask the treated-wood supplier for a connector coating or material recommendation.

4 Use the chart on the right, which was created based on Simpson Strong-Tie testing and experience, to select the connector finish or material.

If a preservative-treated wood product is not identified on the chart, Simpson Strong-Tie has not evaluated test results regarding such product and therefore cannot make any recommendation other than the use of stainless steel with that product. Manufacturers may independently provide test results or other product use infor-mation; Simpson Strong-Tie expresses no opinion regarding any such information.

5 Compare the treated-wood supplier's recommendation with the Simpson Strong-Tie recommendation.

If these recommendations are different, Simpson Strong-Tie recommends that the most conservative recommendation be followed.

Simpson Strong-Tie recommendations are as follows:

Low = Use standard painted and G90 galvanized connectors, Simpson Strong-Tie® Strong-Drive®. Use standard painted and G90 galvanized connectors, Simpson Strong-Tie® Strong-Drive® screws (SDS) with the double-barrier coating, or Strong-Drive® SD screws as a minimum.

Med = Use ZMAX®/HDG galvanized connectors as a minimum. Use HDG fasteners which meet the specifications of ASTM A153, Simpson Strong-Tie® Strong-Drive® SDS screws with double-barrier coating, or Strong-Drive® SD screws with mechanical galvanization, class 55.

High[6] = Use type 303, 304, 305 or 316 stainless-steel connectors and fasteners.

CONNECTOR COATING RECOMMENDATION – STRUCTURAL APPLICATIONS

Environment	Untreated Wood	SBX/ DOT & Zinc Borate	MCA/ MCQ	ACQ-C, ACQ-D (Carbonate), CA-B, CA-C & μCA-C			ACZA	Other or Uncertain
				No Ammonia	With Ammonia	Higher Chemical Content[1]		
Interior – Dry	Low	Low	Low	Low	Med	High	High	High
Exterior	Med	N/A	Med	Med	High	High	High	High
Higher Exposure	High	N/A	High	High	High	High	High	High
Uncertain	High	N/A	High	High	High	High	High	High

1. Wood with actual retention levels greater than 0.40 pcf for ACQ, 0.34 pcf for MCQ, 0.21 pcf for CA-B, 0.15 pcf for CA-C and MCA or 0.14 pcf for μCA-C (Ground Contact).
2. Borate treated woods are not appropriate for outdoor use.
3. Test results indicate that ZMAX®/HDG and the SDS double-barrier coating will perform adequately, subject to regular maintenance and periodic inspection. However, the nationally-recognized test method used, AWPA E12-94, is an accelerated test, so data over an extended period of time is not available. If uncertain, use stainless steel.
4. Some treated wood may have excess surface chemicals making it potentially more corrosive. If you suspect this or are uncertain, use stainless steel.
5. Type 316 stainless-steel connectors and fasteners are the minimum recommendation for ocean-salt air and other chloride environments.

COATINGS AVAILABLE

Not all products are available in all finishes.
Contact Simpson Strong-Tie for product availability, ordering information and lead times.

Finish/Materials	Description	Level of Corrosion Resistance
Gray Paint	Water-based paint intended to protect the product while it is warehoused and in transit to the jobsite.	Low
Powder Coating	Baked on paint finish that is more durable than our standard paint and produces a better looking finished product.	Low
Standard G90 Zinc Coating	Zinc galvanized coating containing 0.90 oz. of zinc per square foot of surface area *(total both sides)*.	Low
ZMAX G185	Galvanized (G185) 1.85 oz. of zinc per square foot of surface area *(hot-dip galvanized per ASTM A653 total both sides)*. These products require hot-dip galvanized fasteners *(fasteners which meet the specifications of ASTM A153)*.	Medium
HOT-DIP HDG GALVANIZED®	Products are hot-dip galvanized after fabrication (14 ga. and thicker). The coating weight increases with material thickness. The minimum specified coating weight is 2.0 oz./ft² *(per ASTM A123 total both sides)*. These products require hot-dip galvanized fasteners *(fasteners which meet the specifications of ASTM A153)*.	Medium
Mechanically-Galvanized Coating, Class 55 *(SD screws)*	Simpson Strong-Tie® Strong-Drive® SD structural-connector screws are manufactured with a mechanically-applied zinc coating in accordance with ASTM B695, Class 55 with a supplemental overcoat. These fasteners are compatible with painted and zinc-coated (G90 and ZMAX®) connectors.	Medium
Double-Barrier Coating *(SDS Screws)*	Simpson Strong-Tie® Strong-Drive® SDS screws are manufactured with two different finishes that together provide a level of corrosion protection that equals that provided by the previous HDG coating.	Medium
SSt300 STAINLESS STEEL®	Connectors are manufactured from Type 316L stainless steel, and provide greater durability against corrosion. Stainless-steel fasteners are required with stainless-steel products, and are available from Simpson Strong-Tie.	High

See Corrosion Information for more specific performance and application information on these finishes.

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