

1) Allowable loads for more than one direction for a single connection cannot be added together. A design load which can be divided into components in the directions given must be evaluated as follows:

$$\text{Design shear/allowable shear} + \text{design tension/allowable tension} \leq 1.0$$

2) The allowable loads shown in this catalog are based on Allowable Stress Design methodology. AF&PA has published a brochure for calculating soft conversions called Guideline to LRFD for Pre-engineered Metal Connectors for Wood Construction. Consult USP for assistance in determining appropriate LRFD values for the products shown in this catalog.

3) Connector ratings may exceed the tensile strength or other aspects of the wood members involved in the connection. A qualified designer should verify wood member capacities when specifying connectors.

4) Verify that the size of the supporting member can accommodate the connector's specified fasteners.

5) Some illustrations in this catalog may not reflect additional mechanical reinforcements which may be required to reduce cross grain tension or wood member bending under loading. The design professional is responsible for determining if additional mechanical reinforcement is required.

6) USP recommends the hanger height be 60% of the joist height for stability.

NDS® Standards

Unless otherwise noted, the load resistance values presented in this catalog reflect the calculation criteria set forth in the 1997 or 2005 National Design Specification for Wood Construction (NDS®) published by the American Forest and Paper Association; with the methodology prescribed in ICC-ES AC13 or other relevant acceptance criteria applied.

Material

USP selects steel for its various products in accordance with application needs and steel properties, including tensile strength, ductility, corrosion resistance, gauge, and weldability. See specific code evaluations or consult USP for steel information on specific products. USP Structural Connectors® are manufactured from steel which meets ASTM A 653, ASTM A 1011, or ASTM A 36.

Testing and Product Design Loads

On all structurally-rated products, USP performs full-scale testing in accordance with ICC-ES AC13, or ASTM D 1761, the standard recognized by all domestic model code agencies. All final testing is conducted by a third-party testing laboratory. In accordance to these standards the design loads listed are the lowest results obtained from one of the following methods:

- 1) The lowest ultimate tested load divided by three.
- 2) Lowest load producing 1/8" deflection.
- 3) Calculations based on 1997 or 2005 NDS® and current codes.

The listed capacity of some products have been increased in accordance with the NDS® by applying Duration Factors for mechanical fastenings. Stress increases have not been applied to steel components of the products.

- Floor / Design Load100% (no increase).
- Roof Snow115% of design load for 2-month duration of load.
- Roof Non-Snow125% of design load for 7-day duration of load.
- Uplift.....133% or 160% of design load for wind/seismic loading based on local code requirements.

Spruce-Pine-Fir or Hem Fir Equivalent Capacity

Unless otherwise noted, the published design loads in this catalog apply to Douglas Fir-Larch or Southern Pine lumber. When Spruce-Pine-Fir or Hem Fir lumber is used with face mount hangers or straps, the nail shear capacity maybe adjusted according to the chart below.

Allowable Load Adjustment Factor		
Wood Species	Specific Gravity	Adjustment Factor
Douglas Fir-Larch (DF-L)	0.50	1.00
Southern Pine (SP)	0.55	1.00
Douglas Fir (S)	0.46	0.88
Hem Fir (N)		
Spruce-Pine-Fir (S-P-F)	0.42	0.86

- 1) Allowable loads must be adjusted according to the applicable wood species.
- 2) When using structural composite lumber, verify wood species and use above listed adjustment factors.

