

STEEL PANEL TECHNICAL INFORMATION

THANK YOU for choosing Midwest Manufacturing as your post frame building material supplier!

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- Panel Properties and Loading Chart 2
 - Steel Panel Technical Information (ASTM, UL) 2
 - Rust Filing on Coated and Uncoated Steel 3-4
 - Post Frame Building Specifications 5-9
 - Cool Chemistry Paint Specifications 10-13
 - Premium Pro-Rib & Pro-Snap Paint Specifications 14-15
 - Pro-Rib Paint Specifications 16-17
 - Warranty Certificates 18-20
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STEEL PANEL PROPERTIES AND LOADING CHART



| Panel Specifications | | | | Top in Compression | | | Bottom in Compression | | |
|----------------------|-----------------|--------------|----------|--------------------|----------|-----------|-----------------------|----------|-----------|
| Panel | Thickness (in.) | Weight (PSF) | Fy (KSI) | Ix (in4) | Sx (in3) | Ma (K-in) | Ix (in4) | Sx (in3) | Ma (K-in) |
| Pro-Rib | 0.0142 | 0.7 | 82 | 0.009 | 0.013 | 0.67 | 0.005 | 0.012 | 0.568 |
| Premium Pro-Rib | 0.0157 | 0.77 | 82 | 0.01 | 0.016 | 0.786 | 0.006 | 0.014 | 0.656 |

| Steel Load Table | | | | Allowable Loads (PSF) | | | | | |
|----------------------|-----------------|--------------|----------|--------------------------|---------|---------|----------------------------|---------|---------|
| Panel Specifications | | | | Wind Load (girt spacing) | | | Live Load (purlin spacing) | | |
| Panel | Thickness (in.) | Weight (PSF) | Fy (KSI) | 2' (ft) | 3' (ft) | 4' (ft) | 2' (ft) | 3' (ft) | 4' (ft) |
| Pro-Rib | 0.0142 | 0.7 | 82 | 158 | 70 | 36 | 118 | 53 | 27 |
| Premium Pro-Rib | 0.0157 | 0.77 | 82 | 182 | 81 | 42 | 137 | 61 | 32 |

Wind Rating (UL580)

Impact Resistance - Hail - (UL2218)

<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/showpage.html?name=TGAM.R20721&ccn-shorttitle=Roof-covering+Materials,+Impact+Resistance&objid=1075553853&cfgid=1073741824&version=versionless&parent>

Fire Resistance (UL790)

https://standardscatalog.ul.com/standards/en/standard_790_8

Specifications for Galvanized Structural Steel (ASTM - A653)

<https://www.astm.org/Standards/A653.htm>

Coil Coating "Paint" Process for Exterior Exposed Building Products (ASTM - A6755)

<http://www.astm.org/Standards/A755.htm>



RUST FILINGS ON COATED AND UNCOATED STEEL

RUST FILINGS

The appearance of the rust “specks” on the surface of any coated or uncoated sheet are usually reported as premature sheet rusting within one year of installation. The particles present are typically the size of fine to coarse grains of sand; they will most likely be concentrated around doors, windows, vents, gables, fasteners, and penetrations where cutting has taken place. In some cases, they may appear very uniformly around large areas. The concentration of the rust specks may vary from a few isolated chips to several thousand per square foot.

Generally, this type of surface “contamination,” which is uncommon, originates during installation. Metal filings are produced when power tools are used to cut, grind, or drill the metal. The metal chips produced are hot and magnetically “charged” and will adhere to the coating surface. In time, these bare filings begin to rust. It is also possible for metal chips generated by a source not related to the building’s construction (such as airborne particles originating several miles away) to deposit upon the sheets. Nothing in the manufacturing process generates metal filings, so these filings had to occur post production.

Rust files can usually be removed easily, especially if they are cleaned soon after panel installation, as they are only adhered to the surface of the coating. A very effective method of removal is to clean the affected areas with Soft Scrub (common household cleaner) and a wet sponge; scrub using light pressure and thoroughly rinse the metal panel to remove all loose rust files and Soft Scrub residue. This method will remove the majority of the rust files and allow the paint to retain much of its original shine. In many instances, a slight brown stain may remain, especially on lighter paint colors.

Removal of rust filings is not always an easy task. The red rust around the chip can be removed easily, but close examination may reveal that the small, dark cores of the metal chips were not removed. Unless the metal chip is completely removed, rust will reappear around the chip within a short period of time. For demonstration purposes, it is likely that 5 to 10 minutes would be spent thoroughly cleaning a 5" area. The complete removal of the red rust (and metal chips) with the paint surface appearing new, clean, and flawless, even under magnification, is proof that the rust did not originate from the base metal of the sheet, but from an external source. Once the area has been completely cleaned, the rust will not reappear unless the source of contamination is still present.

Rust files on uncoated steel are a cosmetic concern and can be removed as described above, or left untreated, as they will not normally affect the service life of the panels. If left unattended, the rust filings will eventually weather away, but the process may require 5 or more years. To minimize the visual impact of existing rust filings, it may prove beneficial to remove all loose particles from the roof by power washing or similar procedures. It is important to ensure that cleaning procedures be such that the paint surface not be damaged when removing loose metal chips from the panel surface. A very gentle power wash/ rinse is suggested, which will not remove or damage the paint finish. On uncoated steel, these metal files will accelerate the sacrificial action of the panel’s metallic coating and will reduce the life expectancy of the panel. The filings must be removed from unpainted material.

The best method of minimizing the problems of rust filings is to cut metal panels with tin snips or a hand shear whenever possible. When power cutting is necessary, cut the panels with the finished side down. Power cutting should be done well away and down wind of the skidded panels and the building to reduce the potential of hot filings embedding themselves to the paint or coated surface. Metal panels cut or drilled with power equipment should be brushed lightly with a cloth or soft bristled brush immediately after cutting to remove any metal filings.

Cleaning Methods:

1. Use a wet rag to wipe over the panel surface.
2. Soft Scrub on a wet sponge. (Soft Scrub is a common household cleaner made by Clorox.)

For more information on this topic, visit www.ussteel.com Construction Market Bulletins - Staining of Building Panel from Steel Debris.

POST FRAME BUILDING SPECIFICATIONS

- 1.0 MATERIALS - Posts/Columns
- 1.2 MATERIALS - Gradeboard
- 1.3 MATERIALS - Wall Girts
- 1.4 MATERIALS - Post Headers
- 1.5 MATERIALS - Wall Sheathing
- 1.6 MATERIALS - Wall Insulation
- 1.7 MATERIALS - Primary Roof Framing
- 1.8 MATERIALS - Roof Purlins
- 1.9 MATERIALS - Roof Sheathing
- 1.10 MATERIALS - Attic Insulation
- 1.11 MATERIALS - Trim

1.0 MATERIALS - Posts/Columns

- A. Wall posts are solid sawn, or nail-laminated structural wood products identified in the 2005 edition of NDS.
- B. Nail-laminated columns 20' in length or less shall be non-spliced.
- C. Lumber grade shall be 2400f MSR or as specified by the designer of record.
- D. Portions of wood posts below grade and less than 8" above grade must be protected with pressure preservative chemical treatments to retention levels for use category UC4B or better per AwPA-U1.
- E. All in place structural performance required connection hardware in the portion of the post below grade and 8" or less above grade shall be hot dipped galvanized per ASTM 153 or as per designer of record.

1.2 MATERIALS - Gradeboard

- A. Gradeboard shall be solid sawn products identified in the 2005 edition of NDS of composite lumber (2x8 Fusion Grade plank)
- B. Wood gradeboard must be pressure preservative treated with preservative chemical treatments and to retention levels per AWPA-UC4A or better.
- C. All connection hardware used to attach the gradeboard shall be hot dipped galvanized per ASTM153 or as specified by designer of record.

1.3 MATERIALS - Wall Girts

- A. Wall girts are solid sawn structural wood products identified in the 2005 edition of NDS.
- B. Wall girts shall satisfy the wind load requirements as specified by the designer of record.
- C. All wall girts less than 8" above grade must be pressure preservative treated with preservative chemical treatments and to retention levels for use category UC4B or better per AWPA-U1.
- D. Wall girts are placed directly on the outside face of wall columns.
- E. Wall girts are attached to the posts with fastener schedules as specified by the designer of record.
- F. All in place structural performance required connection hardware in girts 8" or less above grade shall be hot dipped galvanized per ASTM 153 or as per designer of record.
- G. All in place structural performance required connection hardware in the portion of copper-based pressure-treated girts within 8" of grade shall be hot dipped galvanized per ASTM 153 or stainless steel type 304 as designated by the American Institute of Iron and Steel (AISI) or as specified by the designer of record.

1.4 MATERIALS - Post Headers

- A. Post headers are solid sawn or glued-laminated wood products identified in the 2005 edition of NDS.
- B. Post headers are attached to the post with connector hardware or as specified by the designer of record.

1.5 MATERIALS - Wall Sheathing

- A. Wall sheathing shall satisfy the wind load requirements as specified by the designer of record. Wall sheathing consists of Premium Pro-Rib steel panels attached to outside edge of wall girts in accordance with manufacturer's specifications or as shown on design drawing.
- B. Premium Pro-Rib steel panel substrate shall be:
- Nominal thickness of .0180"
 - G-100 galvanized coating plus zinc phosphate per ASTM 653
 - Meets UL2218 Class 4 hail resistance
 - Meets UL790 Class A fire resistance
 - Meets UL580 Class 90 wind uplift
 - Meets ASTM A 755 requirements
- C. Exterior surface consists of Premium Pro-Rib pre-painted metal panel Ceram-A-Star 1050 finish with color from manufacturer's 25 standard colors.
- D. Fasteners used to through-fasten painted corrugated steel panels shall match the color of adjacent cladding.
- E. Suppliers of wall sheathing products for post-frame building systems are listed on the NFBA website: www.nfba.org

1.6 MATERIALS - Wall Insulation

- A. Wall insulation shall be ASTM C655 conforming roll fiber glass type, shall have a material R- value of 19 hr-ft²-F/Btu or as specified by the designer of record.

1.7 MATERIALS - Primary Roof Framing

- A. All roof framing shall satisfy the load requirements, except dead load for purlins - only the contributions from the purlins, sheathing, and other roof coverings.
- B. The primary roof framing shall consist of metal plate connected wood trusses designed and fabricated in accordance with the 2002 edition of TPI1.

1.8 MATERIALS - Roof Purlins

- A. Roof purlins shall satisfy the load requirements, except dead load for purlins - only includes contributions from the purlins, sheathing, and other roof coverings.
- B. Roof purlins shall be solid sawn structural wood products identified in the 2005 edition of NDS or as specified by the designer of record.
- C. Roof purlins shall be placed directly on the top of trusses with strong axis oriented per shop drawings.
- D. Roof purlins shall be attached to the truss with fastener types and schedules per the designer of record.

1.9 MATERIALS - Roof Sheathing

- A. All roof sheathing shall satisfy all the necessary load requirements except dead load - only includes contributions from the sheathing and other sheathing coverings.
- B. Roof sheathing consists of Premium Pro-Rib steel panels attached to the top edge of roof purlins in accordance with manufacturer's specifications or as shown on design drawings.
- C. Premium Pro-Rib steel panel substrate shall be:
 - Nominal thickness of .0180"
 - G-100 galvanized coating plus zinc phosphate per ASTM 653
 - Meets UL2218 Class 4 hail resistance
 - Meets UL790 Class A fire resistance
 - Meets UL580 Class 90 wind uplift
 - Meets ASTM A 755 requirements
- D. Exterior surface consists of Premium Pro-Rib pre-painted Ceram-A-Star 1050 finish with color from manufacturer's 25 standard colors
- E. Fasteners used to through-fasten painted corrugated steel panels shall match the color of adjacent cladding.
- F. Suppliers of roof sheathing products for post-frame building systems are listed on the NFBA website:
www.nfba.org

1.10 MATERIALS - Attic Insulation

A. Attic insulation shall be ASTM C655 conforming fiber glass type, unfaced with UL flame spread classification of 25 or less where exposed and shall have a material R-value of 38hr-ft@-F/Btu per designer of record.

1.11 MATERIALS - Trim

A. All trim materials include flashings, internal and external corners, closure pieces, and fascia. All trim shall be compatible with the wall/roofing sheathing and sheathing finish materials per product supplier.

B. Suppliers of trim products for post-frame building systems are listed on the NFBA website: www.nfba.org