

From time to time, trusses are used in environments that require the use of treated lumber. Some of these treatments include fire protection and environmental protection for the lumber. Some of these lumber treatments or environmental conditions require extra corrosion protection for the connector plates. Due to the nature of some of these treated lumbers, there may be design reductions in plating and/or lumber values. These reductions can be applied in the MiTek 20/20 Engineering or Structure with Truss Design software by utilizing an inventory with treated lumber.

Within the MiTek engineering software, lumber with a “T” following it is fire retardant treated lumber (for example, 2x4 SP No.2 T); lumber with a “P” following it is preservative treated (for example, 2x4 SP No.2 P); and lumber with an “I” following it is incised preservative treated (for example, 2x4 SP No.2 I). When you select treated lumber within the program, it will take the necessary lumber and plating reductions. There will automatically be a note printed out on the truss design drawing describing the type of lumber that have been used in the design.

One common type of lumber treatment is for fire protection. There are a number of different brands of treatments that may be used, and the manufacturers of these products each have their own lumber value reductions. A few of the most common brands are Hickson Dricon, Hoover Pyro-Guard, and CSI/D-Blaze, which we have included in our Engineering program. Trusses built with any of these treatments may be fabricated with our standard G60 galvanized metal connector plates. The grip value of our connector plates is reduced by 20% and the lumber values are reduced because the treatment process alters the lumber strength. All of the reductions are taken into account automatically by the Engineering program when the included fire-retardant treated lumber is used in the design. You may select the specific brand in Sapphire™ Materials under the “Treatment” column, or you may use “T”, which will use reductions that cover these three brands. If you have a different brand of fire treated lumber, please contact your MiTek engineer to see what options might be available for you.

Preservative treated lumber is another common material used in trusses. Again, different brands and types have different reduction values. When certain types of chemicals are used, plates must be coated with approved materials to prevent corrosion. Alternatively, stainless steel plates may be used. Borate and Micronized Copper Azole (MCA also known as MicroPro™) treated lumbers do not require any reductions to design values so long as the lumber is re-dried to a 19% moisture content prior to truss fabrication. Alkaline Copper Quat (ACQ) or Copper Azole (CA) type treated lumbers do not require lumber reductions, but special ordered G185 galvanized plates, or stainless steel plates, are required to be used. A 20% reduction is required for plating for preservative treated lumber. **MiTek’s G185 plates do not require a reduction. The 20% reduction is necessary due to the fact that this lumber is typically not re-dried to 19% moisture content.** This reduction will be automatically applied by choosing “P” lumber in the Sapphire™ Materials under the “Treatment” column.

Stainless Steel Plates may be used for some corrosive environments. These plates have 25% lower yield strength than regular MiTek MT20 plates. You need to use MT20SS plates and the program automatically applies all the necessary reductions:

Name	Description
MT20SS 2x4	MT20SS 2x4
MT20SS 3x4	MT20SS 3x4
MT20SS 4x4	MT20SS 4x4

When certain types of chemicals are (or may be) present in a structure where trusses are going to be used, the plates must either be coated with approved materials to prevent corrosion, or stainless steel plates need to be used. Stainless Steel plates may not be used where they are directly exposed to a swimming pool, and we do not support using metal plate connected trusses in this situation. Please check with your MiTek engineer when you run into special cases where corrosion may be an issue.

Please note that stainless steel plates come in limited sizes, and both stainless steel and G185 plates are only available in 20 gauge. Check with your sales representative, or the MiTek plate order department for availability.

Once you know that the project you are working on will involve the use of treated lumber, and prior to bidding the job, contact your truss engineer and/or metal connector plate supplier and inform him/her of the truss application and treatment being used. This consultation will allow your engineer and/or metal connector plate supplier to determine the design criteria and connector plate type under which a truss design can be prepared. All steel components (nails, screws, or any structural connectors), not just the metal connector plate, that come in contact with the treated wood, must also be protected from corrosion.

See below for additional information from TPI and SBCA on types of lumber treatments. Please contact your MiTek engineer with any questions or concerns you may have.

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TPI/WTCA Interim Guidelines for Use of  
Alternative Preservative Treatments With  
Metal Connector Plates

January 27, 2004

<http://www.mii.com/artefact/download.asp?aid=43890>

As of December 31, 2003, chromated copper arsenate (CCA) preservative treated products are quickly becoming unavailable for use in truss applications and are already difficult to obtain in some regions. There are numerous alternative replacement products available. Our industries guidelines on preservative treatment and metal connector plates are as follows. Always check with your preservative treatment supplier for acceptability of a preservative for your application.

1. Most chemical formulators have recommended that when preservative treated lumber is required in truss applications, sodium borate or iodine based preservative treatments be used along with the typical G60 galvanized (0.60 oz zinc per sq. ft. of sheet steel, per ASTM A653) metal connector plates that are in general use today for interior applications. Typical sodium borate based preservative treatments are inappropriate for exterior wet-service applications (e.g. exposure to wetting/drying). At this time in order to use typical G60 metal connector plates, only sodium borate or iodine based preservatives are recommended. If another preservative is specified for use with trusses, it may be preferable, where possible, to request a change in the preservative treatment specification.
2. If you are required to use any of the new copper based preservative treatments, then the chemical formulators suggest that the best practice is to use G185 galvanized (1.85 oz zinc per sq. ft. steel sheet per ASTM A653), post-manufacture hot dip galvanized per ASTM A153, or stainless steel connector plates.
3. It is recommended that component manufacturers send out the preservative treatment material safety data sheets (MSDS) along with every preservative treated structural component product shipment.
4. As project specifications may require the use of a specific preservative treatment, the component manufacturer should consult its customer and project design professionals for a review and approval of any preservative treatment substitution.
5. The following tables provide a quick guide to recommended metal connector plate use with the various preservative treatments.

**Table 1 Sodium Borate or Iodine Based Preservatives**

Preservative Types	Popular Brand Names	Metal Connector Plate
Sodium Borate Based Preservatives	Advance Guard, <a href="http://www.osmose.com/wood/usa/preserved/advanceguard/">http://www.osmose.com/wood/usa/preserved/advanceguard/</a> , Osmose, Inc. at 800-241-0240	G60 Galvanized Steel (typical metal connector plated used today)
	EnviroSafe Plus, <a href="http://www.eswoodtreatment.com/">http://www.eswoodtreatment.com/</a> , Wood Treatment Products, Inc. at 800-207-2940  Envirotech WP, <a href="http://www.envirotech-wp.com/about.htm">http://www.envirotech-wp.com/about.htm</a> , Envirotech Ventures International, Inc. at 208-265-5911  SillBor and FrameGuard, <a href="http://www.wolmanizedwood.com/sillbor.htm">http://www.wolmanizedwood.com/sillbor.htm</a> , Arch Wood Protection, Inc. at 770-801-6600  TimberSaver PT, <a href="http://www.treatedwood.com/products/timbersaver/">http://www.treatedwood.com/products/timbersaver/</a> , CSI at 800-421-8661	
Iodine Based Preservative	EcoTreat, <a href="http://www.ecotreatinc.com/main.htm">http://www.ecotreatinc.com/main.htm</a> , EcoTreat, Inc. at 864-527-0497	G60 Galvanized Steel

**Table 2 Sodium Borate Based Fire Retardants That Are Also Preservatives**

Preservative Types <sup>1[1]</sup>	Popular Brand Names	Metal Connector Plate
Sodium Borate Based Fire Retardants and Preservatives	Notes: All FRTs require strength reduction considerations in design. Most FRTs are not appropriate for wet conditions. Two FRTs below are formulated for exterior use and may be acceptable for interior applications where higher humidity/moisture content exists than is appropriate for the other FRTs, but these exterior treatments may not have been tested with elevated temperatures, as specified by TPI 1-2002 sec. 6.4.9.1.1, so their use in roof applications should be excluded unless such consideration of elevated temperatures is provided. In addition, conditions wet enough to require exterior FRTs may be inappropriate for use of truss plates (see last paragraph of these	G60 Galvanized Steel (typical metal connector plate used today)

guidelines).

D-Blaze, <http://www.treatedwood.com/products/dblaze/>,  
CSI at 800-421-8661

Dricon and FRX (exterior),  
<http://www.dricon.com/> & <http://www.frxwood.com/>,  
Arch Wood Protection, Inc. at 770-801-6600

Fire-Pro,  
<http://www.osmose.com/wood/usa/retardant/overview/>,  
Osmose, Inc. at 800-241-0240

Pyro-Guard & Exterior Fire-X (exterior),  
<http://www.frtw.com/products/retardants/pg.html>,  
Hoover Treated Wood Products at 706-595-5058

**Table 3 Copper Based Preservatives**

Preservative Types	Popular Brand Names	Metal Connector Plate
Alkaline Copper Quat (ACQ)	Nature Wood, or Nature Wood with water repellent, <a href="http://www.osmose.com/wood/usa/preserved/naturewood/product/">http://www.osmose.com/wood/usa/preserved/naturewood/product/</a> , Osmose, Inc. at 800-241-0240	G185 or ASTM A153 Galvanized or Stainless Steel
	Preserve, or Preserve Plus (built-in water repellent), <a href="http://www.treatedwood.com/products/preserve/">http://www.treatedwood.com/products/preserve/</a> , or <a href="http://www.treatedwood.com/products/preserveplus/">http://www.treatedwood.com/products/preserveplus/</a> , CSI at 800-421-8661	
Copper Azole (CBA-A) Copper Azole (CA-B)	Wolmanized Natural Select, <a href="http://www.wolmanizedwood.com/">http://www.wolmanizedwood.com/</a> , Arch Wood Protection, Inc. at 770-801-6600	G185 or ASTM A153 Galvanized or Stainless Steel
	Wolmanized Natural Select with water repellent, <a href="http://www.wolmanizedwood.com/">http://www.wolmanizedwood.com/</a> , Arch Wood Protection, Inc. at 770-801-6600	

In addition to the above guidelines based on corrosion resistance, truss exposures should not result in repetitive wetting and drying, like with long periods of exterior exposure. Such exposures result in metal connector plates backing out of lumber due to an excessive amount of wood swelling and shrinkage. If specifications require a copper based preservative for exterior use or an exterior FRT, it should be verified that the metal connector plates will be used in a dry exposure to avoid plate back-out.