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About Backboards for Datacom Rooms

Sure, you care about datacom cabling, connectors, jumper cables, and all of the other items you can buy from Rexel. But the wood that goes into the equipment or telecommunications room backboard? It matters! And it can matter one heck of a lot if you get it wrong.

Q. *What codes and standards specify the backboard requirements in the Equipment Room (ER) and/or the Telecommunications Rooms (TR)?*

A. Contrary to popular belief, backboard fire-rating requirements are not listed in the National Electrical Code. The NEC (NFPA-70) is provided by the National Fire Protection Agency (NFPA-70), and is an electrical safety code.

These backboard are, instead, a building construction code issue. Local code dictates. Always check with the (AHJ) Authority Having Jurisdiction—usually the fire marshal and/or building inspector.

One might encounter some confusion in locating the appropriate fire-rating reference. To do it the right way, find the building's classification. Pay particular attention to Type I and II-F-R or Fire-Resistive buildings.

"Type of Construction" in Chapter 6 of the 1997 Universal Building Code (UBC) describes the "Classification of All Buildings by Types of Construction and General Requirements." This includes "...structural elements ..." in Type I through Type V buildings.

Type I and Type II-F-R Building "... shall be of steel, iron, concrete or masonry."

UBC Section 602.1 and 603.1 both state that the "Walls and permanent partitions of Type I (and II)-F-R buildings shall be of noncombustible fire-resistive construction, except that permanent nonbearing partitions on one-hour or two-hour fire resistive construction (the ER or TR qualifies) which are not part of a shaft enclosure, may have fire-retardant-treated wood (see Section 207) within the assembly."

Subsequently, UBC Section 207 defines Fire-Retardant-Treated Wood "as any wood product impregnated with chemicals by a pressure process or other means during manufacture, and which, when tested in accordance with UBC Standard 8-1 for a period of 30 minutes, shall have a flame spread of not over 25 and show no evidence of progressive combustion."

Further: "All materials shall bear identification showing the fire performance rating thereof."

A Fire-Retardant-Treated backboard will be designated with a fire-rated stamp "branded" or "stamped" along the edge or center of the plywood—"UL FR-S Plywood 1780 R-7003." Marine-grade plywood does NOT qualify even though it is saline "treated"—as it will have a different UL number.

See Figure One.

Note: If this wood needs to be cut, perform this task outside to ensure proper ventilation.

You've got questions about datacom

Bo Conrad, a BICSI-certified instructor, will answer them. To have your question answered in POWER OUTLET e-mail us at poweroutlet@rexelusa.com and put "Ask Bo" in the subject line.

569A STANDARD

The ANSI/EIA/TIA 569A standard (or a “recommendation”) for Commercial Buildings for Telecommunications Pathways and Spaces 7.2.4.1 (page 67) specifies: “A minimum of two walls should be covered with rigidly fixed 20 mm (three-quarter-inch) A-C plywood, preferably void-free, 2440 mm (8 feet) high, capable of supporting attached equipment.

“Plywood should be either fire-rated or covered with two coats of fire retardant paint.”

Note that the finishing grades of the plywood describe the quality of the surface for both sides:

Grade “A” is the highest grade and is without any surface blemishes, void-free of knots.

Grade “B” has the knotholes cut out and replaced with a patch of clean wood

(Both A and B refers to the top finished side of a wood table)

Grade “C” contains some blemishes and an occasional small knot-hole.

Grade “D” contains knotholes without any repair or corrective action by the manufacturer (Both C and D refers to the other rougher side not meant to be seen—similar to the under-side of a wood desk).

Fire-retardant-treated plywood is not readily available in all lumber yards and is not a stock item with distributors. In fact, the only plywood available in the immediate 50-mile area of this author was CDX or C-D grade. The cost varied from \$50-\$60 each.

A-C was available by special order at \$75-\$85 each—with two-week lead times.

See Figure Two.

When mounting, the stamp must be in full view for inspection. Regrettably, many times the stamp is on the “C” or back side of the plywood. It will be discretionary to the inspector whether this “knotty” side must be facing outward. If the “A” side is allowed to



Figure One. UL fire-retardant-treated plywood stamp.

be exposed and the “C” or branded side is mounted against the wall, it is strongly recommended that you obtain written authorization from the inspector—plus an electronic picture of it for CYA purposes.

Put the photo with your as-built drawings and/or your submittal paperwork

PAINT OVER WOOD?

Is there an alternative to using Fire-Retardant-Treated plywood? That would entail painting non-rated, standard A/C void-free three-quarter-inch by 4-foot by 8-foot plywood with a minimum two coats of fire-retardant paint.

Water-base latex paint does NOT qualify (even though it may well seem that other people can get away with it).

In a contradiction of terminologies, Chapter 3 of the new 10th edition of the BICSI Telecommunications Distribution Methods Manual uses the incorrect term “fire-resistance” paint (referring to material or structure in lieu of a substance like paint).

Fire-retardant paint is quite expensive (\$50 per gallon)—and it cannot be readily purchased at the local hardware store. The color choices are also slim (white, beige, or grey) and may not satisfy the desires of the interior decorating committee.

NOTE: If it is an absolute necessity and (if the local code allows) to paint over fire-rated plywood, DO NOT paint over the fire-rating stamp. Cover it first with masking tape to ensure it remains visible; use only light color paint. Be aware that painting over fire-rated plywood (even if you use fire-retardant paint) may cause the paint to peel and flake prematurely.

DRYWALL OVER WOOD?

One alternative (practiced only rarely) is to mount drywall over the plywood to satisfy local building code requirements. The BICSI Telecommunications Cabling Installation Manual (CIM) 3rd edition, Chapter 3 (Installing Support Structures, pages 3-6 thru 3-10) speci-



Figure Two: Inspecting plywood for fire-rating.



Figures Three And Four: Telecom room/closet backboard and mount height.

VERTICALLY, plumbed, without separation, butted 90° smoothly at the corners without gaps. This is to help facilitate mounting ladder racking around the entire perimeter of the room along with other connecting hardware, cable management (D-rings, mushroom caps, etc.), grounding busbars, and (voice) equipment.

See Figure 5.



Figure Five: Equipment-mounted backboard.

fies the same—with an option to extend the thickness to a maximum 25 mm (one inch) with the Figure drawings specifying 1220 mm (4 foot) widths.

When mounting directly onto bare metal studs, the CIM recommends using drywall screws 13 mm (0.5 in) longer than the depth of the plywood being used. If mounted onto drywall, the CIM specifies using ¼-inch-diameter toggle bolts (which must be sufficient in length to allow the bolt to seat behind the drywall after installation). The toggle bolts should be installed 50 millimeters (2 inches) from the edge of the plywood on approximately 24-inch centers.

Also recommended in the CIM: Mounting the plywood 150 millimeters (6 inches) above the finished floor of the ER or TR no matter what the height of the walls (though 8-foot, 6-inches is a minimum).

See Figure 3 & Figure 4.

Both CIM and TDMM recommend covering all four walls (two as a minimum). They recommend mounting the plywood

RETROFITS

In retrofit situations where there is no alternative for a new ER or TR, it might be necessary to “float” the old backboard. The plywood—complete with all related hardware, cabling and blocks—is actually disconnected from the closet walls! It is hung and supported temporarily from overhead supporting structures. The new backboard plywood should meet current local fire code.

Note: The NEC 2002 requires all abandoned cable to be removed from the ceilings. The “law of averages” says if a majority of the cables are going to be replaced, all new cables must meet current fire codes. However, no current specification requires the backboards to be upgraded to current building fire codes.



Figures Six and Seven: D-Rings and cable management.

Q. Can “D”-rings be used as a cable support system?

A. “D”-rings are called this as their profile is shaped like the letter D. They come in different sizes and should only be used for “cable management” on a backboard to route small bundles of cables and cross-connections from one termination point to another.

They have a very limited load factor, sharp bend radius and, therefore, should NOT be used as a “cable support” system like a bridal ring.

See Figures Six and Seven.

Conrad, a BICSI-certified trainer, has a bachelor’s degree in engineering and an MBA. His resume includes corporate executive positions from international marketing and manufacturing to corporate distributor sales and training. His company, CrossBow Communications (www.crossbowcom.com) is licensed by BICSI to conduct the Professional Cable Installer program.