

Stave Core vs. Particleboard

In DHI Magazine (Door and Hardware Institute), a wood door and particleboard manufacturer announced labeling “approvals” that would allow screw attachment of surface mounted hardware on their particleboard core doors (type LD-2 core) without using solid wood for core reinforcement. The announcement also claimed “This will essentially eliminate the need for the use of stave core doors or the use of wide stiles and rails in a particleboard core door”.

Don't be misled. While particleboard core may be acceptable in some applications, stave core and wood reinforcement in particleboard core provide additional benefits that are important for doors in heavy use applications such as medical and educational facilities.

Screw Holding Strength

Solid wood holds screws better than particleboard for secure attachment of hardware.

SCREW WITHDRAWAL IN POUNDS OF PULL/SCREW*
SLC-5 stave core door (basswood) 573
PC-5 particleboard door (LD-2 core) 260

*Test conducted per ASTM D-1037-78 using #12 threaded-to-the-head screws with 1 1/4" screw penetration.

Door Strength

Stave core doors offer greater stiffness and resistance to breakage.

This is especially true at hardware cutouts and around glass openings. When full glass doors were subjected to torsion (twist) tests, the stave door supported 450 pounds before failure compared to 192 pounds for a particleboard door with grade LD-2 core. This highlights that stave core will be a longer lasting door. When comparing physical properties of stave core and type LD-2 particleboard core it is obvious where stave gets its superior strength and ability to resist breakage.

Average Physical Properties

	Modulus of rupture	Modulus of elasticity
Basswood stave core	8,700 psi	1,460,000 psi
Type LD-2 Particleboard core	435 psi	148,700 psi

Wood reinforcement in particleboard core doors or stave core doors should be specified for use on projects or areas where doors may be subject to heavy usage or abuse.

Remember, it's your project, your specification, your reputation, and your choice. Be aware of the differences in features and benefits and specify doors to meet your project's requirements.

Algoma Hardwoods, Inc.- We make doors to your specifications.



Sound Transmission Class Doors (STC)

Excuse me? What's that you said? I'm sorry, can you please repeat that?

No, you are not losing your hearing. The reason you can't hear my conversation is that you are standing behind one of Algoma Hardwoods' Sound Transmission Class (STC) doors. And the good news? Now hear this. We've expanded our already broad range offering of STC rated wood doors. Sure we've got our standard STC 45, 43, 40, 39 and 28's. But now we've earned STC ratings for 33, 32 and 31 (with lite openings), expanding our offerings beyond our well established STC 28 fire-rated door. Please see the chart on the following page for specifics.

How about no added Urea-Formaldehyde? Well, we have addressed that. And, our STC 33, 32 and 28's can all be constructed to comply with the new LEED for Schools criteria. In fact, we can even prepare the door for lite openings and build it no added urea-formaldehyde. Algoma Hardwoods is committed to providing doors that are constructed to the most up-to-date LEED standard.

How About Collaborative for High Performance Schools (CHPS)?

We've addressed that too. Our doors have been tested by a third party laboratory to ensure their compliance with CHPS (Collaborative for High Performance Schools) for VOC emissions.

All of our doors have been tested to the strict standards defined by Riverbank Laboratories. This gives you the confidence that all of our STC rated doors will perform as specified.

Whether it's a school or military installation; government building or hospital, you are sure to find an Algoma Hardwoods' STC rated wood door that fits your project. Specify Algoma Hardwoods and you'll specify excellence.



800.678.8910 • 1001 Perry St • Algoma, WI 54201 • www.algomahardwoods.com

Dealer Information



STC Chart

STC RATING	CORE TYPE	DOOR THICKNESS	FSC	NAUF	FIRE RATING	GLASS TYPE	GLASS AREA	GLAZING SYSTEM	THRESHOLD	GASKET	DROP SEAL	TEST NUMBER
54	SPECIAL	1.75"	NO	YES	n/a	n/a	n/a	n/a	NO	S88, DBL ROW	NGP 225N	TL94-189
45	SPECIAL	1.75"	NO	YES	n/a	n/a	n/a	n/a	YES	S88, DBL ROW	NGP 225N	TL95-194
43	SPECIAL	1.75"	NO	YES	20	n/a	n/a	n/a	YES	S88, DBL ROW	NGP 225N	TL94-193
40	SPECIAL	1.75"	NO	YES	n/a	n/a	n/a	n/a	NO	S88, DBL ROW	NGP 225N	TL94-190
39	SPECIAL	1.75"	NO	YES	n/a	DBL GLAZED	400	WOOD BEAD	YES	S88, DBL ROW	NGP 225N	TL94-192
33	SCLC	1.75"	YES	YES	20	5/16", 1/4" LAMINATED, NON-RATED	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL09-170
32	SCLC	1.75"	YES	YES	20	5/16", 1/4" LAMINATED, NON-RATED	1296	WOOD BEAD	NO	S88, DBL ROW	Pemko 234	TL11-224, 225
32	SCLC	1.75"	YES	YES	20	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL08-230
32	PB	1.75"	YES	YES	20	5/16", 1/4" LAMINATED, NON-RATED	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL09-161
32	PB	1.75"	YES	YES	20	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL11-224
31	SCLC	1.75"	YES	YES	20	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	Pemko 234	TL11-224, 225
31	PB	1.75"	YES	YES	20	5/16", 1/4" LAMINATED, NON-RATED	1296	WOOD BEAD	NO	S88, DBL ROW	Pemko 234	TL11-224, 225
31	PB	1.75"	YES	YES	20	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	Pemko 234	TL11-225
31	PB	1.75"	YES	YES	20	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL08-228
31	MC 45, 60, 90 Min	1.75"	YES	YES	45-90	5/16", LAMINATED, RATED	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL09-166
30	MC 45, 60, 90 Min	1.75"	YES	YES	45-90	5/16", LAMINATED, RATED	1296	WOOD BEAD	NO	S88, DBL ROW	Pemko 234	TL11-224, 225
29	MC 45, 60, 90 Min	1.75"	YES	YES	45-90	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	ZERO 369A	TL08-229
28	MC 45, 60, 90 Min	1.75"	YES	YES	45-90	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	Pemko 234	TL11-224, 225
28	PB	1.75"	YES	YES	20	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	NGP 225N	TL94-188
28	MC 45, 60, 90 Min	1.75"	YES	YES	45-90	Optional***	1296	WOOD BEAD	NO	S88, DBL ROW	NGP 225N	TL95-390

*** Laminated Glass with STC ≥35 to be used (will maintain desired STC rating), rated glass for fire doors, Cat.II impact rating



More than a name...it's a standard.

800.678.8910 • 1001 Perry St • Algoma, WI 54201 • www.algomahardwoods.com

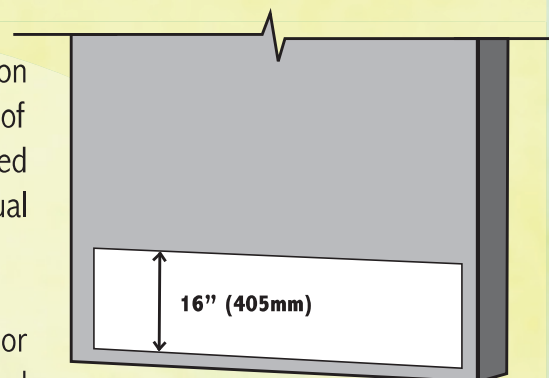
Algoma Tech Report

Protection Plates on Fire Doors

NFPA 80 PROTECTION PLATES

NFPA 80, Standard for Fire Doors and Fire Windows, 1995 Edition, limits protection plates or kickplates on fire doors to a 16" (405mm) high area at the bottom of the door. Protection plates attached above this area must be tested and approved and the plate material must be as indicated in the door manufacturer's individual published listings. **Algoma has approvals over 16" (405mm) in height.**

Plates are usually fastened to wood doors with adhesives, small screws or other mechanical fastener. The attachment method also has to be "tested and approved". Verify approvals with your door supplier to avoid problems as some building inspectors may reject installed fire doors with protection plates if the are not in accordance with NFPA 80 or the door manufacturer's published listings.



Unless otherwise tested and approved, protection plates are to be located within the lower 16" (405mm) area of the door.

Algoma Hardwoods, Inc. - Protection Plate Approvals

C-label and B-label Wood Fire Doors (45, 60, and 90 Minute):

Materials:	U.L. Listed cladding materials for doors and frames (Rigid-PVC) or high- pressure laminates, maximum thickness .060" (1.5mm).
Maximum Size:	48" (1220mm) from bottom of door, one or both faces of door.
Attachment:	Can be applied with the peel and stick adhesive supplied on the back of the protective plate or with an adhesive as recommended by the cladding manufacturer or with Swifts #17383 contact cement.
Other Options:	May be used with full or partial height surface type Rigid-PVC or stainless steel edge guards.

20 Minute Wood Fire Doors:

Materials:	U.L. Listed cladding materials for doors and frames (Rigid-PVC), aluminum, bronze, stainless steel, or high-pressure laminates, maximum thickness .060" (1.5mm).
Maximum Size:	48" (1220mm) from bottom of door, one or both faces of door.
Attachment:	Can be applied with the peel and stick adhesive supplied on the back of the protective plate or with an adhesive as recommended by the cladding manufacturer or with Swifts #17383 contact cement. Aluminum, bronze, or stainless steel protective plates may also be applied with metal wood screws.
Other Options:	May be used with full or partial height surface or mortise type Rigid-PVC or stainless steel edge guards.

Advantages of Factory Finished Doors

The finish on a wood door serves two main purposes. First, it is a means to enhance the natural beauty of the wood veneer. The second is to protect the wood from the effects of natural deterioration and wear from daily use. The appearance of the door finish (along with the veneer species, cut, and match) determines the important first impression of an architectural wood door. Factory finished doors provide the best appearance and durability to ensure they meet both aesthetic and performance requirements of your project.

The Benefits of Factory Finishing Include:

A pleasing consistent appearance with more uniform color, texture, and sheen as doors are properly prepared (machine sanded) just prior to application of stain and finishes by state-of-the-art equipment.

Smoother finishes free of impurities as factory conditions provide a well lighted, temperature controlled, dust free environment for finishing.

Reliable compliance with environmental regulation as solvent (VOC) emissions and waste disposal are controlled at the door factory, meeting Environmental Protection Agency requirements.

Lower finishing costs in most cases as factory automation is more efficient than manual handling and finishing.

Protection from varying job site conditions (temperature and humidity levels, dust, dirt, etc.) as all surfaces are sealed and doors are individually packaged prior to leaving the factory.

Doors which look better for a longer period of time because chemical and wear resistance properties of factory finishes are higher than most field applied finishes.

Simplified service should there be any questions. Factory machined and finished doors have only one vendor to contact if there are service issues to be resolved.

Faster project completion since doors need only to be installed after delivery to the job site.

The Appearance of field finished doors is not covered by the manufacturer's warranty. Door manufactures' warranties do not cover the appearance of field applied finishes because of the many uncontrollable variables that may exist at a construction site (temperature and moisture variation, dust, and other factors). Field conditions may also limit sanding and preparation of the wood surfaces prior to applying stain, the most crucial step in any finishing process. Specify factory finished doors to avoid these problems.

Architectural Wood Doors are the building's permanent furniture. Why risk their appearance to anyone less than the manufacturer's trained craftsmen? Factory finished doors offer the best quality, warranty, environmental, and economical results.

Specify factory finishing for the wood doors on your next project.

Algoma Tech Report

Positive Pressure Approvals

Specifications calling for positive pressure doors or door systems are likely to increase over time. To aid you in responding to those needs, the following summarizes the positive pressure approvals that Algoma Hardwoods currently has.

Category A: No additional edge-sealing system is required. The intumescent is contained in the door itself.

20 minutes (UL and ITS/WHI):

- Single swing 4/0 x 8/0
- Pairs 8/0 x 8/0, standard swing and double egress
- S-Label for singles and pairs
- Hardware applications:
 - Manual or automatic flush bolts
 - Mortise or cylindrical locks
 - Rim exit device
 - Surface vertical rod (SVR)
 - No metal edges required on pairs
 - No treated edges required
 - No astragal required (except S-label)
 - Lites — 1,296 in²
 - Wood Frame 8/0 x 8/0

45 and 60 minutes (UL and ITS/WHI):

- Single swing 4/0 x 8/0
 - Mortise or cylindrical lock
 - Rim exit device
 - Surface vertical rod
- Pairs 8/0 x 8/0, standard swing
 - Manual or automatic flush bolts
 - Surface vertical rods (SVR), 4 point latch
 - SVR or flush bolt X mortise lock, 3 point latch
- S-Label for singles and pairs
- Additional hardware applications:
 - No metal edges required on pairs
 - No treated edges required
 - No astragal required (except S-label)
- Lites — 45 minutes — 1,296 in²
60 minutes — 100 in²

90 minutes (UL and ITS/WHI):

- Single swing 4/0 x 8/0
- S-Label
- Hardware applications:
 - Mortise or cylindrical locks
 - Rim exit device
 - SVR
 - Lites — 100 in²

Category B: Additional edge-sealing system required. The intumescent is surface applied to either the frame or the appropriately rated neutral pressure door.

NOTE: Algoma Hardwoods does not sell or supply intumescent.

Zero 20 Minutes Systems 820 and 850

- Single swing 4/0 x 8/0
- Pairs, standard swing 8/0 x 9/0

3M Graphite Intumescent Strip (GIS) 20 Minutes System

- Single swing 4/0 x 8/0
- Pairs, standard swing 8/0 x 8/0
- Lite kit 1,296 in², wood beaded lite

3M GIS+ 20 Minutes System

- All of the above, plus S-Label.

3M GIS 45 Minutes System

- Single swing 4/0 x 8/0
- Pairs, standard swing 8/0 x 8/0

3M GIS+ 45 Minutes System

- All of the above, plus S-Label

For more information, please call Mr. Larry Grzemkowski at 800.678.8910, extension 153.

Environmentally Certified Wood Doors

When the job demands “green” doors, Algoma can respond with FSC certified Architectural Wood Doors.

Increasingly, architects, builders and owners are looking at environmental considerations in their selection of building materials. In the door segment of the buildings materials industry, this affects everything from reforestation and environmentally-friendly harvesting, to timber processing and, ultimately, to the manufacturing of assembled products. Those manufacturers looking to provide “green” products to the market use independent, third party certification as a primary means of improving public perceptions among purchasers who are concerned about the environment. Third party certification verifies that products are, in fact, environmentally-friendly, i.e. ‘green.’ Chain-of-custody certification of primary and secondary manufacturers ensures that only wood that comes from certified forests is sold to consumers as certified product. Algoma Hardwoods has been granted a five-year FSC Certificate, signalling compliance of its sourcing and procedures with requirements of the FSC program, 3rd party certified by Smartwood of the Rainforest Alliance and approved by the Forest Stewardship Council (FSC). FSC guidelines include:

- Certification that trees were grown, managed and harvested under guidelines for “good forestry practices”
- Documentation that secondary processors (e.g. sawmills, veneer slicing mills, and door manufacturers) ensure that the certified lumber and veneers are used in the final, certified products

Algoma’s status as a certified FSC supplier is maintained through annual audits to ensure compliance with guidelines relating to process, purchase and sale of certified products, as well as by the payment of annual certification fees.

Algoma endorses and practices the responsible use of material, energy and people resources and attempts to put that philosophy in practice in all of its products.

FSC Certified products (or certified “green doors”) need to be specifically called out in Specifications.

Requests for Quotations and Purchase Orders. The following is offered as a guide-spec for your use:
Section 8210 - Wood Doors

For insertion in either Part 1 (General) or Part 2 (Products)

Construction and materials required to be per the FSC Certification Program, 3rd party certified by Smartwood of the Rainforest Alliance and accredited by the Forest Stewardship Council.



The mark of responsible forestry © 1996 Forest Stewardship Council A.C.
FSC-C005458

A Grade versus AA Grade Veneers

Prior to mid-1997 both the Architectural Woodwork Institute (AWI) and the Window and Door Manufacturers Association (WDMA) defined Premium grade doors identically. However, in mid-1997, the AWI published new standards in which the veneer grade requirement for a premium grade door went from grade A to grade AA. The change was made to ensure that doors were to match the panelling and casework on higher end projects, given that they are often grade AA. The change has created an inconsistency with WDMA standards, as well as confusion regarding veneer grade appropriateness for different applications. Grade A veneers are and should be specified on the majority of building projects, e.g. educational, medical, office and governmental building projects.

Following is a comparison of the implications resulting from the selection of each grade:

	Grade AA	Grade A
Economics	+10% to 30% upcharge to Grade A	Normal market pricing
Lead-times	Extended lead-times or not available	Normal lead-times
Wood Resource Use	Poor use of wood resources; decrease in yields	Optimal use of wood resources
“Marketability”	Limited need. Primarily to match architectural railwork or panels	Industry standard. Generally acceptable in all but a few select projects

It is the responsibility of the architect or specifier to select what veneer grade and appearance is required on a given project. Important in the decision-making process is an understanding of the terminology and implications of door and veneer grade.

Because of the conflicting veneer requirements between WDMA and AWI, it is critical that a specifier always indicates the door grade (premium or custom) and the veneer grade AA, A or B).

For further information, please contact your Algoma Hardwoods representative.

Note: We welcome your making use of our Tech Reports. Please feel free to duplicate as appropriate.