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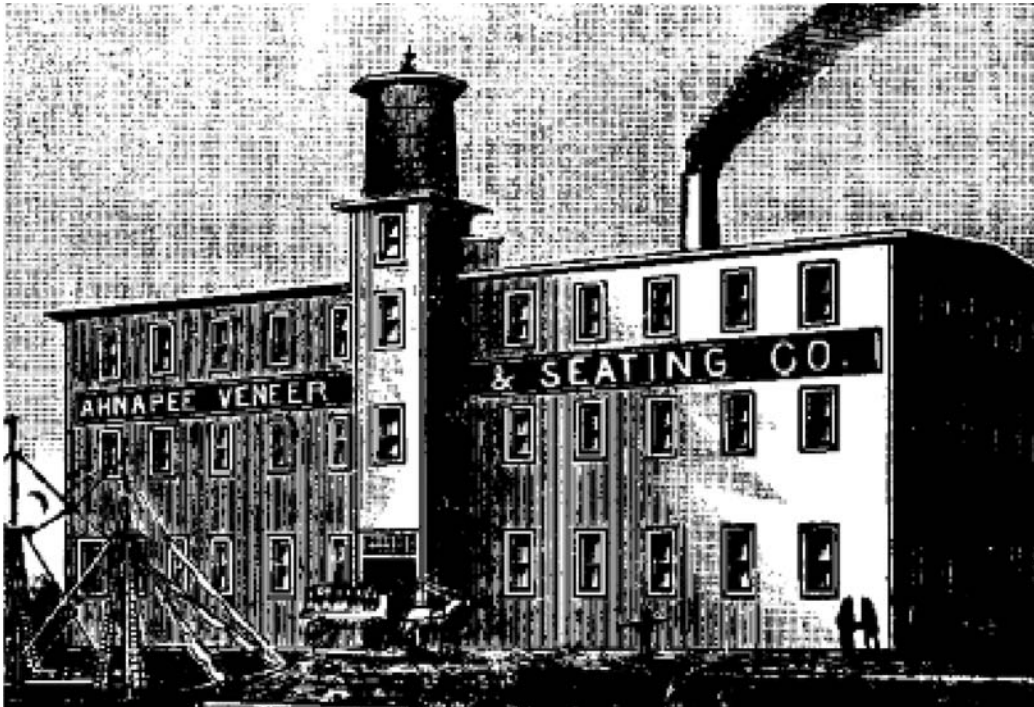
General Information

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About the Company



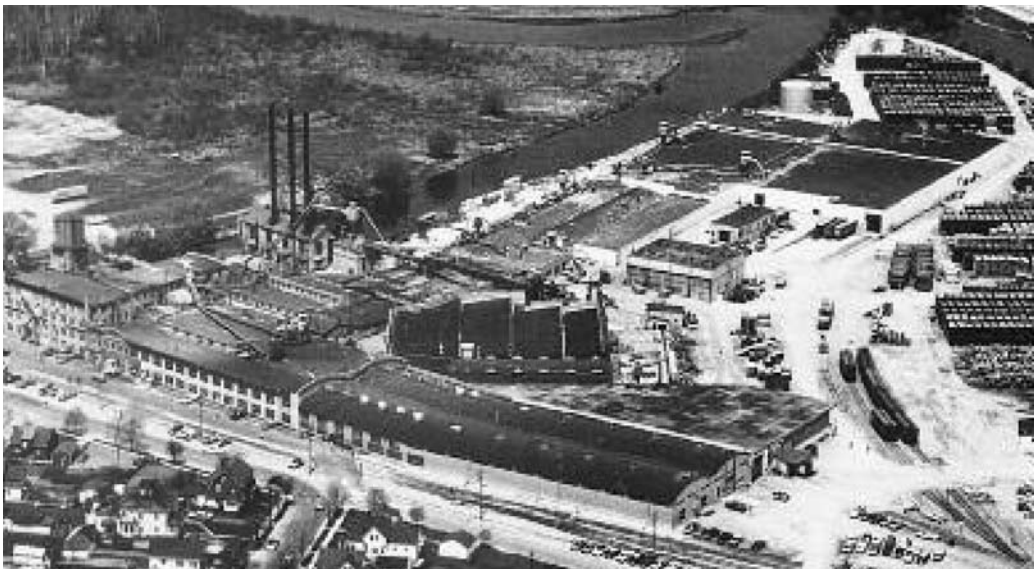
Algoma Hardwoods, Inc. was formed in February 1977. The original company was founded in 1892.

Algoma Hardwoods is an experienced manufacturer with a century-old reputation for skill, knowledge and the highest quality products.

First to develop the wood faced mineral core fire door in 1947, Algoma Hardwoods continues to lead the industry in the research and development of products for life safety.

Algoma Hardwoods is equipped to bevel, prefit, premachine and prefinish flush wood solid core doors. Stile and rail doors and wood frames are also offered.

Algoma® Made products are available at competitive prices throughout the country. Qualifying customers can order directly from the mill by calling 800-678-8910.



To bring the mill and its customers closer together, Algoma Hardwoods has a sales force continuously calling on architects, interior designers, and customers throughout the country. These service professionals are ready to assist you with their time, product knowledge and solutions to your problems.

Sales Organization

Sales Organization

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Warranty Information

COVERAGE

This Warranty applies to Purchasers of the below-described products from Algoma Hardwoods, Inc., and to resale of them during the full warranty term, including Transferees of the product. Algoma Hardwoods, Inc. warrants that its products hereinafter listed, will be free from manufacturing defects which would render them unserviceable or unfit for their normal, recommended use for the time periods indicated below.

-PRIOR TO INSTALLATION

Any Algoma Hardwoods door or frame found by an authorized representative of Algoma Hardwoods to be defective within the meaning of this warranty, prior to installation, will, at Algoma Hardwoods' option, except as provided on the reverse side hereof with respect to claims relating to door warp or photographing, either be repaired, or replaced with an identical product delivered to the location or the structure without charge. If, after a reasonable number of attempts to remedy the problem, repair or replacement is not practical, Algoma Hardwoods will refund the purchase price of the product.

-AFTER INSTALLATION

If any product becomes defective after installation, Algoma Hardwoods will agree, in addition to the above, to pay reasonable expenses for removing, rehangng and refinishing. Such removal and rehangng shall be performed only with the approval of Algoma Hardwoods and after the cost of such work has been determined. **IF THE DEFECT FOR WHICH THE PRODUCT IS BEING REJECTED WAS VISIBLE AND APPARENT PRIOR TO INSTALLATION, Algoma Hardwoods CANNOT BE RESPONSIBLE** for the cost of removal and reinstalling the product.

EXCEPTIONS TO COVERAGE

ALGOMA HARDWOODS SHALL HAVE NO LIABILITY UNDER THIS WARRANTY UNLESS SUCH DOORS OR FRAMES HAVE BEEN HANDLED, STORED, FINISHED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH ESTABLISHED BUILDING PRACTICES, THE RECOMMENDATIONS SET FORTH ON THE REVERSE SIDE HEREOF, AND ALGOMA HARDWOODS' WRITTEN INSTALLATION RECOMMENDATIONS, AND HAVE BEEN SUBJECTED ONLY TO NORMAL USE. FURTHERMORE, UNLESS THE PRODUCTS HAVE BEEN PREFINISHED BY ALGOMA HARDWOODS, ALGOMA HARDWOODS SHALL HAVE NO LIABILITY UNDER THIS WARRANTY FOR THE FINISH OF SUCH DOORS OR FRAMES. This warranty does not apply if the defect or failure of the warranted product to conform to the warranty was caused by damage while in the possession of the consumer. **ALGOMA HARDWOODS' SOLE RESPONSIBILITY IS AS STATED IN THIS WARRANTY, AND ALGOMA HARDWOODS IS NOT LIABLE FOR CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES.** (This warranty gives you specific legal rights, and you may also have other rights which vary from state to state).

CLAIMS PROCEDURE

Algoma Hardwoods cannot inspect or control the handling or exposure of doors or frames after shipment; therefore, the Purchaser must inspect them when received. The Purchaser, upon discovery of a defect in the product, must notify Algoma Hardwoods, Inc. in writing, of the defect within thirty (30) days of discovery of the defect.

OTHER CONDITIONS ON WARRANTY

It shall not be Algoma Hardwoods' policy to inspect finished installations for the sole purpose of certifying that the installation is within warranty. **THIS WARRANTY WILL NOT COVER EXCLUSIONS, IS SUBJECT TO TOLERANCES, AND REQUIRES STRICT COMPLIANCE WITH THE STORAGE, HANDLING, JOB FINISHING AND INSTALLATION INSTRUCTIONS, ALL STATED ON THE REVERSE SIDE OF THIS WARRANTY.**

WARRANTY	Product	Interior Use	Exterior Use
	Wood Frames	Life of original installation	NOT WARRANTED
	Architectural Hot Press (PC-5 Novodor) FD 1/3 Hour	Life of original installation	NOT WARRANTED
	SLC-5 Stave Lumber Core, FD 1/3 Hour	Life of original installation	NOT WARRANTED
	SCLC-5 Structural Composite Lumber Core, FD 1/3 Hour	Life of original installation	NOT WARRANTED
	FD 11/2, FD 1, FD 3/4 Hour	Life of original installation	NOT WARRANTED
	SR Acoustical, FD 1/3 Hour	Life of original installation	NOT WARRANTED
	LL Lead Lined, FD 1/3 Hour	Life of original installation	NOT WARRANTED
	Stile and Rail/Artisan	Life of original installation	NOT WARRANTED
	FGFW Full Glass Full Warranty 1/3 Hour	Life of original installation	NOT WARRANTED
	SHC & IHC Hollow Core	Limited 1 year warranty	NOT WARRANTED
	PC-7 (Commercial Cold Press)	Limited Lifetime	NOT WARRANTED
	Commercial Cold Press (PC-7) FD 1/3 Hour	Limited Lifetime	NOT WARRANTED

*Exclusions and limitations for exterior doors listed on reverse side.

Purchaser _____ Name of Installation _____

Address _____ City _____ State/Zip _____

Algoma Order No. _____ No. of Doors _____ Type _____

_____ No. of Doors _____ Type _____

Date Shipped _____ No. of Doors _____ Type _____

_____ No. of Doors _____ Type _____

_____ No. of Doors _____ Type _____

_____ No. of Frames _____ Type _____

By: _____



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Warranty Information

PHOTOGRAPHING AND WARP TOLERANCES

1. Stiles, rail, and core show-through (photographing) on flush doors shall not be considered a defect unless the faces of the door vary from a true plane in excess of .010" in any three inch span.
2. Warp shall not be considered a defect unless it exceeds 1/4" in the plane of the concave side of the door itself. The following warp allowances are for 13/4" or thicker doors. For doors wider than 3'6" and less than 7' in height, the warp shall not exceed 1/4" in a section 3'6" by the height of the door. For doors wider than 3'6" and higher than 7', the warp shall not exceed 1/4" in any 3'6" by 7' section. For doors up to and including 3'6" wide and over 7' in height, the warp shall not exceed 1/4" in any 7' length of door section. "Warp" is any distortion in the door itself and does not refer to the relationship of the door to the frame or jamb in which it is hung. The term "warp" shall include bow, cup and twist. In measuring the amount of warp present in a door, the following method shall be used: bow, cup, and twist shall be measured by placing a straight edge, taut wire or string on the suspect concave face of the door at any angle (i.e., horizontally, vertically, diagonally), with the door in its installed position. The measurement of bow, cup and twist shall be made at the point of maximum distance between the straight-edge, taut wire or string and the face of the door.
3. Manufacturer has the option to let the warped or photographing door hang 1 year to acclimate to surroundings.
4. Exterior doors, or interior doors subjected to different temperature or humidity conditions on each side of the door; or stored or used in conditions outside the guidelines below will not be warranted.

CERTAIN ADDITIONAL MATTERS EXCLUDED FROM THIS EXPRESS WARRANTY

1. The appearance of field finished doors or frames is not warranted.
2. Natural variations in the color or texture of wood are not to be considered as defects.
3. Since bleaches sometimes react unfavorably to minerals and other particles in wood, Algoma Hardwoods will not be liable for results of the bleaching of wood products.
4. The warranty against warp does not apply to the following:
 - a. Doors with face veneers of different species on each side.
 - b. Doors that are improperly hung or do not swing freely.
 - c. Doors with top and bottom rails not sealed.
 - d. Exterior doors
5. This warranty does not cover:
 - a. Doors with cutouts for lights, louvers and/or face grooves, any edge of which is nearer than 5 inches to any edge of the door.
 - b. Doors with cutout areas exceeding 40 percent of the door area, or with individual cutouts exceeding 54 inches in height (Exception: FGFW Full Glass Doors).
 - c. Doors with less than 5 inches between cutouts for lights, louvers, locks, and/or other hardware cutouts (Exception: 1 1/2" on stile and rail doors and 1 1/2" on FGFW Full Glass Doors).
 - d. Any delamination or warpage caused by failure to protect and seal all exposed surfaces of the door and the continued proper maintenance of these surfaces.
 - e. The appearance of wood doors with a high gloss finish.
 - f. Doors with hardware that is not compatible with a particular door construction. Concealed overhead closers, stops, or holders are limited to a maximum mortise dimension of 13/8" wide by 1 13/16" deep on particleboard or stave core doors (13/4" or thicker doors) and not approved for use on fire-rated doors.
 - g. Repairs, rework or replacements made without prior written consent from manufacturer.
 - h. Normal wear and tear including wear through of the finish or doors deteriorating for reasons other than material and workmanship of the door itself.
 - i. Doors and accessories that are not acceptable to local authorities having jurisdiction.
 - j. Doors where self-tapping or combination metal/wood screws are used to surface applied hardware.
 - k. Exterior doors.

HANDLING, JOB FINISHING AND INSTALLATION INSTRUCTION

1. Deliver doors or frames to building site after plaster or cement is dry. If doors are stored at jobsite for more than one week, all edges should be sealed.
2. Handle with clean gloves and do not drag doors or frames across one another or across other surfaces.
3. Store flat on a level surface off the floor in a dry, well ventilated building. Cover to keep clean and avoid discoloration with opaque covering which does not permit light to penetrate. Covering must allow air circulation. Relative humidity should not be less than 25 percent or greater than 55 percent to aid in preventing warping and photographing. Avoid exposure to direct sunlight or artificial light, as some veneers will change color when exposed to light.
4. Doors and frames should not be subjected to: abnormal heat, extreme dryness, humid conditions or sudden changes therein.
5. The structural strength of the door or frame must not be impaired in the fitting of the door or frame, the application of hardware, or cutting and altering the door for lights, louvers, panels or any other special details. Cutting for electric strikes or other hardware may impair the structural strength of the frame.
6. For all doors up to 7'6" high, use three hinges. All doors 7'6" or higher require an additional hinge for each additional 30" of length.
 - a. Top and bottom offset pivots require one intermediate pivot up to 7'6" and an additional pivot for each additional 30" of length.
 - b. Center hung pivots warranted on PC-5 up to 7'0". All doors above 7'0" up to 8'0" must use stave lumber core.
7. Before finishing, remove handling marks or effects of exposure to moisture with a thorough, final sanding over all surfaces of the door using 120 to 180 grit sandpaper and clean before applying sealer or finish, otherwise a blotchy appearance may result. Sanding and finishing should be done in a horizontal position. Some species of wood contain a chemical (oak particularly) that reacts unfavorably with certain finishes. Where possible, the surface should be tested for such unfavorable reactions. Application of a thinned clear sanding sealer, followed by light block sanding before finishing, will promote the uniformity of subsequent stain coats. The full beauty of wood is best emphasized by the use of a satin or semi-gloss finish rather than high gloss. For spray application of paint on paint grade surfaces, additional preparation of the surface will be required to minimize visibility of grain. The darker the stain color, more sanding and prepping is required.
8. Immediately after fitting, or cutting for closers, weatherstrip and/or threshold, and before hanging any interior or exterior door on the job, the entire door, including the top and bottom edges, must receive an application of primer and two coats of a good grade paint, varnish or lacquer. Adequate drying time must be allowed between coats. For jobsite finishing, do not use a water-thinned paint unless an oil base prime coat is first applied. Exterior finishes shall be used on the exterior face and all edges of exterior doors.
9. Dark colored finishes should be avoided on exterior surfaces of exterior doors.
10. Doors or frames prefinished at the factory should be compared with the approved finish sample before installing. Installation of prefinished doors or frames shall constitute acceptance.
11. Finishing at the job site should be discontinued immediately if unsatisfactory results are evident. The manufacturer should be consulted for possible corrective action before continuing.



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Policy on Field Finishing

Finishing at the jobsite or in our customer's shop shifts the responsibility away from the Algoma factory. (See Algoma Hardwoods' Door Warranty, Tolerances, Exclusions and Instructions.) To assist all parties in recognizing their responsibilities, the notice shown here is included with every packing slip on every shipment leaving the factory.

NOTICE: JOB CAPTAIN AND FINISHER

Storing Doors

Pile doors on leveled supports covered with a sheet of plywood or heavy cardboard to protect the face of the bottom door. Cover the top door in a similar manner. Protect all doors from exposure to light with dark colored polyethylene or similar material. Do not store doors in damp areas or freshly plastered buildings. Storage area should be dry and well ventilated. Relative humidity should range from 25% to 55%. Do not subject material to extremely high or low humidity. **This is extremely important for fire doors because some constructions have fire retardant chemicals in them which will draw moisture. (See instruction sheet attached to each fire door.)** When moving doors, handle them with clean hands or wear clean gloves. Bare hands leave finger marks and stains. Do not drag them across each other or against other surfaces. If unfinished material is to be stored at jobsite for more than one week, all edges should be sealed.

Finishing Doors

All doors must be inspected for matching, face grade or other visual defects prior to installation and finishing. These doors **should not be considered as ready for finishing** as received. The factory cannot be responsible for the manner in which they are handled once they are loaded for shipment.

Before applying **any** finish, the finisher **must thoroughly block-sand or belt-sand both faces** with 120 to 180 grit sandpaper in order to remove all scuffs, scratches, burnishes, raised grain, handling marks and effects of exposure to moisture. Thorough sanding cannot be done without using a sanding block and the door must be in a horizontal position.

To ensure uniform color when applying any stains, it is highly recommended that a wash coat be applied, followed by a light sanding. It is also essential to apply stains with the door in a **horizontal position**. This permits easier handling of materials and prevents the solvents from evaporating too quickly, which is a common cause of streaks caused by the stains "setting up" before clean up can be completed. If problems develop in finishing **do not** continue with the finishing. Notify your finish supplier or door supplier immediately. Avoid extremely dark stains on light colored woods. **The darker the stain the better the preparatory sanding must be.**

Doors to be painted in the field will require additional field preparation before application of the final coats. Additional preparation may include spackling and/or sanding because of hidden surface blemishes or differential absorption of finish coats.

FAILURE TO FOLLOW THESE FINISHING INSTRUCTIONS PUTS TOTAL RESPONSIBILITY FOR THE APPEARANCE OF THE FINISHED PRODUCT IN THE HANDS OF JOBSITE PERSONNEL.

If these instructions are contrary to instructions supplied by the finish manufacturer, all work should stop until an understanding between finish supplier and door supplier is reached.

All doors must be inspected for color match, face grade or other visual defects prior to installation and finishing.

If the customer cannot prove to us that the material supplied by Algoma Hardwoods was handled as outlined above, we cannot be held liable for problems that may be encountered.

Fire Door Installation and Field Finishing

Field Fitting & Machining for Hardware

Algoma® Made Mineral Core Fire Doors have hardwood plywood inner edge bands. This material is so strong that driving screws, nails or nail sets into the stile will be very difficult.

Fitting

Doors must be trimmed, beveled and machined at the factory or at a shop licensed under UL or ITS/WHI. Field machined doors may be rejected by authorities having jurisdiction.

The installer should never trim from the top of the door. For height, it is allowable to trim up to 3/4" from the bottom end of the door. Fire doors should never be cut down in width to fit a smaller opening than the size for which the door was manufactured.

Unless ordered otherwise, Algoma will always prefit single fire doors by 1/8" at each stile, or 1/4" in total width; paired fire doors by 3/32" at each stile, or 3/16" in total width.

Algoma's fire doors will be prefit 5/8" for length, with 1/8" clearance at the top and 1/2" at the bottom, unless ordered otherwise.

Both vertical edges will be beveled 3 degrees unless ordered otherwise.

Machining for Hardware

Algoma's fire doors **may be** hung with standard weight .134" x 4 1/2" x 4 1/2" non-ball bearing hinges up to 9'0". (Over 9'0", ball bearing hinges must be used.) Doors 7'6" or higher require an additional hinge for each additional 30" of length. Listed spring hinges may be used.

Pilot holes 5/32" in diameter must be drilled to accept a #12 x 1 1/4" fully threaded steel screws with constant diameter wood type threads for attaching the hinges. Use not less than #8 fully threaded screws and 1/8" pilot holes for a lock attachment.

Listed surface applied, thru-bolted closers, are recommended for wood fire doors. Surface closers may also be applied with screws, rather than thru-bolts when Superfire top rails are specified for mineral core fire doors. Unless doors are ordered with the heavy duty reinforcing, thru-bolts must be used to fasten closers or any other surface hardware. **(DO NOT OVERTIGHTEN THRU-BOLTS.)** If screws are used, **DO NOT** use self-tapping or combination wood/metal screws.

All Algoma® Made mineral core fire doors shall be installed in listed and labeled wood or metal frames.

Note: If Algoma® Made Fire Doors are purchased factory prefit and premachined, Algoma will predrill pilot holes for screws on mortise hinges upon request. Installation will only require application of hinges. Pilot holes for attachment screws on locks, other hardware and surface applied hardware will require drilling at the job.

Field Finishing Procedure

Prior to finishing, follow instructions as described in Policy on Field Finishing, page 8.

Do not use steel wool under any circumstances.

Use only oil soluble stains and test on an inconspicuous area of a door to be sure the desired color will be obtained.

INSTALLATION AND FIELD FINISHING INSTRUCTIONS MUST BE FOLLOWED OR WARRANTY IS VOID.



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Policies and Procedures

Quotations. Per door, frame and other schedules, freight allowed, F.O.B. Algoma, USA dollars. No "Plans and Specs" quotes are made at Algoma. No "Plans and Specs" orders will be accepted.

Prices quoted by Algoma's customer when using Algoma's Quick Quote Program, will not be binding on the mill if in error, or if date quoted by customer is not registered at Algoma by sending in a copy of his quote. All prices, discounts and terms of sale are subject to cancellation, withdrawal or change without notice.

Terms of Sale. F.O.B. Algoma, WI Net 30 days ADI (After Date of Invoice). In brief form: Net 30 days ADI. A service charge of 1 1/2% per month, or part thereof, will be assessed on any past due balance.

Order Acknowledgments to Customers. Once the approved door, frame and hardware schedule and shop drawings are in hand, Algoma Hardwoods will be responsible for the proper location of the machining for hardware as taken from above schedules. This and all other information for producing a door order will be written into Algoma Hardwoods' order form and a copy of it returned to the customer for his acknowledgment. The customer is responsible for acknowledging the correctness of:

1. The proper number of doors on each item and the total order.
2. Proper door construction by item.
3. Proper door sizes by item.
4. Proper door swings.
5. Correct lite and louver locations within the door's area.
6. Correct hinge and lock locations.

The above items must be known to produce the doors; therefore it is essential that the acknowledgments be returned or valuable time will be lost in producing the order. To underscore this, the following note is included on the acknowledgment of each machined and/or finished order:

This acknowledges your order as we interpret it. Please check it for errors and return a signed copy immediately (with corrections noted in red). Production may have already begun. Delays in acknowledging may result in backcharges for material and labor if changes are not due to our misinterpretation. Failure to return a signed acknowledgement shifts responsibility back to the customer.

Prices. Acknowledged prices are based on the order as written, not necessarily on your inquiry or our original quotation. Prices as shown on acknowledgment are final (assuming no changes are made) and will be invoiced on the date of shipment.

Order Changes and Cancellations. Changes must be confirmed by customer in writing. Order changes received prior to actual production being started will be processed at a minimum of \$200 per order change. After production has started and the change requires rework, refacing, etc., customer will be charged a minimum of \$200 plus all necessary rework costs on a time and material basis. Cancellations received prior to actual production will be processed at a minimum of \$250. Cancellations made after production has started will cost \$250 plus expenses for all costs incurred. Those customers who, after the order has been written and entered by Algoma, submit a complete new schedule of any type, will be charged at the rate of \$50 per hour for time spent updating Algoma's order.

Buck sheets sent in lieu of a frame schedule will incur a \$5/door charge in addition to the standard coordination charge.

Consignment Policy. All consignment material use must be approved by Algoma Hardwoods prior to acceptance of an order.

All other consignment materials must be properly marked and labeled with customer name and order number. If consignment material is not received in time for scheduled installation, shipment will not be delayed—items will be shipped without installation, and consignment material will be returned to customer (collect) when received.

Consignment material must be shipped to Algoma freight prepaid. All charges will be applied to the order. All paperwork, expediting, tracing, etc. must be handled by the customer.

Samples. Construction Samples: 1 3/4-inch thick, 6" x 6" mill-option species faces and stiles. Faces and stiles clear Univar®-finished, rails sealed. Labeled for identification. On jobs, up to 3 samples will be furnished at no charge. Additional samples charged as follows:

FD 1/3 Hour Samples\$15.00 each
FD 1 1/2, 1 or 3/4 Hour Samples\$20.00 each

When submitting only veneers and/or finishes for approvals, 1/4" x 8 1/2" x 11" plywood samples will be supplied. (Unfinished or standard Univar®-finished; up to 3 at no charge.) Additional quantities are \$5.00 each for unfinished and \$7.50 each for finished samples.

Custom Samples. Special samples other than above, built to architects' job specifications, finished and unfinished. Please contact the mill for pricing.



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Policies and Procedures

Retainage. Algoma's invoices are not subject to retainage. Payment of invoice in full will not forfeit the right of the buyer to request subsequent corrections or adjustments.

Legislation. Seller represents that with respect to the production of the Articles and/or the performance of the services offered, it has fully complied with the provisions of the Fair Labor Standards Act of 1938 as amended. Algoma Hardwoods is an equal opportunity employer and has an approved Affirmative Action Plan on file.

Special Orders. All orders of special nature, size, thickness, face, core or cut are subject to special quotation and may not be canceled after acceptance by Seller. Seller reserves the right to require 50% advance payment on such orders.

Claims and Complaints. All claims for obvious defects, shortages or delays relating to the merchandise sold hereunder must be made in writing to Seller within five days after receipt of such merchandise, and Seller shall not be liable for any such claims not made within such time period. Under no circumstances shall Seller be liable for incidental or consequential damages arising out of any defect, shortage or delay or any breach of warranty and all such damages are specifically excluded. All other claims and complaints must be submitted in writing to Algoma Hardwoods. No commitment to return material will be honored unless approved by Algoma Hardwoods. No backcharge of any kind will be honored unless previously authorized by Algoma Hardwoods.

Appearance. All doors must be visually inspected for face grade, color, match and other defects by the customer prior to further work or installation. We are responsible for repairing or replacing material as originally furnished, but not refinishing or reinstallation if the defect could be detected prior to further work or installation. If manufacturing defects are detectable only after sealing or staining, no additional coat of finish may be applied without approval of the manufacturer.

End Matching. A variation of grain pattern is considered acceptable for end matching:

Single door and transom3/8"
Pair of doors with single transom1/2"

Force Majeure. Seller shall have no liability for any delays or non-performance due to strikes or other labor disturbances, fire, flood, shortage of materials, delays in transit, force majeure, government priority or other regulations delay or failure by Seller's suppliers to deliver or other cause beyond Seller's control or any other commercial impracticability, whether similar or dissimilar to the foregoing.

Damage or Loss In Transit. All shipments shall be F.O.B. Seller's mill. In all cases, the Buyer shall bear all risk of loss from the time the goods are delivered to a carrier or to Buyer's trucks; and buyer shall file and pursue all claims against carrier arising from damage to the goods while in their possession. Use form on page 24 of this section.

Product Delivery. Any additional charges assessed by carrier will be passed on to customer. Examples include re-delivery arrangements, excessive time in job site unloading, etc.

Warranty. Seller warrants that the merchandise on this acknowledgment will perform according to its standard printed warranties relating to such merchandise, subject to the terms and conditions of the said warranties which are incorporated by reference herein as if set out in full. If no standard printed warranty of Seller is applicable to any merchandise on this acknowledgment, then there are no warranties with respect to such merchandise other than those appearing on the face of this acknowledgment and Buyer's sale and exclusive remedy and the limit of Seller's liability shall be the invoice value of any such merchandise claimed to be defective. There are no warranties relating to the described merchandise which extend beyond the description in this paragraph and, unless otherwise noted in any applicable standard printed warranty, such warranties are exclusive and in lieu of all other warranties, express, implied or statutory, including the warranty of merchantability or fitness for a particular purpose.

Collection Costs. Should it become necessary to place Buyer's account for collection, Buyer shall pay all costs thereof including reasonable attorney fees.

Taxes and Surcharges. Prices named herein shall be subject to any additional charges to cover any existing or future surcharges, manufacturers, sales, use or similar tax which may be applicable and are to be borne by the Buyer.

Scope. This instrument constitutes the entire and only agreement between the parties hereto, and any representation, affirmation of fact, and course of prior dealings, promise of condition in connection therewith or usage of the trade not incorporated herein shall not be binding upon either party. No waiver, alteration or modification of any of the provisions hereof shall be binding unless in writing and signed by a specifically authorized representative of the Seller.



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Building Codes for Fire Safety

The purpose of building codes is to provide reasonable minimum requirements in building construction to protect the public health, safety and welfare. To that end, there are provisions for fire safety, strength properties, durability and sanitation. This short recap provides a summary of the fire safety aspects of building codes.

General

Of those municipalities having building codes, it is estimated that approximately 70% have adopted, at least in part, one of the national model codes. However, the percentage that have adopted one as a complete package is much smaller.

Model Codes

The national model codes are for the most part performance type. They are written by professional people and with the assistance of industry. Four of them are true model codes. The fifth, National Fire Protection Association's Life Safety Code, is not a complete code, but as far as fire protection is concerned, it is given the same status as the model codes.

1. Basic Code, also known as BOCA, is written by Building Officials and Code Administrators International with headquarters at 4051 W. Floosmoor Road, Country Club Hills, IL 60477. It is widely adopted in the eastern and midwestern sections of the country.
2. Uniform Building Code is written by International Conference of Building Official (ICBO) with headquarters at 5360 South Workman Mill Road, Whittier, CA 90601. It is widely adopted on the Pacific coast and eastward to include cities in the midwest and some areas in the southwest.
3. Standard Building Code is written by Southern Building Code Congress with headquarters at 900 Montclair Road, Birmingham, AL 35213. It is widely adopted in the southern states.
4. National Building Code is written by American Insurance Service Group, Inc., with offices at 85 John St., New York, NY 10038. It has scattered adoptions throughout the country.
5. NFPA Life Safety Code is written by a Technical Committee of the National Fire Protection Association with headquarters at Battery March Park, Quincy, MA 02269. It is enforced most widely in those areas where the influence of the Fire Marshal is predominant.

Some states have a Fire Safety Code, which must be observed in construction and maintenance of public buildings. The State Fire Marshal, usually a political appointee, is responsible for enforcement of the code.

Within the model codes and NFPA Life Safety Code are chapters which are at considerable variance. It should be noted that state, county and municipal governing bodies adopting one of the model codes may make certain modifications to suit local conditions or to meet the political situation. Code regulations as described herein are meant to cover only their general application. It will, therefore, be necessary to refer to the appropriate chapter in the local code relative to variations and specific conditions.

Construction Standards by Federal Agencies

Some federal agencies write and administer construction standards which are, in a sense, partial or modified building codes.

1. The Housing and Community Development Act, effective January 1, 1975, gave Housing and Urban Development (HUD) the authority to write and administer a mobile home standard. The new Mobile Home Construction and Safety Standards have been implemented.
2. Federal Housing Administration (FHA) of HUD writes and administers Minimum Property Standards for FHA-insured buildings. They cover one- and two-family dwellings, multi-family dwellings and care-type housing.
3. Public Health Service of the Department of Health and Human Services writes and administers minimum Construction Requirements of Construction and Equipment for Hospital and Medical Facilities for construction under the Hill-Burton Program.
4. Social Security Administration of HEW has jurisdiction over construction for Medicare and Medicaid Facilities. NFPA Life Safety Code (1981 Edition) is the reference standard used for fire protection requirements for these facilities.
5. Other federal agencies refer to nationally recognized model codes for general construction requirements and establish certain specific criteria in the form of Guide Specifications

All About Wood Fire and Smoke Doors

General

Fire doors are labeled according to type of opening they are to protect. The rating is awarded in hours or fraction of hours and the temperature rise at the end of 30 minutes of test is recorded. A hose stream impact test is run at the end of the test period.

Ratings

The table at right shows Underwriters Laboratories ratings for fire doors and those in bold type indicate ratings achieved by Algoma Hardwoods, Inc. Standard For Fire Doors National Fire Protection Association (NFPA) pamphlet #80 is the standard for fire door and window installation. It is written by a Technical Committee of National Fire Protection Association and covers the use, installation and maintenance of fire doors. Copies may be obtained from National Fire Protection Association, Batterymarch Park, Quincy, Massachusetts 02269. The following are excerpts from the Standard:

Classification of Wall Openings. Three-hour fire doors (A) are for use in openings in walls separating buildings or dividing a single building into fire areas. The 1½-hour fire doors (B) and (D) are for use in openings in 2-hour enclosures of vertical communications through buildings (stairs, elevators, etc.) or (D) in exterior walls which are subject to severe fire exposure from outside of the building. The 1-hour fire doors (B) are for use in buildings in 1-hour enclosures of vertical communications through buildings (stairs, elevators, etc.) The ¾-hour fire doors (C) and (E) are for use in openings in partitions between corridor and rooms or (E) in exterior walls which are subject to moderate fire exposure from outside the building. The ½-hour fire door is for use where smoke control is a primary consideration and is for protection of openings in partitions between a habitable room and a corridor when the wall is constructed to have a fire resistance rating of not more than one hour or across corridors where a smoke partition is required.

Labels. The fire protection ratings of 3, 1½, 1, ¾ or ½ hours indicate the duration of the test exposure, and the letters A,B,C,D or E appearing on the label following the hourly rating indicate the classification of the wall opening for which the door is designed. Labels provide evidence that the size of the door and the exposed glass area are acceptable under the Standard. When the temperature rise is shown on the label, it indicates the temperature developed on the unexposed face of the door at the end of 30 minutes of exposure to the Standard Fire Test. Labels may indicate that the maximum transmitted temperatures are 250°F, 450°F, or 650°F. If the temperature rise is not indicated, the rise for the door is in excess of 650°F. The temperature rise with glass vision panels of 100 sq. in. or less per door leaf is the same as for similar doors without glass lites. The temperature rise for all doors with glass lites exceeding 100 sq. in. or for doors provided with louvers is in excess of 650°F.

Temperature Rise Limitations. Where fire doors are used in stairway enclosures, such doors should be constructed so that the maximum transmitted temperature end point shall not exceed 450°F above ambient at the end of 30 minutes of the Standard Fire Exposure Test.

Glass. Only labeled or listed special glass shall be used.

Frames. Only labeled door frames shall be used. Wood or plastic-faced doors can be installed in pressed steel, aluminum, steel channel or wood frames of the single unit type. The clearance between the bottom of the door and the floor surface shall not exceed ¼-inch or ⅜-inch with the existence of a raised sill or threshold. The clearance at the top and sides or between edges of doors shall not exceed ⅛-inch.

Sills. Buildings with combustible floors require special sill construction at door openings, as combustible floor construction shall not extend through the opening, except in 1/3-hour openings. Raised non-combustible sills or thresholds are acceptable whenever combustible floor coverings are contemplated or are in use on one or both sides of the door opening. Combustible floor coverings shall be permitted to extend through the door openings of 1½-hour ratings or less providing the floor covering has a minimum of a Class II interior floor finish rating. If non-combustible floors are used, sills are not required.

Standard vs. Codes

According to the scope of NFPA #80, it is not intended that the Standard should establish the degree of protection required or to constitute the approval of any products. In this regard, where there is a conflict between the Standard and the building code, the building code shall prevail. For example, the Uniform Building Code by ICBO has provisions for ½-hour (20 min.) doors to protect openings in one hour corridor walls. These are smoke doors, not fire doors. They are required to pass the fire endurance of the Standard Test Method, but are not required to pass the hose stream test.

U.L. RATINGS FOR FIRE DOORS			
Time Rating on label	Type	Temperature Rise on label	Permissible Glass Area
3 Hr.†	(A)	30 Min. 250°F Max.	None permitted
3 Hr.	(A)	30 Min. 450°F Max.	None permitted
3 Hr.	(A)	30 Min. 640°F Max.	None permitted
3 Hr.	(A)	*	None permitted
1½ Hr.	(B)	30 Min. 250°F Max.	Up to 100 sq. in. per leaf
1½ Hr.	(B)	30 Min. 450°F Max.	Up to 100 sq. in. per leaf
1½ Hr.	(B)	30 Min. 650°F Max.	Up to 100 sq. in. per leaf
1½ Hr.	(B)	*	Up to 100 sq. in. per leaf
1 Hr.	(B)	30 Min. 250°F Max.	Up to 100 sq. in. per leaf
1½ Hr.	(D)	30 Min. 250°F Max.	None permitted
1½ Hr.	(D)	30 Min. 450°F Max.	None permitted
1½ Hr.	(D)	30 Min. 650°F Max.	None permitted
1½ Hr.	(D)	*	None permitted
¾ Hr.	(C)	**	Up to 1296 sq. in. per leaf
¾ Hr.	(E)	**	Up to 720 sq. in. per leaf
½ Hr.		**	Up to 1296 sq. in. per leaf

†3-Hour Doors only available in metal.
 *When temperature rise for 3, 1½ or 1 hour door exceeds 650°F, it is not recorded on the label.
 **No recording of temperature rise is made on the label of ¾, ½ hour doors.



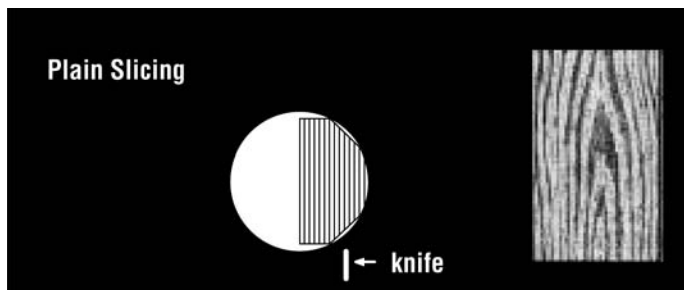
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Types of Veneer Cuts

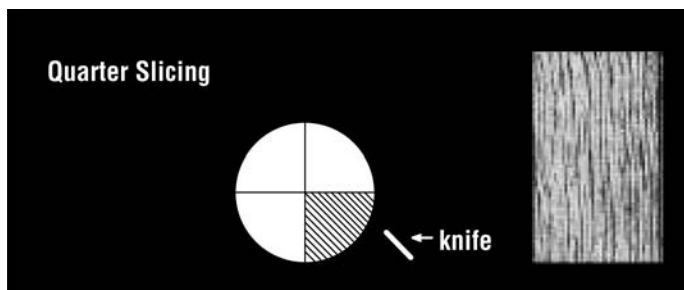
The manner in which veneers are cut is an important factor in producing the various visual effects obtained. The same species cut differently will have entirely different visual character and will vary in color as well. There are four principal methods of cutting veneer. The veneer slicer and veneer lathe are the primary equipment employed.



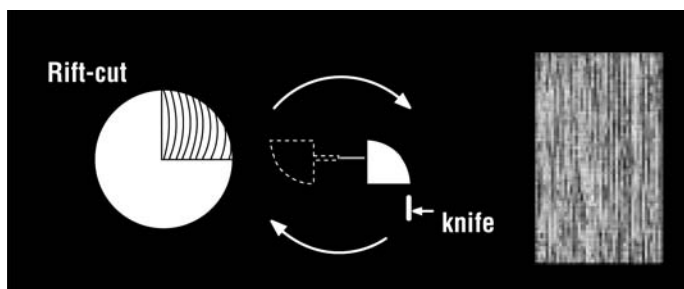
Rotary. The log is mounted centrally in the lathe and turned against a knife, like unwinding a roll of paper. Since this cut follows the log's annual growth rings a bold grain figure is produced. Rotary cut veneer is exceptionally wide and matching at veneer joints is relatively difficult. Almost all softwood plywood is cut this way. Lengths in all hardwoods are limited to 10'.



Plain slicing (or flat slicing). The half log, or flitch, is mounted with the heart side flat against the guide plate of the slicer and the slicing is done parallel to a line through the center of the log. This produces a figure similar to that of plain sawn lumber.



Quarter slicing. The quarter log, or flitch, is mounted on the guide plate so that the growth rings of the log strike the knife at approximately right angles, producing a series of stripes, straight in some woods, varied in others. In red and white oak, the knife will tend to cut along the medullary rays in the log, which provides flake in the veneer.



Rift-cut. Rift-cut veneer is produced in the various species of oak. Oak has medullary ray cells which radiate from the center of the log like the spokes of a wheel. The rift is obtained by slicing slightly across these medullary rays. This accentuates the vertical grain and minimizes the "flake." **Comb grain** is a selection from rift-cut material that is distinguished by the tightness and straightness of its grain.

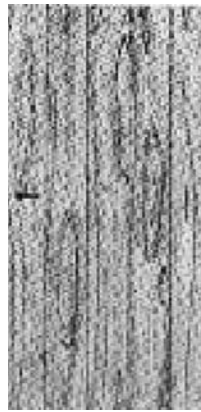
Veneer Matching



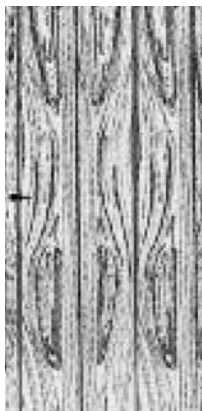
Book Match



Slip Match



Random Match



Running Match



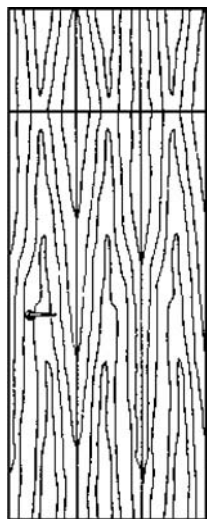
Balance Match



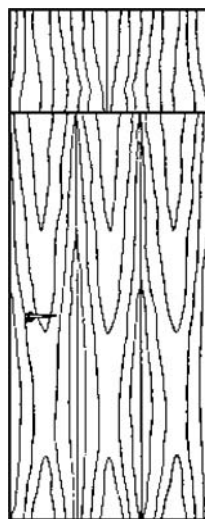
Center Match



Continuous Match



End Match



No Match

Matching of Individual Veneer Pieces in a Door Face

Book Match. Most common match in the industry. Every other piece of veneer is turned over so adjacent pieces are opened like adjacent pages in a book. Veneer joints match and create a mirrored image at the joint line, yielding a maximum continuity of grain. Used with rotary, plain sliced, quarter, rift-cut or comb grain veneers.

Slip Match. Adjoining pieces of veneer are placed in sequence without turning over every other piece. Grain figure repeats, but joints won't show mirrored effect. Often used in quarter cut, rift-cut and comb grain veneers to eliminate the barber pole effect.

Random Match. Veneers are joined with the intention of creating a casual unmatched effect. Veneers from several logs may be used within a face.

Assembly of Veneers Within the Door Face

Running Match. Non-symmetrical appearance. Veneer pieces of unequal width. Each face is assembled from as many veneer pieces as necessary.

Balance Match. Symmetrical appearance. Each face is assembled from pieces of uniform width before trimming. This match reduces veneer yield.

Center Match. Symmetrical appearance. Each face has an even number of veneer pieces of uniform width before trimming. Veneer joint in the center of the panel produces symmetry. This match reduces veneer yield.

Doors With Transoms

Continuous Match. Provides optimum veneer utilization as each single piece of veneer extends from the top of the transom to the bottom of the door. Veneer length may limit this option.

End Match. A single piece of veneer extends from the bottom of the door to the top of the transom with a mirror image at the transom.

No Match. Intended for casual, unmatched appearance.

Match Line. In Continuous and End Match transoms, the following variation of grain pattern between the door and transom is considered acceptable:

Single door and transom $\frac{3}{8}$ "

Door Face Veneer Standards

The face grading requirements for flush doors are described in the following pages. It is not correct to refer to veneers (or any raw material) using the terms “custom,” “premium” or “economy” grades. These grade designations only apply to complete products.

FACE MATERIAL REQUIREMENTS

Veneers for Transparent Finishes

- **Custom Grade Doors.** “A” grade faces are standard for Custom Grade doors. Veneer is required to be of sufficient thickness (minimum 1/50” at 12% MC) to preclude sand-through, show-through of core, and glue bleed.
- **Premium Grade Doors.** “A” grade faces are standard for Premium Grade doors (WDMA). Veneer is required to be of sufficient thickness (minimum 1/50” at 12% MC) to preclude sand-through, show-through of core, and glue bleed.
- **Economy Grade Doors.** “B” grade faces are accepted for Economy Grade doors. Veneer is required to be of sufficient thickness (minimum 1/50” at 12% MC) to preclude sand-through, show-through of core, and glue bleed.

Veneer Grade Descriptions

- **Grade AA.** The veneer shall be smooth, tight-cut and full-length. When the face consists of more than one veneer component or piece, the edges shall appear parallel and be edge matched. Rotary-cut faces may be whole piece or multipiece with edge joints tight with no sharp color contrasts at the joints. Species specified for natural color will allow color contrasts, but must be book matched or conform to the type of matching as specified. The components of plain-sliced (flatcut) and multi-piece rotary faces will be book matched, unless otherwise specified with a running, balanced, or center matched arrangement. Unless otherwise specified, components in plain-sliced faces will have a matching arrangement selected by the manufacturer. Plain-sliced faces will consist of two or more components and rotary faces will consist of one or more components with no component less than 5 inches (127mm) wide except for outside components which may be less than 5 inches (127mm) to allow for certain types of matching or panel edge trim loss. No plain-sliced components will have a split heart. No full quarter-cut is allowed in plain-sliced faces. The width of any single component in quarter-cut, rift-cut or comb grain faces shall not be less than 3 inches (76mm) except for outside components which may be less than 3 inches (76mm) to allow for certain types of matching or door edge trim loss.
- **Grade A.** The veneer shall be smooth, tight-cut and full-length. When the face consists of more than one veneer component or piece, the edges shall appear parallel and be edged matched. Rotary-cut faces may be whole piece or be multi-piece with edge joints tight; however, no sharp color contrasts are permitted at the joints and the face will provide a good general appearance. Species specified for natural color will allow color contrasts, but must be book matched or conform to the type of matching as specified. The components of plain-sliced (flat-cut) and multi-piece rotary faces will be book matched, unless otherwise specified with a running, balanced, or center matched arrangement. Unless otherwise specified, components in plain-sliced faces will have a matching arrangement selected by the manufacturer. Plain-sliced faces will consist of two or more components and rotary faces will consist of one or more components with no component less than 4 inches (102mm) wide except for outside components which may be less than 4 inches (102mm) to allow for certain types of matching or panel edge trim loss. Split heart is permitted if manufactured cathedral is achieved. No full quarter-cut is allowed in plain-sliced faces. The width of any single component in quarter-cut, rift-cut or comb grain faces shall not be less than 3 inches (76mm) except for outside components which may be less than 3 inches (76mm) to allow for certain types of matching or door edge trim loss. In some species sapwood is permitted; in other species it may be permitted by agreement between buyer and seller.
- **Grade B.** The veneer shall be smooth, tight-cut and full-length. Slip or book matched veneers are available if specified by the buyer. If not specified, multi-piece faces will be pleasingly matched. Sharp color contrasts at the joints are not permitted. Species specified for natural color will allow color contrasts, but must be pleasing matched or conform to the type of matching as specified. Plain-sliced faces will consist of two or more components with no component less than 3 inches (76mm) wide and rotary faces will consist of one or more components with no component less than 4 inches (102mm). Outside components may be less than 3 inches (76mm) for plain-sliced faces and 4 inches (102mm) for rotary faces to allow for certain types of matching or door edge trim loss. Some full quarter-cut is permitted in plain sliced faces. For some species, unlimited sapwood is allowed and in other species a percentage of sapwood is allowed.

Door Face Veneer Glossary

- Balance Matched** - Two or more veneer components or leaves of equal size (prior to edge trimming) to make up a single face.
- Bark Pocket** - Comparatively small area of bark around which normal wood has grown.
- Blending** - Color change that is detectable at a distance of 6' to 8' but which does not seriously detract from the overall appearance of the panel.
- Burl** - A swirl, twist or distortion in the grain of the wood which usually occurs near a knot or crotch. A burl can often be associated with abrupt color variation and/or a cluster of adventitious buds.
- Burl Bending** - A swirl, twist or distortion in the grain of the wood which usually occurs near a knot or crotch, but does not contain a knot and does not contain abrupt color variation. A bending burl is detectable at 6 ft. to 8 ft. (1.8m to 2.4m) as a swirl or rounded.
- Center Match** - An even number of veneer components or leaves of equal size (prior to edge trimming) matched with a joint in the center of the panel to achieve horizontal symmetry.
- Checks** - Small slits running parallel to grain of wood, caused chiefly by strains produced in seasoning.
- Comb Grain** - The grain of a quarter-sawn lumber.
- Component (of face)** - An individual piece of veneer that is jointed to other pieces to achieve a full length and width face. Terms used interchangeable with component in the context of face are piece and leaf.
- Cross Bar** - Irregularity of grain resembling a dip in the grain running at right angles, or nearly so, to the length of the veneer.
- Decay** - The decomposition of wood substance by fungi.
- Discolorations** - Stains in wood substances. Some common veneer stains are sap stains, blue stains, stain produced by chemical action caused by the iron in the cutting knife coming into contact with the tannic acid in the wood, and those resulting from the chemical action of the glue.
- Doze** - (synonymous with DOTE) A form of incipient decay characterized by a dull and lifeless appearance of the wood accompanied by a lack of strength and softening of the wood substance.
- Face Veneer** - The outermost exposed wood veneer surface of a veneered wood door.
- Few** - A small number without regard to their arrangement in the panel.
- Figure** - The pattern produced in a wood surface by annual growth rings, rays, knots, deviations from natural grain such as interlocked and wavy grain, and irregular coloration.
- Flake, Ray** - Portion of a ray as it appears on the quartered surface. Flake can be a dominant appearance feature in oak and is sometimes referred to as fleck.
- Grain** - The direction, size, arrangement, and appearance of the fibers in wood or veneer.
- Grain Slope** - Expression of the angle of the grain to the long edges of the veneer component.
- Grain Sweep** - Expression of the angle of the grain to the long edges of the veneer component over the area extending one-eighth of the length of the piece from the ends.
- Gum Pockets** - Well-defined openings between rings of annual growth, containing gum or evidence of prior gum accumulations.
- Gum Spots** - Gum or resinous material of color spots caused by prior resin accumulations sometimes found on panel surfaces.
- Hairline** - Thin, perceptible line showing at the joint of two pieces of wood.
- Heartwood** - The nonactive center of a tree generally distinguishable from the outer portion (sapwood) by its darker color.
- Inconspicuous** - Barely detectable with the naked eye at a distance of 6' to 8'.
- Knot** - Cross section of tree branch or limb with grain usually running at right angles to that of the piece of wood in which it occurs.
- Knots, Blending Pin** - Sound knots 1/4" or less in diameter that do not contain dark centers. Blending pin knots are detectable at a distance of 6' to 8' and do not seriously detract from the overall appearance of the panel.
- Knot Holes** - Voids produced by dropping of knots from the wood in which they were originally embedded.
- Knots, Open** - Openings where a portion of the wood substance of the knot was dropped out, or where cross checks have occurred to present an opening.
- Knots, Pin** - Sound knots 1/4" or less in diameter containing dark centers.
- Knots, Sound, Tight** - Knots that are solid across their face and fixed by growth to retain their place.
- Mineral Stain** - Olive and greenish-black streaks believed to designate areas of abnormal concentration of mineral matter; common in hard maple, hickory, and basswood; also called "Mineral Streak."
- Plain Sliced** - Veneer sliced parallel to the pith of the log and approximately tangent to the growth rings to achieve flat cut veneer. Plain sliced veneer can be cut using either a horizontal or vertical slicing machine or by the half-round method using a rotary lathe.
- Pleasing Matched** - A face containing components which provides a pleasing overall appearance. The grain of the various components need not be matched at the joints. Sharp color contrasts at the joints of the components are not permitted.
- Quartered** - Veneer produced by cutting in a radial direction to the pith to the extent that ray flake is produced, and the amount may be unlimited.
- Ray** - Ribbon-shaped strand of tissue extending in a radial direction across the grain, so oriented that the face of the ribbon is exposed as a fleck on the quarter surface. Also known as "Wood Ray."
- Repairs** - A patch shim, or filler material inserted and/or glued into veneer or a panel to achieve a sound surface.
- Repairs, Blending** - Wood or filler insertions similar in color to adjacent wood so as to blend well.
- Rift Cut** - Veneer produced by cutting at a slight angle to the radial to produce a quartered appearance without excessive ray flake.
- Rotary Cut** - Veneer produced by centering the entire log in a lathe and turning it against a broad cutting knife.
- Rough Cut** - Irregular shaped areas of generally uneven corrugation on the surface of veneer.
- Sapwood** - The living wood of lighter color occurring in the outer portion of a tree.
- Shake** - A separation along the grain of wood in which the greater part occurs between the rings of annual growth.

Door Face Veneer Standards

SPECIES

ASH, BEECH^(b), BIRCH, MAPLE, POPLAR
Plain Sliced (Flat Cut), Quarter Cut, Rotary Cut

Cut

Grade Description	AA			A		
	Sap (White)	Heart (Red or Brown)	Natural	Sap (White)	Heart (Red or Brown)	Natural
Color and Matching						
Sapwood	Yes	No	Yes	Yes	No	Yes
Heartwood	No	Yes	Yes	No	Yes	Yes
Color Streaks or Spots	Slight			Slight Yes		
Color Variation	Slight Yes			Slight Yes		
Sharp Color Contrasts at Joints	Yes, if Slip, Plank or Random Matched			Yes, if Slip, Plank or Random Matched		
Type of Matching						
Book Matched	Yes			Yes		
Slip Matched	Specify			Specify		
Pleasuring Matched	Not applicable			Not applicable		
Nominal Minimum Plain Sliced	5" (127mm)			4" (102 mm)		
Width of Quarter	3" (76 mm)			3" (76 mm)		
Face Component (a) Rotary	5" (127 mm)			4" (102mm)		
Natural Characteristics						
Small Conspicuous Burls & Pin Knots - Combined Avg. Number	1 per 5 sq. ft. (2 per sq m)			1 per 3 sq. ft. (4 per sq m)		
Conspicuous Burls - Max. Size	¼" (6.4mm)			⅜" (9.5mm)		
Conspicuous Pin Knots						
Avg. Number	No			1 per 8 sq. ft. (4 per 3 sq m)		
Max. Size: Dark Part	No			⅛" (3.2mm)		
Total	No			¼" (6.4mm)		
Scattered Sound and Repaired Knots						
Combined Avg. Number	No			No		
Maximum Size - Sound	No			No		
Maximum Size - Repaired	No			No		
Average Number - Repaired	No			No		
Mineral Streaks	No; Maple, slight			Slight		
Bark Pockets	No			No		
Worm Tracks	Slight			Slight		
Vine Marks	Slight			Slight		
Cross Bars	Slight			Slight		
Manufacturing Characteristics						
Rough Cut/Ruptured Grain	No			No		
Blended Repaired Tapering	Two ½" x 3" (Two 0.8mm x 76mm)			Two ¼" x 6" (Two 1.6mm x 152mm)		
Hairline Splits	(on ends only)					
Repairs	Very small blending			Small blending		
Special Characteristics (Except as listed below, special characteristics are not restricted)						
Quartered	1" in 12" (25.4mm in 305mm) maximum grain slope, 2½" in 12" (63.5mm in 305mm) maximum grain sweep.					

Unfilled worm holes, open splits, open joints, open bark pockets, shake or doze not allowed in above grades.

- Notes: (a) Outside components will be a different size to allow for edge trim loss and certain types of matching.
 (b) American or European

Door Face Veneer Standards

SPECIES

AFRICAN AND HONDURAS MAHOGANY, ANEGRE, MAKORE, SAPELE

Cut

Plain Sliced (Flat Cut), Quarter Cut, Rotary Cut

Grade Description	AA	A	B
Color and Matching			
Sapwood	No	No	No
Heartwood	Yes	Yes	Yes
Color Streaks or Spots	Slight	Slight	Occasional
Color Variation	Slight	Slight	Moderate
Sharp Color Contrasts at Joints	Yes, if Slip, Plank or Random Matched	Yes, if Slip, Plank or Random Matched	Yes, if Slip, Plank or Random Matched
Type of Matching			
Book Matched	Yes	Yes	Specify
Slip Matched	Specify	Specify	Specify
Pleasant Matched	Not applicable	Not applicable	Yes
Nominal Minimum Plain Sliced	5" (127mm)	4" (102 mm)	3" (76 mm)
Width of Quarter	3" (76 mm)	3" (76 mm)	3" (76 mm)
Face Component (a) Rotary	5" (127 mm)	4" (102mm)	4" (102mm)
Natural Characteristics			
Small Conspicuous Burls & Pin Knots - Combined Avg. Number	1 per 5 sq. ft. (2 per sq m)	1 per 3 sq. ft. (4 per sq m)	1 per 2 sq. ft. (6 per sq m)
Conspicuous Burls - Max. Size	¼" (6.4mm)	⅜" (9.5mm)	½" (12.7mm)
Conspicuous Pin Knots			
Avg. Number	No	1 per 8 sq. ft. (4 per 3 sq m)	1 per 4 sq. ft. (3 per sq m)
Max. Size: Dark Part	No	⅛" (3.2mm)	⅛" (3.2mm)
Total	No	¼" (6.4mm)	¼" (6.4mm)
Scattered Sound and Repaired Knots			
Combined Avg. Number	No	No	1 per 8 sq. ft. (4 per 3 sq m)
Maximum Size - Sound	No	No	⅜" (9.5mm)
Maximum Size - Repaired	No	No	⅛" (3.2mm)
Average Number - Repaired	No	No	1 per 8 sq. ft. (4 per 3 sq m)
Mineral Streaks	No	Slight	Occasional
Bark Pockets	No	No	Few to ⅛" x 1". (Two 3.2mm x 203mm)
Worm Tracks	No	No	Slight
Vine Marks	Slight	Slight	Yes
Cross Bars	Occasional	Occasional	Yes
Manufacturing Characteristics			
Rough Cut/Ruptured Grain	No	No	Slight
Blended Repaired Tapering Hairline Splits	Two ⅜" x 3" (Two 0.8mm x 76mm) (on ends only)	Two ⅜" x 6" (Two 1.6mm x 152mm)	Two ⅜" x 8" (Two 3.2mm x 203mm)
Repairs	Very small blending	Small blending	Blending
Special Characteristics (Except as listed below, special characteristics are not restricted)			
Quartered	1" in 12" (25.4mm in 305mm) maximum grain slope, 2½" in 12" (63.5mm in 305mm) maximum grain sweep.		

Unfilled worm holes, open splits, open joints, open bark pockets, shake or doze not allowed in above grades.

Notes: (a) Outside components will be a different size to allow for edge trim loss and certain types of matching.



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Door Face Veneer Standards

SPECIES

RED AND WHITE OAK

Cut

Plain Sliced (Flat Cut), Quarter Cut, Rotary Cut

Grade Description	AA	A	B
Color and Matching	Red Oak White Oak	Red Oak White Oak	Red Oak White Oak
Sapwood	No	No	5% ^(a) 5% ^(a)
Heartwood	Yes	Yes	10-20% ^(a) Yes
Color Streaks or Spots	Yes		Yes
Color Variation	Slight		Yes
Sharp Color Contrasts at Joints	Yes, if Slip, Plank or Random Matched		Yes, if Slip, Plank or Random Matched
Type of Matching			
Book Matched	Yes		Specify
Slip Matched	Specify		Specify
Pleasant Matched	Not applicable		Yes
Nominal Minimum Plain Sliced	5" (127mm)		3" (76 mm)
Width of Quarter	3" (76 mm)		3" (76 mm)
Face Component (a) Rotary	5" (127 mm)		4" (102mm)
Natural Characteristics			
Small Conspicuous Burls & Pin Knots - Combined Avg. Number	1 per 4 sq. ft. (3 per sq m)		1 per 1½ sq. ft. (4 per sq m)
Conspicuous Burls - Max. Size	¼" (6.4mm)		½" (12.7mm)
Conspicuous Pin Knots			
Avg. Number	No		1 per 8 sq. ft. (4 per 3 sq m)
Max. Size: Dark Part	No		⅛" (3.2mm)
Total	No		¼" (6.4mm)
Scattered Sound and Repaired Knots			
Combined Avg. Number	No		1 per 8 sq. ft. (4 per 3 sq m)
Maximum Size - Sound	No		⅜" (9.5mm)
Maximum Size - Repaired	No		⅛" (3.2mm)
Average Number - Repaired	No		1 per 8 sq. ft. (4 per 3 sq m)
Mineral Streaks	No		Slight, Blending
Bark Pockets	No		Few to 3.2 mm x 25.4 mm
Worm Tracks	No		Slight
Vine Marks	No		Yes
Cross Bars	Slight		Yes
Manufacturing Characteristics			
Rough Cut/Ruptured Grain	No		Slight
Blended Repaired Tapering	Two ½" x 3" (Two 0.8mm x 76mm) (on ends only)		Two ⅝" x 8" (Two 3.2mm x 203mm)
Hairline Splits			
Repairs	Very small blending		Blending
Ray Fleck (Flake)	Slight, Blending Quarter cut unlimited		Slight, Blending Quarter cut unlimited
	Rift not to exceed ⅜" (9.5mm) in width		
	Comb not to exceed 3/32 in. (2.4mm) in width		
Slope and Sweep <i>Quarter & Rift Comb Grain</i>	1" in 12" (25.4mm in 305mm) maximum grain slope, 2½" in 12" (63.5mm in 305mm) maximum grain sweep. ½" in 12" (12.7mm in 305mm) maximum grain slope, ½" in 12" (12.7mm in 305mm) maximum grain sweep.		

Unfilled worm holes, open splits, open joints, open bark pockets, shake or doze not allowed in above grades.

- Notes: (a) Sap is permitted in rotary only unless otherwise specified.
 (b) 10% sap is permitted in rift, comb, quartered and plain sliced. 20% sap allowed in rotary.
 (c) Outside components will be a different size to allow for edge trim loss and certain types of matching.

Door Face Veneer Standards

SPECIES

PECAN AND HICKORY

Cut

Plain Sliced (Flat Cut), Quarter Cut, Rotary Cut

Grade Description	AA	A	B
Color and Matching			
Sapwood	Yes	Yes	Yes
Heartwood	Yes	Yes	Yes
Color Streaks or Spots	Yes	Yes	Yes
Color Variation	Yes	Yes	Yes
Sharp Color Contrasts at Joints	Yes, if Slip, Plank or Random Matched	Yes, if Slip, Plank or Random Matched	Yes, if Slip, Plank or Random Matched
Type of Matching			
Book Matched	Yes	Yes	Specify
Slip Matched	Specify	Specify	Specify
Pleasant Matched	Not applicable	Not applicable	Yes
Nominal Minimum Plain Sliced	5" (127mm)	4" (102 mm)	3" (76 mm)
Width of Quarter	3" (76 mm)	3" (76 mm)	3" (76 mm)
Face Component (a) Rotary	5" (127 mm)	4" (102mm)	4" (102mm)
Natural Characteristics			
Small Conspicuous Burls & Pin Knots - Combined Avg. Number	1 per 1 sq. ft. (11 per sq m)	2 per 1 sq. ft. (22 per sq m)	No limit
Conspicuous Burls - Max. Size	¼" (6.4mm)	⅜" (9.5mm)	½" (12.7mm)
Conspicuous Pin Knots			
Avg. Number	1 per 2 sq. ft. (6 per sq m)	2 per 1 sq. ft. (22 per sq m)	No limit
Max. Size: Dark Part	⅛" (3.2mm)	⅛" (3.2mm)	⅛" (3.2mm)
Total	¼" (6.4mm)	¼" (6.4mm)	¼" (6.4mm)
Scattered Sound and Repaired Knots			
Combined Avg. Number	No	No	1 per 8 sq. ft. (4 per 3 sq m)
Maximum Size - Sound	No	No	⅜" (9.5mm)
Maximum Size - Repaired	No	No	⅛" (3.2mm)
Average Number - Repaired	No	No	1 per 8 sq. ft. (4 per 3 sq m)
Mineral Streaks	Slight	Slight	Yes
Bark Pockets	No	Small, Occasional	Few to ¼" x 2" (Few to 6.4mm x 50.8mm)
Worm Tracks	No	Slight	Few
Vine Marks	Slight	Occasional	Yes
Cross Bars	Slight	Occasional	Yes
Manufacturing Characteristics			
Rough Cut/Ruptured Grain	No	No	Slight
Blended Repaired Tapering Hairline Splits	Two ½" x 3" (Two 0.8mm x 76mm) (on ends only)	Two ¼" x 6" (Two 1.6mm x 152mm)	Four ⅛" x 8" (Four 3.2mm x 203mm)
Repairs	Very small blending	Small blending	Blending
Special Characteristics (Except as listed below, special characteristics are not restricted)			
Bird Pecks (c)	No	Slight	Yes
Knife Marks	Knife marks may occur in these high density species		
Quartered	1" in 12" (25.4mm in 305mm) maximum grain slope, 2½" in 12" (63.5mm in 305mm) maximum grain sweep.		

Unfilled worm holes, open splits, open joints, open bark pockets, shake or doze not allowed in above grades.

- Notes:
- (a) Outside components will be a different size to allow for edge trim loss and certain types of matching.
 - (b) For Pecan and Hickory, conspicuous pin knots means sound knots ¼" (6.4mm) or less in diameter with dark centers larger than 1/16" (1.6mm). Blending pin knots are sound knots ¼" (6.4mm) or less in diameter with dark centers 1/16" (1.6mm) or less and are allowed in all grades of Pecan and Hickory.
 - (c) To achieve a more rustic appearance, bird peck shall be specified.



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Door Face Veneer Standards

SPECIES

WALNUT AND CHERRY

Cut

Plain Sliced (Flat Cut), Quarter Cut, Rotary Cut

Grade Description	AA	A	B
Color and Matching			
Sapwood	No	No ^(a)	No ^(a)
Heartwood	Yes	Yes	Yes
Color Streaks or Spots	Slight	Slight	Yes
Color Variation	Slight	Slight	Yes
Sharp Color Contrasts at Joints	Yes, if Slip, Plank or Random Matched	Yes, if Slip, Plank or Random Matched	Yes, if Slip, Plank or Random Matched
Type of Matching			
Book Matched	Yes	Yes	Specify
Slip Matched	Specify	Specify	Specify
Pleasant Matched	Not applicable	Not applicable	Yes
Nominal Minimum Plain Sliced	5" (127mm)	4" (102 mm)	3" (76 mm)
Width of Quarter	3" (76 mm)	3" (76 mm)	3" (76 mm)
Face Component (a) Rotary	5" (127 mm)	4" (102mm)	4" (102mm)
Natural Characteristics (Except as limited below, natural characteristics are not restricted)			
Small Conspicuous Burls & Pin Knots - Combined Avg. Number	1 per 4 sq. ft. (3 per sq m)	1 per 1½ sq. ft. (8 per sq m)	2 per 1 sq. ft. (22 per sq. m)
Conspicuous Burls - Max. Size	¼" (6.4mm)	⅜" (9.5mm)	½" (12.7mm)
Conspicuous Pin Knots			
Avg. Number	1 per 5 sq. ft. (3 per sq m)	1 per 2 sq. ft. (6 per sq m)	1 per 1 sq. ft. (11 per sq. m)
Max. Size: Dark Part	⅛" (3.2mm)	⅛" (3.2mm)	⅛" (3.2mm)
Total	¼" (6.4mm)	¼" (6.4mm)	¼" (6.4mm)
Scattered Sound and Repaired Knots			
Combined Avg. Number	No	No	1 per 8 sq. ft. (4 per 3 sq m)
Maximum Size - Sound	No	No	⅜" (9.5mm)
Maximum Size - Repaired	No	No	⅛" (3.2mm)
Average Number - Repaired	No	No	1 per 8 sq. ft. (4 per 3 sq m)
Mineral Streaks	Slight	Slight	Yes
Bark Pockets	No	No	Few to ⅛" x 1" (Few to 3.2mm x 25.4mm)
Worm Tracks	No	No	Slight
Vine Marks	Slight	Occasional	Yes
Cross Bars	Slight	Occasional	Yes
Manufacturing Characteristics			
Rough Cut/Ruptured Grain	No	No	Slight
Blended Repaired Tapering	Two ½" x 3" (Two 0.8mm x 76mm)	Two ⅜" x 6" (Two 1.6mm x 152mm)	Four ⅜" x 8" (Four 3.2mm x 203mm)
Hairline Splits	(on ends only)		
Repairs	Very small blending	Small blending	Blending
Special Characteristics (Except as listed below, special characteristics are not restricted)			
Gum Spots	Occasional gum spots permitted in Cherry	Occasional gum spots permitted in Cherry	Gum spots and gum streaks in Cherry
Quartered	1" in 12" (25.4mm in 305mm) maximum grain slope, 2½" in 12" (63.5mm in 305mm) maximum grain sweep.		

Unfilled worm holes, open splits, open joints, open bark pockets, shake or doze not allowed in above grades.

- Notes: (a) Sap is allowed in grades A and B, however, the percentage must be agreed upon between buyer and seller.
 (b) Outside components will be a different size to allow for edge trim loss and certain types of matching.
 (c) For Walnut and Cherry, conspicuous pin knots means sound knots 1/4" (6.4mm) or less in diameter with dark centers larger than 1/16" (1.6mm). Blending pin knots are sound knots 1/4" (6.4mm) or less in diameter with dark centers of 1/16" (1.6mm) or less and are allowed in all grades of Walnut and Cherry.

Comparison of Flush Door Costs

This chart of door cost ratios can be used as a guide for comparing relative costs of flush doors with veneers.

Actual costs can vary widely due to specifiers' veneer selection and/or veneer matching. Plain sliced Red Oak is used as the basis of comparison and therefore has the relative cost value of "100."

Anigre, Sli Plain	150
Anigre, Qtd Plain	150
Anigre, Qtd Light Figure	170
Anigre, Qtd Med. Figure	197
Ash, Sli White	121
Ash, Sli Brown	173
Avodire, Qtd	222
Birch, Sli Nat	110
Birch, Rot Nat	94
Birch, Sli Red	167
Birch, Rot Red	106
Birch, Sli White	137
Birch, Rot White	118
Bubinga, Qtd	222
Cherry, Sli	131
Ebony, Qtd Macassar	723
Fir, Qtd/Vertical Grain	160
Gum, Qtd Fgd Red	238
Hickory, Sli w/sap (or Pecan)	129
Koa, Qtd	296
Lacewood, Qtd	245
Mahogany, Sli African	119
Mahogany, Qtd African	126
Maple, Birdseye (Heavy eye)	663
Maple, Sli White	121
Medium Density Overlay	85
Oak, Sli Red	100
Oak, Rift Red	122
Oak, Sli White	121
Oak, Rift White	134
Oak, Qtd English Brown	423
Paldao, Qtd	222
Rosewood, Sli East Indian	683
Rosewood, Sli Santos	445
Sapele, Sli	147
Sapele, Qtd	128
Satinwood, Qtd East Indian	720
Teak, Sli	238
Tigerwood, Qtd	193
Walnut, Sli	144
Zebrawood, Qtd	244

*Based on PC-5 core construction and "A" Grade faces. No allowance made for ship, sell, G&A or profit.



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Door Weights and Square Footages

Square Feet							
Door Height	Door Width						
	2'0"	2'4"	2'6"	2'8"	3'0"	3'6"	4'0"
6'8"	13.3	15.6	16.7	17.8	20.0	23.3	26.7
7'0"	14.0	16.3	17.5	18.7	21.0	24.5	28.0
7'6"	15.0	17.5	18.8	20.0	22.5	26.3	30.0
8'0"	16.0	18.7	20.0	21.3	24.0	28.0	32.0
8'6"	17.0	19.8	21.3	22.7	25.5	29.8	34.0
9'0"	18.0	21.0	22.5	24.0	27.0	31.5	36.0

Door	Size/Style	Pounds Per Sq. Ft.
PC-5 Novodor	1 $\frac{3}{4}$ "	5.7 lbs
	1 $\frac{5}{8}$ "	3.7 lbs
SCLC-5 Structural Composite	1 $\frac{3}{4}$ "	6.3 lbs
	1 $\frac{5}{8}$ "	3.6 lbs
SLC-5 Stave Core	1 $\frac{3}{4}$ "	4.8 lbs
	1 $\frac{5}{8}$ "	3.5 lbs
	2 $\frac{1}{4}$ "	5.6 lbs
FD 1$\frac{1}{2}$, 1 & $\frac{3}{4}$ Hour	1 $\frac{3}{4}$ "	4.3 lbs
	With Superfire rails & lockblocks	4.7 lbs
PC-7	1 $\frac{3}{4}$ "	4.8 lbs
Acoustical	STC-28 MinCore	4.3 lbs
	STC-28 PC-5	5.7 lbs
	STC-43	7.1 lbs
	STC-39, 40, 45, 54	6.4 lbs
Lead Lined (SCLC-5)	$\frac{1}{16}$ " lead	9.4 lbs
	$\frac{1}{8}$ " lead	13.4 lbs
PC-HPDL-3	1 $\frac{3}{4}$ "	5.0 lbs
PC-HPDL-5	1 $\frac{3}{4}$ "	5.4 lbs
SLC-HPDL-5	1 $\frac{3}{4}$ "	5.0 lbs

