



**Rules and
Specifications
for
Dimension and
Woodwork**

*Quality Wood Component Products
Since 1929*

Wood Component Manufacturers Association

Tenth Edition

RULES AND SPECIFICATIONS FOR DIMENSION AND WOODWORK

DIMENSION & COMPONENTS

Rough Dimension

Semi-Machined Components

Fully-Machined Components

WOODWORK

Interior Trim and Moulding

Stair Treads and Risers



WOOD COMPONENT MANUFACTURERS ASSOCIATION

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*By the WCMA Rules & Research Committee, and as approved by the Board
of Directors of the Wood Component Manufacturers Association.*

FORWARD

This Rulebook has been issued by the Wood Component Manufacturers Association to serve as a useful guide for the dimension & component manufacturer and buyer. It is intended to standardize the methods and procedures for specifying, purchasing, and designing wood component products used by manufacturers of furniture, cabinets, and related products who utilize wood components to produce finished wood products. A major objective of this Rulebook is to bring about uniformity in the classification of various kinds of wood products including solid and edge-glued flat stock, solid and laminated squares, hardwood interior trim, paneling and stair treads and risers. The book also contains commonly used abbreviations and nomenclature.

The promulgation, printing and jurisdictional control of these rules have been approved by the members of the Wood Component Manufacturers Association, upon recommendation by its Rules & Research Committee.

Commercial standard grading rules for dimension, components and woodwork are established as a basis of common understanding between the manufacturer, distributor, exporter and user. It is recognized that these grading specifications are applicable to every transaction involving the sale of dimension, components and woodwork. Other requirements or stipulations may be added by producer or purchaser to further specify the product. In the absence of any agreement between the producer and the purchaser, these rules shall apply.

Considering the natural characteristics of wood, the objective of these grades is to specify the minimum requirements possible in order to maximize the wood utilization and minimize the cost to the customer. To arrive at the most efficient cost, dimension & component users are encouraged to specify only those faces and tolerances necessary to produce a satisfactory wood component product suited to the end use.

TABLE OF CONTENTS

	PAGE
SECTION A – DIMENSION COMPONENTS	
1. SCOPE	1
2. DEFINITION OF PRODUCT	1
2.1 Rough Dimension	1
2.2 Semi machined Dimension	1
2.3 Fully machined Dimension	2
3. GENERAL REQUIREMENTS	2
3.1 Seasoning	2
3.2 Gluing	2
3.3 Tempering	3
3.4 Workmanship	3
3.5 Thickness	3
3.6 Squareness, Bow and Crook	3
4. MACHINING	4
4.1 Rough	4
4.2 Rough Surfaced	4
4.3 Finish Surfaced	4
4.4 Moulded to Pattern	4
4.5 End Work	4
4.6 Shaping, Routing, Boring, Turning	4
5. GRADES	4
5.1 <i>FACE GRADES HARDWOOD</i>	5
5.1.1 "A" Face	5
5.1.2 "B" Face	5
5.1.3 "C" Face	6
5.2 <i>FACE GRADES PINE</i>	7
5.2.1 "A" Face	7
5.2.2 "B" Face	7
5.2.3 "C" Face	8
5.3 <i>OTHER GRADES</i>	9
5.3.1 Paint	9
5.3.2 Sound	9
5.4 <i>GRADE SPECIFYING</i>	9
5.5 <i>LIST OF GRADES</i>	10

6.	SCALE	10
6.1	<i>FLAT STOCK SOLID & EDGE GLUED</i>	10
6.1.1	Thickness	10
6.1.2	Width	10
6.1.3	Length	11
6.2	<i>SQUARES, LAMINATED</i>	12
6.2.1	Thickness	12
6.2.2	Width	12
6.2.3	Length	13
6.3	<i>SQUARES, SOLID</i>	13
6.3.1	Rough	13
7.	COUNT	14
8.	ORDER METHOD	14
9.	TOLERANCE	15
9.1	Rough Dimension	15
9.2	Rough Surfaced Dimension	15
9.3	Semi Machined and Fully Machined Dimension	15
10.	PACKAGING AND SHIPPING	16
11.	RECEIVING AND INSPECTION	16
11.1	Receiving	16
11.2	Inspection, Domestic	16
11.3	Inspection, Export	17
SECTION B – WOODWORK		
1.	HARDWOOD INTERIOR TRIM AND MOULDING	17
1.1	<i>GENERAL REQUIREMENTS</i>	17
1.1.1	Seasoning	17
1.1.2	Workmanship	17
1.1.3	Grading	17
1.1.4	Allowable Characteristics	18
1.2	<i>DETAIL REQUIREMENTS GRADE “A”</i>	18
1.2.1	Characteristics	18
1.2.2	Seasoning Defects	19
1.3	<i>DETAIL REQUIREMENTS-“SELECT”</i>	20
1.3.1	Characteristics	20
1.3.2	Seasoning Defects	21

1.3.3	Tolerances	21
1.3.4	Machining Defects	22
1.4	DETAIL REQUIREMENTS GRADE "B"	23
1.5	DESIGNS AND SIZES	23
1.5.1	Standard Design and Sizes	23
1.5.2	Special Design	23
1.5.3	Special Sizes	23
1.5.4	Random Lengths	23
1.5.5	Specified Lengths	24
1.5.6	Tolerance	24
1.5.7	Bundling	24
1.6	MEASUREMENT	24
1.7	INSPECTION	24
2.	HARDWOOD STAIR TREADS & RISERS	25
2.1	GENERAL REQUIREMENTS	25
2.1.1	Seasoning	25
2.1.2	Workmanship	25
2.2	DETAIL REQUIREMENTS - STANDARD GRADES	25
2.2.1	Clear Grade	25
2.2.2	Select Grade	26
2.2.3	Character Marked Grade	26
2.2.4	Paint Grade	26
2.3	TREADS	26
2.3.1	Thickness	27
2.3.2	Width	27
2.3.3	Length	27
2.4	RISERS	27
2.4.1	Thickness	27
2.4.2	Width	27
2.4.3	Length	27
2.5	TOLERANCE	28
2.6	INSPECTION	28
	SECTION C – ABBREVIATIONS	29
	NOMENCLATURE AND DEFINITIONS	31

Section A – Dimension Components

1. **SCOPE**

The rules in this section apply to Hardwood and Softwood Dimension components cut from kiln dried rough lumber, bolts, cants or logs. They cover flat stock, solid and edge glued; and squares, solid and laminated, for furniture, cabinet and specialty manufacturers.

These rules provide specifications for dimension components for domestic and export trade. They cover Definition of Product, General Requirements, Grades, Scale, Count, Order Method, and Tolerance of Rough, Semi-machined, and Fully-machined parts. They also cover packaging, shipping, receiving, inspection and storage.

2. **DEFINITION OF PRODUCT**

Dimension components as covered by these rules are defined as hardwoods and softwoods, normally kiln dried, which have been processed to a point where the maximum waste is left at the dimension mill, and the maximum utility delivered to the user. They are manufactured from rough boards, bolts, cants or logs of varying thicknesses to the specific requirements of a particular plant or industry. Components are in specified thicknesses, widths, and lengths, or multiples thereof. They may be solid or glued up as specified. They are classified as Rough dimension, Semi-machined dimension or fully-machined dimension.

2.1 Rough Dimension – consists of blanks cut and ripped to specific sizes normally rough surfaced two sides or more to a nominal size.

2.2 Semi-Machined Dimension – is rough dimension parts carried one or more steps further in manufacturing processes. They may include one or more of several operations such as finish

surfacing, moulding, turning, tenoning, flat sanding, equalizing, trimming, mitering, etc., but which will not make the product a completely machined part ready for assembly.

2.3 Fully Machined Dimension – parts are completely machined with no additional work necessary prior to assembly. A final polish sanding operation may be required prior to finishing or painting.

3. GENERAL REQUIREMENTS

All dimension parts sold, as conforming to these rules shall meet the following general requirements.

3.1 Seasoning – Material shall be properly kiln dried according to accepted methods for the specie and thickness to within a range of 5-9% M.C. Uniformity of moisture content within a 3% variance (i.e., 6-8%) is most desirable, especially in the manufacture of glued parts. A low moisture content (5-7%) is desirable for parts manufactured and shipped during the winter season when plants are operating their heating systems and the relative humidity is lower. The same is true for parts being shipped to dry climates. Due to the tendency of wood to change in moisture content because of changes in atmospheric conditions, no specific moisture content can be guaranteed when dimension parts reach their final destination. Dimension manufacturers shall exercise all possible care in the seasoning, drying, handling and shipping of their products to assure delivery in a suitable condition.

3.2 Gluing – Dimension parts glued for width, length and/or thickness shall be bonded with high grade glue and in such manner as to provide strong joints. Type of glue used and kind of joint

shall be a matter of contract between buyer and seller.

- 3.3 Tempering** – Glued stock will be tempered for the proper time required before surfacing and machining. This is to prevent sunken glue joints and stabilize the size prior to machining.
- 3.4 Workmanship** – All dimension parts shall be well manufactured and shall conform to the various grades as hereinafter defined.
- 3.5 Thickness** – The maximum finished thickness obtainable is dependent on the width of the piece. The following table indicates thicknesses, which can be obtained from various thicknesses of rough lumber as related to width of stock:

Rough	Rough Surfaced	Finish Surfaced Less than 6" (152.4mm) Wide	Two Sides 6" (152.4mm) and wider
<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
4/4	15/16	25/32	3/4
5/4	1 3/16	1 1/32	1
6/4	1 7/16	1 1/4	1 3/16
8/4	1 7/8	1 11/16	1 5/8
10/4	2 3/8	2 3/16	2 1/8
12/4	2 3/4	2 11/16	2 5/8
<i>Inches</i>	<i>Millimeters</i>	<i>Millimeters</i>	<i>Millimeters</i>
4/4	23.8	19.9	19.1
5/4	30.2	26.2	25.4
6/4	36.5	31.8	30.1
8/4	47.6	42.9	41.3
10/4	60.3	55.6	54.0
12/4	69.9	68.3	66.7

- 3.6 Squareness, Bow and Crook** – Specifications regarding squareness, bow, and crook shall be discussed, negotiated, and agreed to by buyer and seller for each order.

4. MACHINING

- 4.1 Rough (RO)** – is sawmill cut.
- 4.2 Rough surfaced (RS)** – is hit or miss planed or 20/36 grit abrasive that will clean up in subsequent finishing.
- 4.3 Finish surfaced (FS)** – is a smooth uniform knife finish or 60 grit sander finish that will clean up with a .015" (.4mm) flat sander cut. Finish surfaced can be surfaced two sides or surfaced four sides (S2S or S4S).
- 4.4 Moulded to pattern (PAT)** – Moulded in the lineal direction to the customers specification or drawing, inside of line to govern.
- 4.5 End Work** – Machined to customer specifications (see abbreviations for suggested codes.)
- 4.6 Shaping, Routing, Boring, Turning, etc.** – Per customer specifications.

5. GRADES

In rough or semi-machined dimension parts of any grade, those blemishes that will be removed in planing or machining to finished sizes will be permitted. Flat stock dimension parts may be solid or edge glued, Rough, Rough Surfaced or Finish Surfaced. Solid Squares cut directly from bolts, cants or logs will be kiln dried after cutting. Laminated squares are cut from kiln-dried lumber. Solid or laminated squares may be sold Rough, Rough surfaced or Finish surfaced. In glued dimension parts matching for direction of grain, figure and color, if required, shall be a matter of agreement between manufacturer and user, normally strips (staves) with similar grain and color are together.

5.1 Face Grades – Harwoods

5.1.1 “A” Face – Material that is acceptable for prominent surfaces such as tops, doors and drawer fronts.

Will admit:

- Small sound knot specks;
- Small dark mineral streaks or pitch pockets not over 1/16" X 1" (1.6mm x 25.4mm);
- Light discoloration;
- Size of strips (staves): 1" (25.4mm) min., 5" (127mm) max., narrow strips (staves) to be well scattered.

Will not admit:

- Birdseye;
- Any knots other than small specks;
- Splits, checks or shake;
- Holes, gouges or other open areas deeper than 1/32" (.8mm);
- Bark or wane;
- Mineral streaks larger than 1/16" x 1" (1.6 x 25.4mm);
- Large dark discolored areas;
- Punky or unsound wood.

5.1.2 “B” Face – Material which is acceptable for surface of intermediate visibility such as the exterior of most end panels, the interior of end panels on an open case, shelves and the inside of drawer fronts.

Will admit:

- Occasional pin knots and small sound knots not over 1/8" (3.2mm);
- Occasional mineral streak not over 1/4" x 2-1/2" (6.4 x 63.5mm);
- Moderate discoloration;
- Occasional birdseye;

- Size of strips (staves): 3/4" (19.1mm) min., 5" (127mm) max., narrow strips (staves) to be well scattered.

Will not admit:

- Any knots over 1/8" (3.2mm);
- Splits, checks or shake;
- Holes, gouges or other open areas deeper than 1/32" (.8mm);
- Bark or wane;
- Punky or unsound wood;
- Mineral streaks over 1/4" x 2-1/2" (6.4 x 63.5mm);
- Large dark discolored areas.

5.1.3 "C" Face – Material which is acceptable for low visibility parts where strength and smoothness is the deciding factor such as back edges of rails, underside portion of any table that is susceptible to touch and feel.

Will admit:

- Unlimited discoloration or mineral streaks;
- Solid knots up to 1/2" (12.7mm) diameter;
- Surface checks;
- Open defects up to 1/8" x 1" (3.2 x 25.4 mm) or 1/4" (6.4mm) diameter;
- Unlimited birdseye;
- Small areas of punky or unsound wood;
- Boards of any width up to 5" (63.5mm).

Will not admit:

- Large open knots;
- Wane;
- Large areas of punky or unsound wood.

5.2 Face Grades – Pines

5.2.1 “A” Face – Material which is acceptable for prominent surfaces such as tops, doors, and drawer fronts.

Will admit:

- Any number of sound red knots up to 3” diameter (this type of knot is desirable and as many as possible should be included on the good side). Splits within the knots are acceptable unless they seriously weaken the part or cannot be filled.
- Occasional small black knots if they are tight and not over 1/4” (6.4mm) in diameter. Clusters of black knots are not acceptable.
- Pitch or pitch pockets up to 1/8” wide by 1” (3.2 x 25.4mm) long.
- Size of strips (staves): 1” (25.4mm) min., 6” (152.4 mm) max., narrow strips (staves) to be well scattered.

Will not admit:

- Black knots larger than 1/4” (6.4mm);
- Open or missing knots;
- Splits, checks or shake;
- Wane, bark or pitch;
- Stain or discoloration;
- Pitch pockets over 1/8” (3.2mm) wide by 1” (25.4mm) long;
- Thin stock;
- Holes, gouges or other open areas deeper than 1/32” (.8mm).

5.2.2 “B” Face – Material which is acceptable for surfaces of intermediate visibility such as the exterior of most end panels, interior of end panels on open cases, shelves and center panels.

Will admit:

- Any size or number of round red knots, splits within the knot are acceptable, splits around the knot are acceptable up to 2/3 of the circumference of the knot.
- Small black knots that are tight and not over 1/2" (12.7mm) in diameter or larger knots that are only partially black. Clusters of four or more black knots should be excluded.
- Moderate discoloration;
- Pitch or pitch pockets 1/8" (3.2mm) wide by 1" (25.4mm) long;
- Size of strips (staves): 3/4" (19.1mm) min., 6" (152.4mm) max., narrow strips (staves) to be well scattered.

Will not admit:

- Splits, checks or shake;
- Open or missing knots;
- Wane or bark;
- Thin stock.

5.2.3 "C" Face – Material which is acceptable for low visibility parts where strength and smoothness is the deciding factor such as back edges of rails, underside portion of any table that is susceptible to touch and feel.

Will admit:

- Unlimited number and size of black knots;
- Unlimited discoloration;
- Pitch pockets;
- Small surface checks;
- Boards of any width up to 7" (177.8mm).

Will not admit:

- Large open knots or holes;
- Large areas of punky or unsound wood.

5.3 Other Grades

5.3.1 Paint (PNT) – This grade will permit, on the best face, defects such as burls and tight knots which, when properly filled, will be concealed when finished with nontransparent material. The reverse face or back may contain defects of a sound grade, patches, and slight imperfections in surfacing.

5.3.2 Sound (SND) – This grade is a utility grade that may contain any defects that will not materially impair the strength of the individual piece for the use intended. Slight skips in dressing on either face will be permitted.

5.4 Grade Specifying

A key purpose in these standards is to provide a system where the buyer can choose only those grades that meet their needs and not over specify which adds unnecessarily to the product cost. Considering the natural characteristics of wood, it is the Dimension Manufacturer's objective to always maximize his utilization thus reducing the material cost to the customer.

The following Codes are used to simplify specifying: AF = All Faces; FE = 1 Face and 4 Edges; 1F = 1 Face; 1E = 1 Edge; 1F1E = 1 Face and 1 Edge; PNT = Paint Grade; SND = Sound Grade

5.5 List of Grades

AAF	=	“A” All Faces
BAF	=	“B” All Faces
CAF	=	“C” All Faces
AFE	=	“A” 1 Face 4 Edges, “B” Back
BFE	=	“B” 1 Face 4 Edges, “C” Back
CFE	=	“C” 1 Face 4 Edges, Sound Back
A1F	=	Remainder Sound
B1F	=	Remainder Sound
C1F	=	Remainder Sound
A1E	=	Remainder Sound
B1E	=	Remainder Sound
C1E	=	Remainder Sound
A1F1E	=	Remainder Sound
B1F1E	=	Remainder Sound
C1F1E	=	Remainder Sound

6. SCALE

As referred to in this section the word SCALE shall mean the footage content that the customer is charged for in each piece of dimension.

6.1 Flat Stock – Solid and Edge Glued

6.1.1 Thickness – In computing the footage of Dimension Components, the rough nominal thickness required for its manufacture is used. Surface measurement is to apply on rough 1” (25.4mm) and thinner lumber and board foot measurement is to apply on lumber over 1” (25.4mm) rough thickness.

6.1.2 Width – In computing footage when edges are surfaced, moulded, or sawn to net width, * 1/4” (6.4mm) shall be added to the net finished width if under 6 inches (152.4mm) wide and under 50 inches (1270mm) long. If 6 inches

(152.4mm) or wider, all lengths, and 50 inches (1270mm) or longer, all widths, 1/2" (12.7mm) shall be added to the net finished width. If widths are in fractions of less than eighths of an inch, assume the next higher 1/8" (3.2mm). All pieces having a net width of 3/4" (19.1mm) inch or under shall be counted as 1" (25.4mm) wide.

** The words "sawn to net width" refer to stock sawn on straight line rip saw or double end tenoner, producing a piece of stock in which the edge is satisfactory for its ultimate use.*

6.1.3 Length – For Dimension parts supplied in rough lengths, no addition in length is to be allowed.

For Hardwood Dimension lumber equalized to net length, 1" (25.4mm) shall be added to net finished length.

If lengths are in fractions, the measurement shall be to the nearest 1/4" (6.4mm) with 1" (25.4mm) to be added for equalizing. For those measurements falling exactly at midpoint between quarters of an inch, the lower quarter shall be used.

EXAMPLE OF SCALE – FLAT STOCK

Required Size	Measured As
Inches	
3/4 x 1-1/2 x 22	1 x 1-3/4 x 23
3/4 x 1-1/2 x 51	1 x 2 x 52
3/4 x 1-5/16 x 23-1/8	1 x 1-5/8 x 24
7/16 x 4-5/8 x 30	1 x 4-7/8 x 31
7/16 x 7-1/4 x 25-1/8	1 x 7-3/4 x 26
5/16 x 6-3/16 x 18-9/16	1 x 6-3/4 x 19-1/2
5/16 x 8-9/16 x 21-11/16	1 x 9-1/8 x 22 -3/4
1 x 2-1/4 x 36	1-1/4 x 2-1/2 x 37
Millimeters	
19.1 x 38.1 x 558.8	25.4 x 44.5 x 584.2
19.1 x 38.1 x 1295.4	25.4 x 50.8 x 1320.8
19.1 x 33.3 x 587.4	25.4 x 41.3 x 609.6
11.1 x 117.5 x 762.0	25.4 x 123.8 x 787.4
11.1 x 184.2 x 638.2	25.4 x 196.9 x 660.4
7.9 x 157.2 x 471.5	25.4 x 171.5 x 495.3
7.9 x 217.5 x 550.9	25.4 x 231.8 x 577.9
25.4 x 57.2 x 914.4	31.8 x 63.5 x 939.8

6.2 Squares, Laminated

In laminated stock, exact specifications as to number of piles shall be determined between the producer and customer. In the absence of this specification, the number of piles used shall be based upon the most economical manner to produce required thickness.

- 6.2.1 Thickness** – When stock is laminated, each ply is to be figured from the rough thickness necessary to produce the dressed piece as set forth in Section 3.5.
- 6.2.2 Width** – In laminated stock, the width shall be figured 1/4" (6.4mm) over the net width in two ply stock, and 1/2" (12.7mm) over in 3 or more ply stock.

6.2.3 Length – When laminated stock is equalized 1" (25.4mm) shall be added to the net length.

EXAMPLE OF SCALE – SQUARES, LAMINATED

Required Size (S4S Equalized)	Count As	Made From
<i>Inches</i>		
1-5/8 x 1-5/8 x 29	2 x 1-7/8 x 30	2 Pcs. 4/4"
2-1/6 x 3-1/8 x 29	2-1/2 x 3-3/8 x 30	2 Pcs. 5/4"
3-Ply Stock:		
2-3/8 x 2-3/8 x 29	3 x 2-7/8 x 30	3 Pcs. 4/4"
3 x 3 x 29	3-3/4 x 3-1/2 x 30	3 Pcs. 5/4"
3-3/16 x 6 x 45	3-3/4 x 6-1/2 x 46	3 Pcs. 5/4"
<i>Millimeters</i>		
41.3 x 41.3 x 736.6	50.8 x 47.6 x 762.0	2 Pcs. 4/4"
52.4 x 79.4 x 736.6	63.5 x 85.7 x 762.0	2 Pcs. 5/4"
3-Ply Stock:		
60.3 x 60.3 x 736.6	76.2 x 73.0 x 762.0	3 Pcs. 4/4"
76.2 x 76.2 x 736.6	95.3 x 88.9 x 762.0	3 Pcs. 5/4"
81.0 x 152.4 x 1143.0	95.3 x 165.1 x 1168.4	3 Pcs. 5/4"

6.3 Squares, Solid

6.3.1 Rough - Squares shall be of sufficient size after kiln drying to surface four sides to the following thicknesses: 4/4 S4S 25/32" (19.9mm), 5/4 S4S 1-1/32" (26.2mm), 6/4 S4S 1-1/4" (31.8mm), 8/4 S4S 1-11/16" (42.9mm). These squares shall be measured on the basis of the rough lumber required to produce them.

EXAMPLES OF SCALE – SQUARES, SOLID

Required Size	Rough Size
Inches	
3/4 x 3/4 x 15	4/4 x 1 x 16
1-3/8 x 1-3/8 x 20	8/4 x 1-5/8 x 21
2 x 2 x 30	10/4 x 2-1/4 x 31
Millimeters	
19.1 x 19.1 x 381.0	4/4 x 1 x 16
34.9 x 34.9 x 508.0	8/4 x 41.3 x 533.4
50.8 x 50.8 x 762.0	10/4 x 57.2 x 787.4

7. **COUNT**

Dimension parts shall be ordered in specific quantities in terms of number of pieces, sets of pieces, lineal feet of random length or number of feet. The manufacturer will ship the order complete, with no back orders, unless previously agreed to by the buyer. The buyer shall accept up to 5 percent overrun in pieces, feet or sets of pieces if ordered in sets, in any or all items ordered.

8. **ORDER METHOD**

In the absence of other requirements by the customer the following steps for writing orders shall be followed:

Quantity, thickness, width, length, grade, machining and any other specifications required by the customer. Sizes shall be in ascending order with similar thickness grouped thinnest first, then all parts of the same width, lengths from shortest to longest.

Examples:

Qty	Thickness	Width	Length	Machining	Grade
<i>Inches</i>					
100	25/32	x 2	x 14	FS S4S	AFE
150	25/32	x 2	x 19	FS S4S	AFE
500	25/32	x 2	x 20-1/4	FS S4S	AFE
300	25/32	x 2-1/4	x 16	FS S4S	AFE
350	1-1/32	x 2-1/2	x 18-1/2	FS S2S	B1F
<i>Millimeters</i>					
100	19.9	x 50.8	x 355.6	FS S4S	AFE
150	19.9	x 50.8	x 482.6	FS S4S	AFE
500	19.9	x 50.8	x 514.4	FS S4S	AFE
300	19.9	x 57.2	x 406.4	FS S4S	AFE
350	26.2	x 63.5	x 469.9	FS S2S	B1F

9. TOLERANCE

9.1 Rough Dimension

Tolerances for rough hardwood dimension parts shall be agreed upon by customer and seller.

9.2 Rough Surfaced Dimension

Unless otherwise agreed upon by customer and seller, sizes, which will be changed in the process of further fabrication by the customer, shall be subject to the following tolerances:

Thickness	Plus 1/16 inch (1.6mm)	Minus 1/16 inch (1.6mm)
Width	Plus 1/16 inch (1.6mm)	Minus 1/16 inch (1.6mm)
Length	Plus 1/8 inch (3.2mm)	Minus 1/8 inch (3.2mm)

9.3 Semi-Machined and Fully-Machined Dimension

In machined dimension a normal tolerance of plus or minus 1/32" (.8mm) will be allowed in all machining operations at time of working unless otherwise specified. Mating parts shall

meet requirements agreed to by the buyer and seller. It should be recognized that atmospheric conditions may cause a later change in dimensions over which manufacturers have no control.

10. PACKAGING AND SHIPPING

Packing and shipping shall be in accordance with methods accepted in the trade to insure proper protection of the product in transit. Any variations and special requirements shall be a matter of agreement between the buyer and seller.

11. RECEIVING AND INSPECTION

No complaint shall be justified unless the number of dimension parts not meeting specification exceeds 2 percent. No claim shall be honored on material that has been machined by the customer.

11.1 Receiving

Purchasers of dimension parts, upon receipt of shipments and prior to further machining and processing shall handle and store the stock in a manner customarily accepted in the trade in order to prevent the occurrence of degrade. This shall include protection against moisture and temperature changes as well as physical damage.

11.2 Inspection, Domestic

In case of complaint, the purchaser shall notify the seller within 5 days after receipt of shipment. Any rejected material shall be held intact, properly protected, in its original form for a period up to 3 weeks after notice of rejection, and pending adjustment.

11.3 Inspection, Export

In case of complaint, the purchaser shall notify the seller, by cable, within 2 days after receipt of shipment, and shall make a supporting detailed written report within 5 days after such goods have been received by the purchaser. Any rejected material shall be held intact, properly protected, in its original form for a period up to 5 weeks after notice of rejection, and pending adjustment. Any inspection shall be made by a party agreed upon by the purchaser and seller with complete reports being given to both.

Section B – Woodwork

1. HARDWOOD INTERIOR TRIM AND MOULDING

1.1 General Requirements

All hardwood interior trim and moulding sold as conforming to this standard shall be clear face trim, except where characteristics of the wood and seasoning defects, as hereinafter specified, may be present in not to exceed 10 percent of any shipment. It shall be well manufactured in accordance with the following requirements.

- 1.1.1 **Seasoning** – Material shall be kiln dried according to accepted methods for the species in question to a moisture content from 5 to 9 percent when shipped from the mill.
- 1.1.2 **Workmanship** – All woodwork shall be well manufactured and shall conform to the various grades hereinafter defined.
- 1.1.3 **Grading** – All hardwood interior trim and moulding shall be graded from the face side.

1.1.4 Allowable Characteristics – Those characteristics covered by member mouldings, or covered when the stock is installed, and characteristics on the reverse side that do not impair its use, shall be allowed.

1.2 Detail Requirements – Grade “A”

The characteristics and seasoning defects allowed in any one piece shall be only as covered by not more than any two of the following paragraphs.

1.2.1 Characteristics:

Sapwood – Sapwood shall be allowed in all items of hardwood interior trim and moulding, except when made from cherry, selected red birch, red gum, or unsteamed walnut. In these woods, the sapwood shall not exceed 25 percent (surface measure) in the aggregate in any one piece and not more than 5 percent of the quantity of any one item (pattern, style, or total of same kind of units). This grade is suitable for natural and highest quality paint finishes.

Stain – Stain covering not more than 25 percent in any one piece (surface measure), and not more than 5 percent of the quantity of any one item, shall be allowed.

Streaks – Slight streaks shall be permitted in not more than 10 percent of the quantity of any one item.

Wormholes – Wormholes not larger than 1/16” (1.6mm) in diameter, and not more than one to each 3 linear feet

(914.4mm), shall be allowed. Maximum quantity of material containing wormholes shall not exceed 5 percent of the quantity of any one item.

Knots – One knot, tight, sound and smoothly dressed, not to exceed 1/2" (12.7mm) diameter, in stock 6' (1828.8mm) long or less, and not more than two in stock over 6' (1828.8mm) long, shall be allowed. Maximum quantity of material containing knots shall not exceed 5 percent of the quantity of any one item. Burls that do not contain knots over 1/8" (3.2mm) in diameter or unsound centers shall not be considered a defect.

Machine imperfections – Slight machine imperfections, which can be eliminated by hand sanding, shall be allowed.

Torn grain – A maximum depth of 1/32" (.8mm) will be permitted on machine run stock in not over 10 percent of the length in any one piece and not more than 5 percent of the quantity of any one item.

1.2.2 Seasoning Defects:

End splits – End splits 1/4" (6.4mm) in length for each linear foot (304.8mm), or its equivalent, per piece, will be allowed, except that where exact lengths are specified, stock shall be usable for the purpose intended, without waste.

Surface checks – Surface checks not to exceed 1/32" (.8mm) wide, 1" (25.4mm) long, and one check to each foot (surface

measure), or its equivalent, per piece, shall be allowed. Maximum quantity of material containing surface checks shall not exceed 5 per cent of the quantity of any one item.

Warp – Warped stock that will lie flat or straight with ordinary nailing shall be allowed.

1.3 Detail Requirements – “Select” Grade

S4S Red Oak and Poplar (S4S nominal width boards 1 x 2 through 1 x 12, in lengths of 6’ through 16’)

The following characteristics and seasoning defects allowed in any one piece shall be covered by not more than any two of the following paragraph:

1.3.1 Characteristics

Sapwood – Sapwood shall be allowed without limit, unless specified otherwise by buyer and seller in all items of “Select” Grade Red Oak and Poplar.

Stain – Stain, in Red Oak covering not more than 25 percent in any one piece (surface measure), and not more than 5 percent of the quantity of any one item shall be allowed. In Poplar, slight stain is admitted without limit.

Streaks – Slight streaks shall be permitted in not more than 10 percent of the quantity of any one item in Red Oak boards.

Wormholes – Wormholes not larger than 1/16” in diameter and not to

exceed 1 per lineal foot, shall be allowed. Maximum quantity of material containing wormholes shall not exceed 5 percent of the quantity of any one item.

Knots – One knot, tight, sound and smoothly dressed, not to exceed 1/2" diameter, in stock 6' or less, not more than two in stock 8" in width or less and over 6' in length, and not over three in stock over 8" in width and over 6' in length, shall be allowed. Burls and pin knots that measure 1/4" and diameter or less shall not be considered defects.

1.3.2 Seasoning Defects

End Splits - End split is allowed 1/4" in length for each lineal foot of the board. That means that a 4" end split is allowed in a 16' board. The split ends will not exceed 10 per cent of total lineal footage of any one item.

Surface Checks – Surface checks will not exceed 1/32" wide by 1" long. Maximum allowable quantity is 1 per lineal foot in any board.

Warp – Warped stock that will lie flat or straight with ordinary nailing shall be allowed.

1.3.3 Tolerances

Thickness – A variation in thickness of plus or minus 1/64" will be allowed for all unsanded boards. An additional allowance of 1/32" scant will be allowed for sanded stock.

Width – A variation of plus or minus 1/32" in width will be allowed.

Length – Lengths shall be measured by the lineal foot allowing minus 1/4" and plus 2". Boards scant in length up to 1/4" short of specified length will not exceed more than 10% of total lineal footage of one item.

1.3.4 Machining Defects

Edge defects – Edge defects shall follow the same characteristics and seasoning guidelines as the face with the exception of the following guidelines for one edge, which leaves one edge superior. Each of the following defects will not be allowed in more than 5 percent of the lineal footage of a single item.

Un-machined run-outs – Not to exceed 3" on the end of the board on one edge in stock 6' and less, not to exceed 6" in stock over 6'.

Wane – Wane not more than 4" in length, and not measuring more than 1/2" the thickness, shall be allowed if not involving the premium face. Wane is not allowed on both edges, but is allowed once in 6' and not more than twice in boards longer than 6'.

Saw Marks – Saw marks on one edge are allowed in 5 percent of the lineal footage of an item.

Torn Grain – Torn grain with a maximum depth of 1/32" will be permitted on moulded stock in not over 10 percent

of the length in any one piece. No more than 5 percent maximum of the quantity of any one item.

Machine Imperfections – Slight machine imperfections, which can be removed by hand sanding shall be allowed.

1.4 Detail Requirements – Grade “B”

This grade shall be the same as grade “A” except that when sold and marked “grade B” there shall be no restriction as to sapwood and stain in any of the species, as this grade is normally confined to a paint finish.

1.5 Designs and Sizes

1.5.1 Standard Design and Sizes – Shall conform to Industry Standard Wood Moulding Patterns, latest edition, as published by the Wood Moulding & Millwork Producers, 507 First Street, Woodland, CA 95695. Tel: (916) 661-9591.

1.5.2 Special Design – Shall be: As per full size detail drawing (inside of line to govern); as per template (stock must fit flush, not tight at time of machining); or as per sample.

1.5.3 Special Sizes – Shall be as specified.

1.5.4 Random Lengths – Length 4’ (1219.2mm) to 16’ (4876.8mm) shall be counted on 6” (152.4mm) breaks. Each shipment may contain no more than 20 percent of lengths under 8’ (2438.4mm). Five percent may consist of lengths under 6’ (1828.8mm). A variation of 5 percent over or under the quantity

ordered, in linear feet on random-length orders will be allowed.

1.5.5 Specified Lengths – When specified lengths are ordered, all lengths up to and including 4' 6" (1371.6mm) shall be counted on 6" (152.4mm) breaks. Example: Stock 3' 2" (965.2mm) long will be counted as 3' 6" (1066.8mm); 4' 6" (1371.6mm) long will be counted as 4' 6" (1371.6mm). Lengths over 4' 6" (1371.6mm) shall be counted on 6" (152.4mm) breaks, to which an additional 6" (152.4mm) shall be allowed for cutting. Example: Stock 4' 7" (1397mm) long will be counted as 5' 6" (1676.4mm); 7' (2133.6mm) will be counted as 7' 6" (2286mm).

1.5.6 Tolerance – A variation in size of 1/32" (.8mm) plus or minus will be allowed for all unsanded hardwood interior trim and moulding, with an additional allowance of 1/32" (.8mm) scant for machine sanding.

1.5.7 Bundling – Moulding shall be bundled and measured by averaging the lengths, which may vary 6" (152.4mm) over or under the nominal length.

1.6 Measurement

Hardwood interior trim and moulding shall be sold on a linear foot basis.

1.7 Inspection

All hardwood interior trim and moulding sold as conforming to this commercial standard is subject to inspection in the condition as received, and complaints regarding any

shipment shall be made within five (5) days after receipt thereof. Any rejected material shall be held intact in its original form, properly protected, for a period up to three (3) weeks after notice of rejection and pending adjustments.

2. HARDWOOD STAIR TREADS AND RISERS

2.1. General Requirements

All hardwood stair treads and risers sold as conforming to this standard shall be well manufactured in accordance with the following requirements:

- 2.1.1 Seasoning** – Material shall be kiln dried according to accepted methods for the species in question to a moisture content not to exceed 7 percent when shipped from the mill.
- 2.1.2 Workmanship** – All woodwork shall be well manufactured and shall conform to the various grades hereinafter defined.

2.2 Detail Requirements – Standard Grades

Hardwood stair treads and risers shall be graded according to the face, side and nosing. The reverse side of all grades may contain imperfections and characteristics, which do not materially impair the strength. The standard grades for hardwood stair treads and risers, which may be glued up for width or one piece, shall be as follows:

- 2.2.1 Clear Grade** – The tread nosing and the face of treads and risers shall be clear and free of sapwood. In glued up stock, the pieces shall be well matched for color and grain. Streaks may be

admitted, but not more than two in any one tread or riser and not over 6" (152.4mm) long in the aggregate.

2.2.2 Select Grade – The tread nosing and the face of treads and risers may contain slightly chipped grain; streaks; bright sapwood; sound tight knots not over 1/4" (6.4mm) in diameter and not more than two in each piece, spot worm holes 1/16" (.8mm) in diameter or less, to the extent of one per linear foot.

2.2.3 Character Marked Grade – The tread nosing and the face of treads and risers shall display various character markings inherent in the tree, reflecting the natural beauty of hardwood. The character markings may include tight knots, wormholes, bird pecks, swirls, burls, and other grain irregularities, stain, streaks and other color variations occurring in the growth of the wood. It shall be free from rot, decay, and heart center.

2.2.4 Paint Grade – This grade covers risers only that are intended for a paint finish. The face may contain tight knots, stain, or other sound imperfections which do not materially impair the strength or which would prevent a smooth paint finish. Open defects when properly filled and sanded shall be permitted.

2.3 Treads

Stair treads are available in Clear Grade, Select Grade, and Character Marked Grade.

- 2.3.1 Thickness** – The standard thickness for treads shall be 1" (25.4mm) after moulding, less customary allowance for sanding. Special thicknesses of 25/32" (19.9mm) and 1-5/16" (33.3mm) may also be graded according to this standard.
- 2.3.2 Width** – The standard widths for treads shall be 9-1/2" (241.3mm), 10-1/2" (266.7mm), and 11-1/2" (292.1mm). The width shall be measured from the extreme point of the nosing to the back edge.
- 2.3.3 Length** – The standard lengths for treads shall be 3' (914.4mm); 3' 6" (1066.8mm); 4' (1219.2mm); 4' 6" (1371.6mm); and 5' (1524.0mm).

2.4 Risers

Stair risers are available in Clear Grade, Select Grade, Character Marked Grade, and Paint Grade.

- 2.4.1 Thickness** – The standard thickness of risers shall be 3/4" (19.1mm) after moulding, less customary allowance for sanding.
- 2.4.2 Width** – The standard widths of risers shall be 6-1/2" (165.1mm), 7" (177.8mm), 7-1/2" (190.5mm), and 8" (203.2mm).
- 2.4.3 Length** – The standard lengths of risers shall be 3' (914.4mm), 3' 6" (1066.8mm), 4' (1219.2mm), 4' 6" (1371.6mm), and 5' (1524mm).

2.5 Tolerance

A manufacturing tolerance of plus or minus 1/32" (.8mm) in the thickness, width, and length shall be allowed. All treads and risers shall be furnished with square ends and with side edges parallel.

2.6 Inspection

All hardwood stair treads and risers sold as conforming to the commercial standard are subject to inspection in the condition as received, and complaints regarding any shipment shall be made within five (5) days after receipt thereof. Any rejected material shall be held intact in its original form, properly protected, for a period up to three (3) weeks after notice of rejection and pending adjustments.

Section C - Abbreviations

GENERAL:

BF	=	Board Foot
LF	=	Linear Foot
SM	=	Surface Measure
AD	=	Air Dried
KD	=	Kiln Dried
AF	=	All Faces
FE	=	One Face, 4 Edges
FL	=	Face laminate
MC	=	Moisture Content
"	=	Inches
Mm	=	Millimeters

GRADES:

AAF	=	"A" Grade, All Faces
BAF	=	"B" Grade, All Faces
CAF	=	"C" Grade, All Faces
AFE	=	"A" Grade, 1 Face, 4 Edges, "B" Back
BFE	=	"B" Grade, 1 Face, 4 Edges, "C" Back
CFE	=	"C" Grade, 1 Face, 4 Edges, "C" Back
BFEB	=	"B" Grade, 1 Face, 4 Edges, "B" Back
PFE	=	Paint Grade, 1 Face, 4 Edges, Sound Back
PFEP	=	Paint Grade, 1 Face, 4 Edges, Paint Grade Back
SND	=	Sound Grade

MACHINING:

LINEAL WORK:

HorM	=	Hit or Miss
S1S	=	Finish Surface 1 Side
S2S	=	Finish Surface 2 Sides
S3S	=	Finish Surface 3 Sides
S4S	=	Finish Surface 4 Sides
E4S	=	Finish Surface 4 Sides with eased corners
PAT	=	Mould to Pattern

END OPERATIONS:

- NE = Not equalized to length cut reasonably square
- EQ = Equalized square to length
- T1E = Tenon 1 end, square cut other end
- T2E = Tenon 2 end
- HT1E = Half tenon (rabbet) 1 end, square cut other end
- HT2E = Half tenon (rabbet) 2 ends
- M1E = Mitre 1 end, square cut other end
- M2E = Mitre 2 ends
- C1E = Cope 1 end, square cut other end
- C2E = Cope 2 ends
- SL1E = Slot 1 end, square cut other end
- SL2E = Slot 2 ends

CROSS WORK:

Dadoes:

- Dd1 = One dado to Pattern & location
- Dd2 = Two dadoes to Pattern & location

SPECIAL WORKING:

Resaw:

- RSC = Resaw Center
- RS2 = Resaw 2 cuts
- RS3 = Resaw 3 cuts

Ripping:

- RP1 = Rip special 1 cut
- RP2 = Rip special 2 cuts, etc.

Bandsaw:

- BS = Bandsaw to detail

Shaping:

- SH = Shape to detail

Routing:

RT = Rout to detail

Mortise:

MTC = Mortise

Notch:

NH1 = 1 Notch

NH2 = 2 Notches, etc.

CLP1 = Clip 1 end

CLP2 = Clip 2 ends, etc.

Bore:

B1H = Bore 1 hole

B2H = Bore 2 holes, etc.

B1HC = Bore 1 hole & countersink

B2HC = Bore 2 holes & countersink, etc.

DW1 = 1 Dowel

DW2 = 2 Dowels, etc.

Turn:

TN = Turn to Pattern

Sand:

SD1 = Sand 1 face

SD2 = Sand 2 faces

PFS1 = Profile Sand 1 Edge

PFS2 = Profile Sand 2 Edges, etc.

NOMENCLATURE AND DEFINITIONS:

Bird Peck – A small hole or patch of distorted grain resulting from birds pecking through the growing cells of the tree.

Bow – The longitudinal distortion of a board from a true plane or surface (from end to end).

Burl – A swirl or twist in the grain of the wood which occurs near a knot but does not contain a knot over 1/8" in diameter.

Characteristics – Any natural marking or injury, which occurs in wood altering the uniformity of its appearance, such as knots, stain, and worm holes.

Check – A lengthwise separation of the wood, the greater part of which occurs across the rings of annual growth. A surface check is a check occurring on the surface of a piece.

Chipped Grain – An area where the surface is chipped or broken out in very short particles below the line of cut.

Conditioning in Kiln Drying – Obtaining the same moisture content in the "shell" or outside surface of the board as there is in the "core" or center of the board.

Crook – The longitudinal distortion along the edge of a board.

Cup – The lateral distortion of a board from a true plane or surface (from edge to edge across the face).

Decay – A disintegration of the wood substance due to the action of wood destroying fungi. Also known as "dote" and "rot."

Defect – Any irregularity occurring in or on wood that may lower its strength, durability or utility values.

Equalizing in Kiln Drying – Obtaining the same moisture content from board to board in a charge of lumber.

Hardwoods – The botanical group of trees that, with a few exceptions, comprise all the broad leafed species. The term has no reference to the actual hardness of the wood. Angiosperms is botanical name for hardwoods.

Heart Center – The small soft core (pith) occurring in the structural center of the log.

Moisture Content of Wood – Weight of the water contained in the wood expressed in percentage of the weight of the oven dry woods.

Sapwood – The layers of wood next to the bark, usually lighter in color than the heartwood.

Sound Knot – A knot, which is solid across its face, as hard as the surrounding wood, and shows no indication of decay.

Split – A lengthwise separation of the wood by reason of the tearing apart of the wood cells.

Stain – A discoloration, occurring on, or in, wood, of any color other than the natural color of the piece on which it appears.

Streak – Streak is a discoloration caused by an accumulation of mineral like substance or chemical change within the wood.

Tight Knot – A knot, which is so fixed by growth or position as to firmly, retain its place in the piece.

Torn Grain – Means that a part of the wood is torn out in dressing.

Twist – A combination of cup, bow, and crook.

Warp – Any variation from a true or plane surface.

Worm Holes – Voids in the wood caused by the burrowing action of certain wood infesting worms, which, of course, do not survive the kiln drying process.

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