

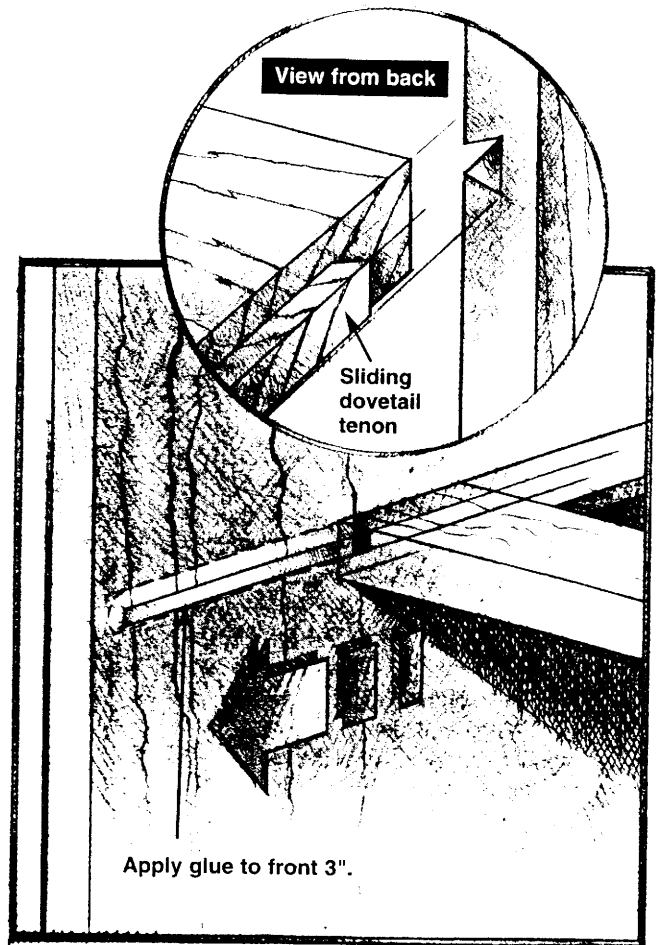
Species	Approximate Shrinkage From Green To Oven Dry Moisture Content		Expected Change In Width For Kiln Dried Wood Kept Indoors In The Pittsburgh Region (All Figures Shown Are Change Per Inch Of Width)			
	Tangential	Radial	Unfinished (fluctuates from 4% to 14%)		Well Finished On All Sides (fluctuates from ~7% to ~9%)	
			Tangential	Radial	Tangential	Radial
Hardwoods						
Ash, White	7.8%	4.9%	0.028	0.018	0.006	0.004
Basswood, American	9.3%	6.6%	0.033	0.024	0.007	0.005
Beech, American	11.9%	5.5%	0.043	0.020	0.009	0.004
Birch, Yellow	9.2%	7.2%	0.033	0.026	0.007	0.005
Catapla	4.9%	2.5%	0.018	0.009	0.004	0.002
Cherry, Black	7.1%	3.7%	0.025	0.013	0.005	0.003
Chestnut	6.7%	3.4%	0.024	0.012	0.005	0.002
Hickory, Pecan	8.9%	4.9%	0.032	0.018	0.006	0.004
Maple, Red	8.2%	4.0%	0.029	0.014	0.006	0.003
Maple, Sugar	9.9%	4.8%	0.035	0.017	0.007	0.003
Oak, Northern Red	8.6%	4.0%	0.031	0.014	0.006	0.003
Oak, Red	8.9%	4.2%	0.032	0.015	0.006	0.003
Oak, Southern	11.3%	4.7%	0.040	0.017	0.008	0.003
Oak, White	10.5%	5.6%	0.038	0.020	0.008	0.004
Sycamore, American	8.4%	5.0%	0.030	0.018	0.006	0.004
Walnut, Black	7.8%	5.5%	0.028	0.020	0.006	0.004
Yellow Poplar	8.2%	4.6%	0.029	0.016	0.006	0.003
Softwoods						
Cedar, Eastern Red	4.7%	3.1%	0.017	0.011	0.003	0.002
Douglas Fir, Coastal	7.8%	5.0%	0.028	0.018	0.006	0.004
Fir, White	7.1%	3.2%	0.025	0.011	0.005	0.002
Pine, Eastern White	6.1%	2.1%	0.022	0.008	0.004	0.002
Pine, Sugar	5.6%	2.9%	0.020	0.010	0.004	0.002
Redwood, Young Grc	4.9%	2.2%	0.018	0.008	0.004	0.002
Spruce, Sitka	7.5%	4.3%	0.027	0.015	0.005	0.003
Imported						
Lauan	8.0%	3.8%	0.029	0.014	0.006	0.003
Mahogany	5.1%	3.7%	0.018	0.013	0.004	0.003
Spanish Cedar	6.3%	4.1%	0.023	0.015	0.005	0.003
Teak	4.0%	2.2%	0.014	0.008	0.003	0.002

Strategy 7: Divide and support the drawers without damaging the sides

You can avoid expensive metal drawer slides by building web frames that support the drawers while also serving as visual dividers. However, you face the challenge of running the web frames across the grain of the cabinet side, where movement occurs. To fix this, let dovetails provide a solution.

Using a dovetail bit and your router, start at the back edge of each side, and cut dovetail dados stopped 1" from the front edge. For each drawer except the bottom one, build a mortise-and-tenoned web frame with 3/4" stock. Make it as wide as the inside width of the cabinet plus the depths of the dovetail grooves. Cut a sliding dovetail tenon on each side of this frame. It's better to make this joint ever so slightly loose rather than too tight, to avoid assembly problems. Trim off the front 1/4" of each dovetail tenon. The extra space provides a spot for glue to pool, easing assembly.

To install each web frame, apply glue to the front 3" of the dovetail grooves. Slide the web frame into the dados from the rear of the cabinet until it's flush at the front. The dovetail holds the assembly firmly in place, glue keeps the front flush, and the unglued portion allows the cabinet side to expand and contract. To make the drawer slide smoothly, apply self-adhesive strips of ultra-high molecular weight (UHMW) plastic to the web frame for the drawer sides to ride on. (A 10 1/2' roll of UHMW costs \$5.99 from Woodcraft. Call 800/225-1153, and order item 16L64.)



How much will it move?

Here's a sampling of movement information for often-used woods. Use the "Change per unit" columns to calculate the amount of swelling or shrinking to allow for when sizing project parts.

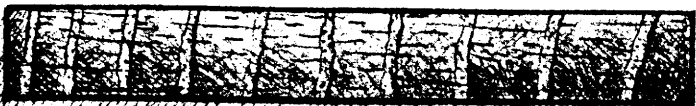
Width (inches) at 14 percent moisture content	Width at 6 percent moisture content		Change per unit*		
	Quartersawn	Flatsawn	Quartersawn	Flatsawn	
Ash, white	12	11.84	11.74	.0017	.0027
Birch, yellow	12	11.75	11.64	.0026	.0034
Cedar, western red	12	11.89	11.77	.0011	.0023
Cherry, black	12	11.88	11.76	.0013	.0025
Mahogany	12	11.83	11.77	.0017	.0024
Maple, sugar	12	11.84	11.66	.0017	.0035
Oak, red	12	11.85	11.65	.0016	.0037
Oak, white	12	11.83	11.65	.0018	.0037
Pine, ponderosa	12	11.87	11.79	.0013	.0022
Teak	12	11.9	11.82	.001	.0019
Walnut, black	12	11.82	11.74	.0019	.0027

*Multiply "change per unit" by width of board to find out how much it will shrink or swell per 1 percent change in moisture content.

Source: U.S. Forest Service's Forest Products Laboratory

Quartersawn

Flatsawn



On the left, you see the vertical lines of quartersawn grain; on the right, flat grain. For a general guideline, assume that flat grain will shrink and swell about twice as much as quartersawn grain in response to changes in moisture content.