Aw, Snap: Testing Wood Laminates

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Wood laminates are sandwiched layers of wood glued together to distribute forces to increase its load-bearing capabilities. Laminated timber is used in vertical and horizontal beams that experience compression and tension forces. To test the compression and tension forces on a laminated wood beam, weight/load was applied to the center of the beams. The beams had two, four, and eight layers glued together to all the same thickness, with the control being a solid wood piece of that same thickness. Data was collected by measuring the deviation from level after fixed weights of increasing loads were applied to the center of each beam. After deviations were measured for each beam, weight was added gradually using sand until the breaking point was reached. From the data I collected, the deviation from level increased as load increased for each beam; laminated wood beams outperformed the control of a solid wood beam. Under increasing loads, two layers and eight layers of wood bent more than four layers, and bent about the same amount under the same loads. At the breaking point, more layers did not carry the most load: two layers of ¼-inch beams were able to carry the most load before the breakpoint. For this experiment, two layers were the optimal number of layers for the laminate beams striking a balance between flexibility and strength.