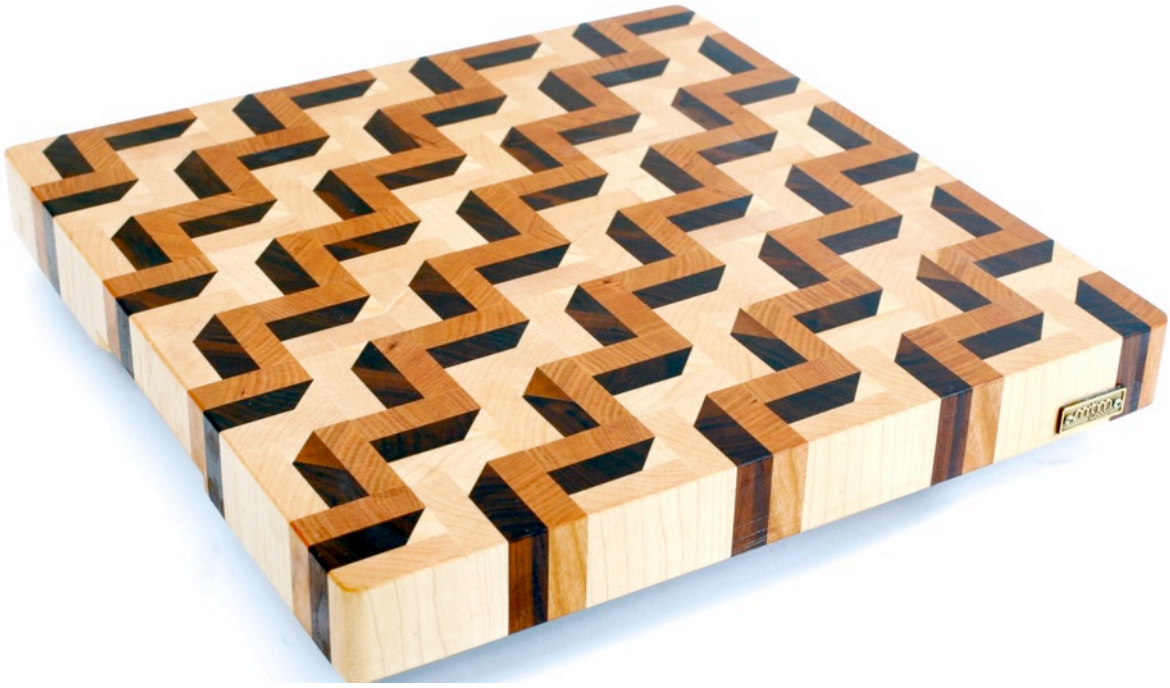
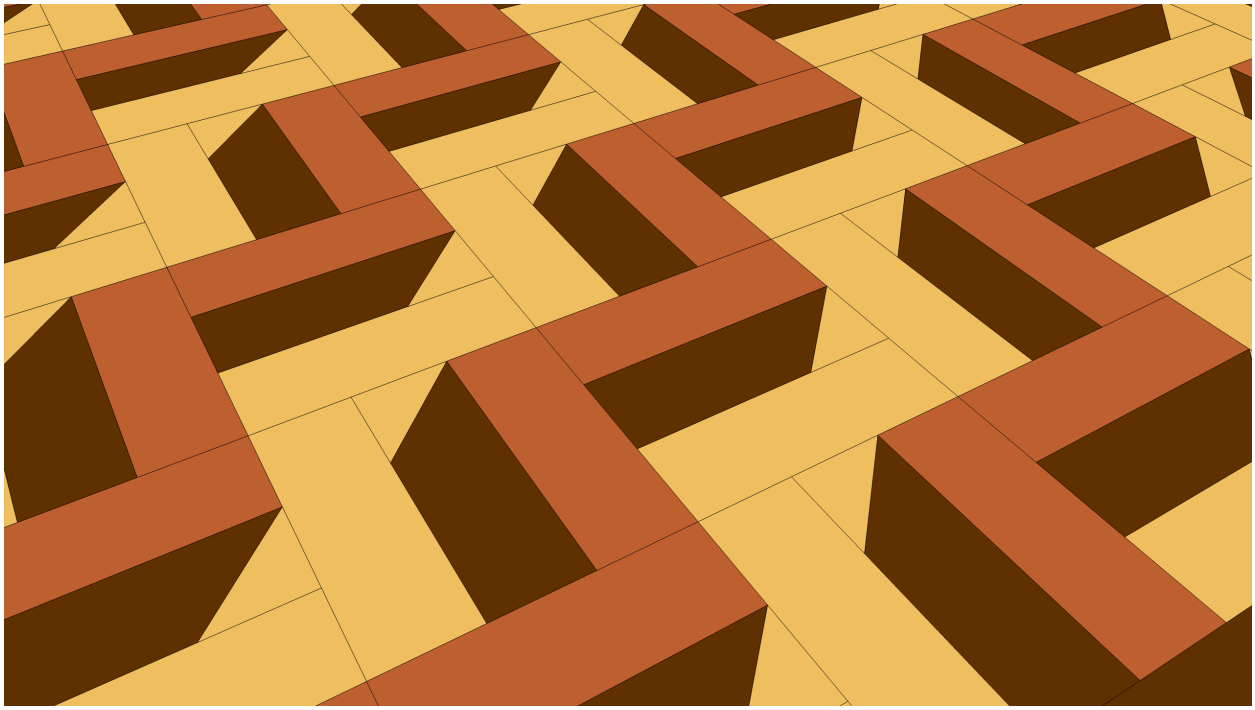
3D END GRAIN CUTTING BOARD N3



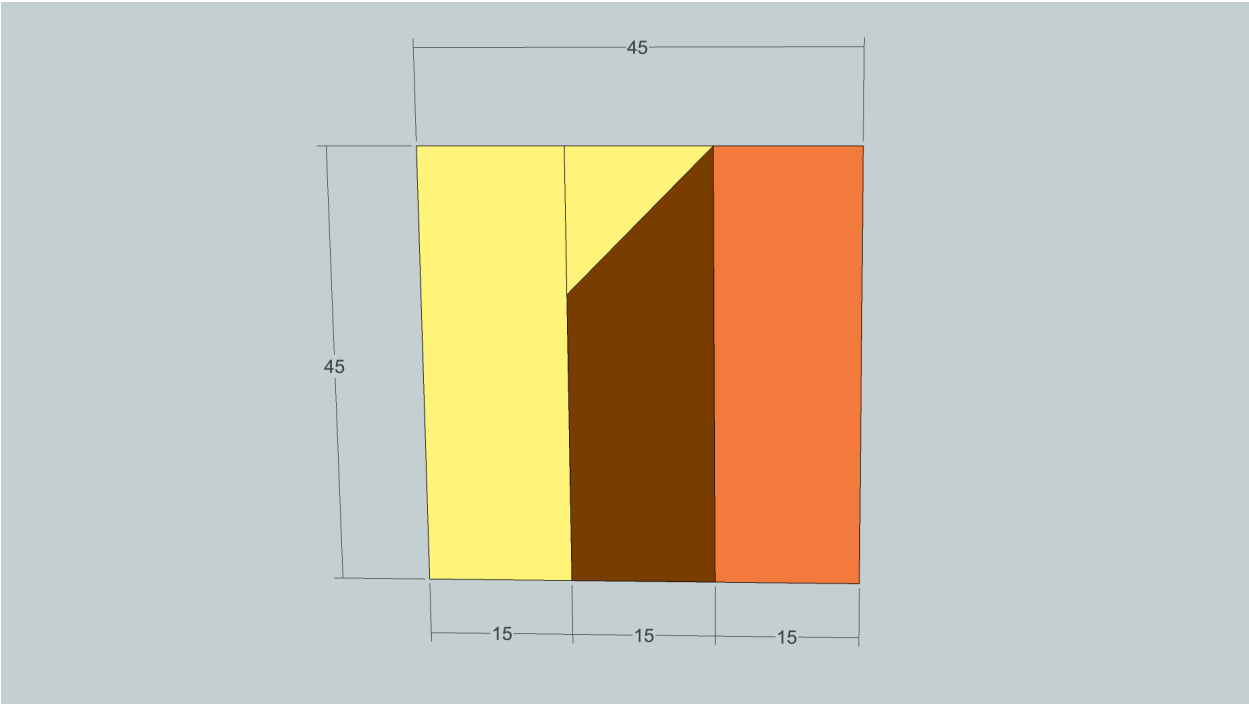
mtmwood
2014

This pattern shows a 3D optical illusion of the zigzag wall lit by the sun.



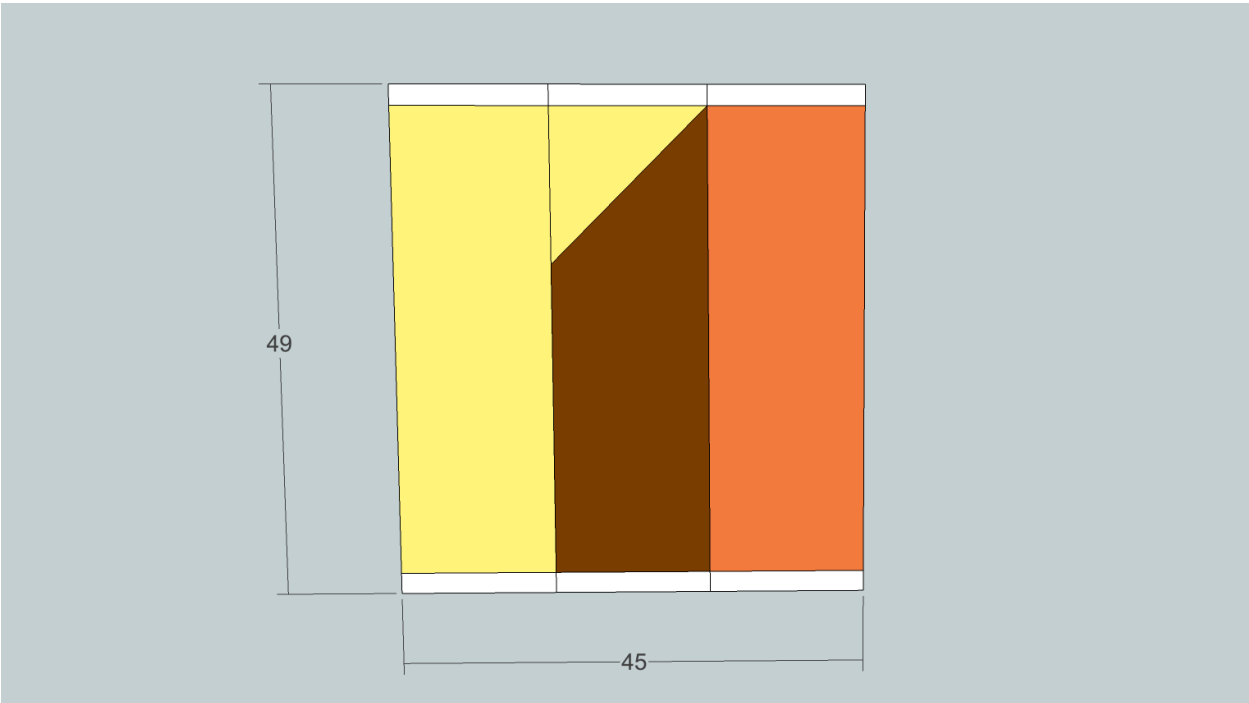
I used hard maple, black walnut and black cherry for this project. You may use other contrasting wood species. You need three types of wood: light wood (maple, hornbeam, birch), dark wood (padauk, walnut, sapele, purpleheart) and middle tone wood (movingui, cherry, oak).

This pattern consists of only one type of square.

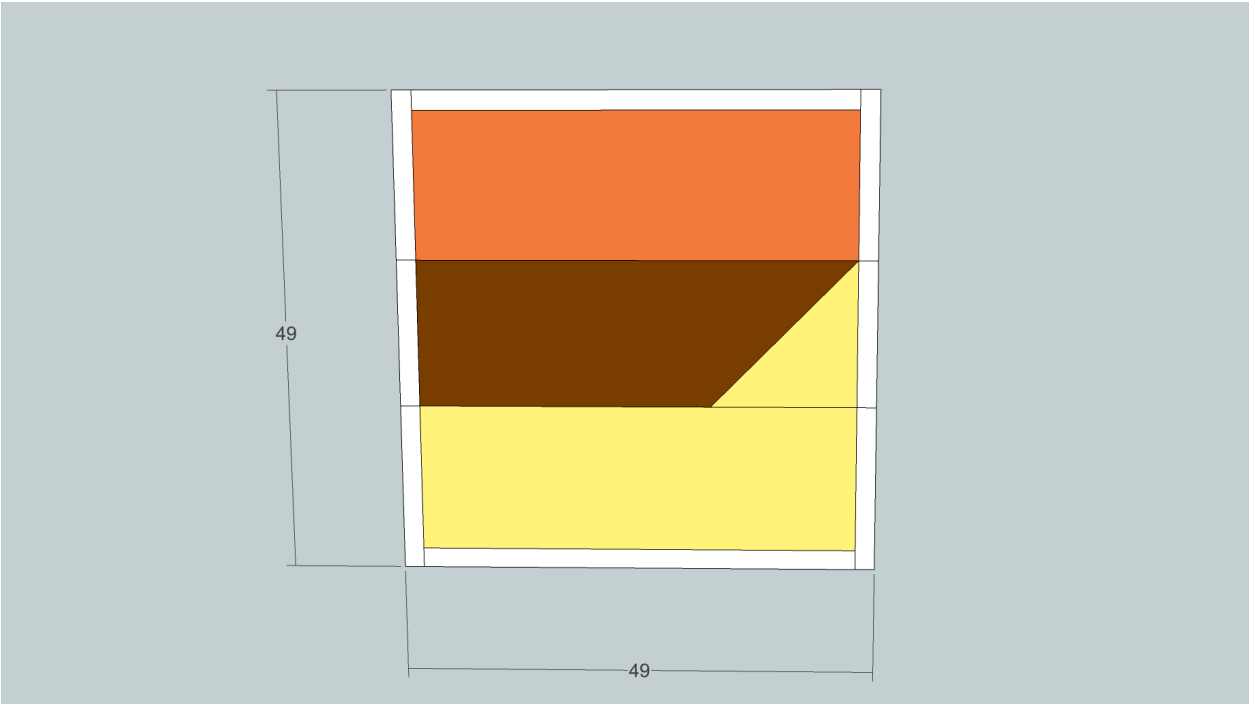


But we should get reserves during production, so the making process is more complex. To make this cutting board you should make two boards, which consists of two types of square blocks. White parts are the reserves, material to be removed. The thickness of all reserves is 2 mm.

1st type block:

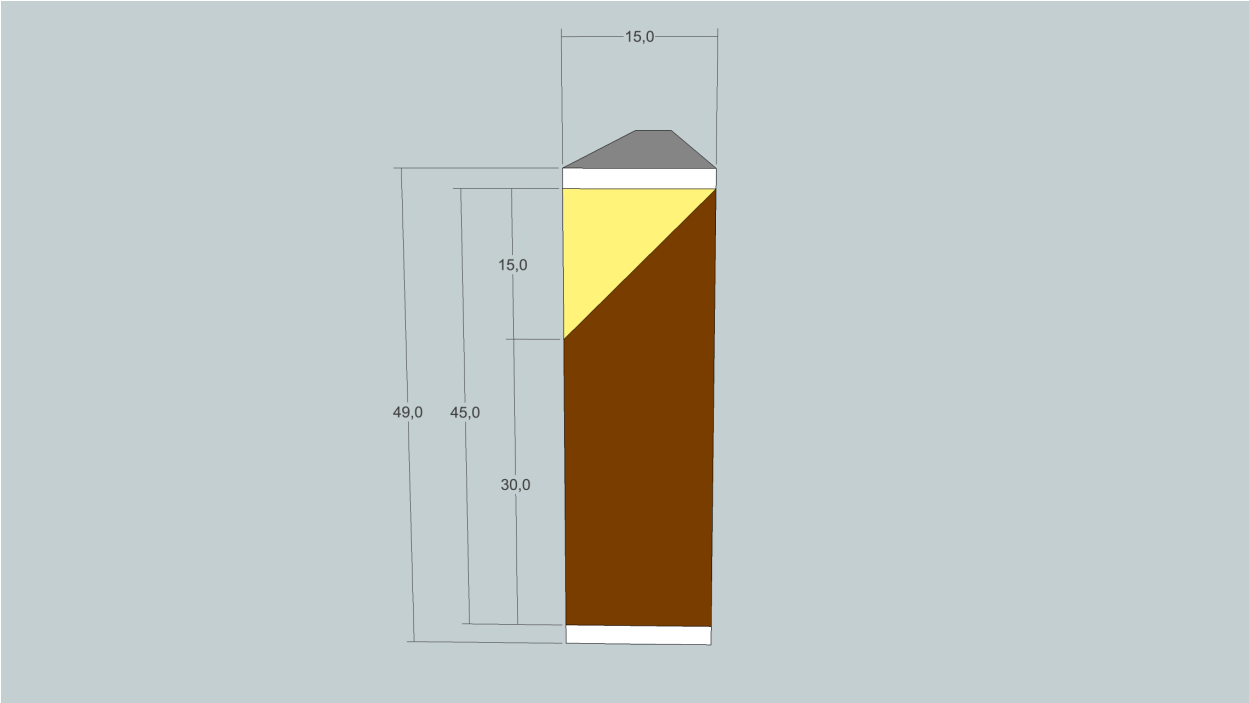


2nd type block:

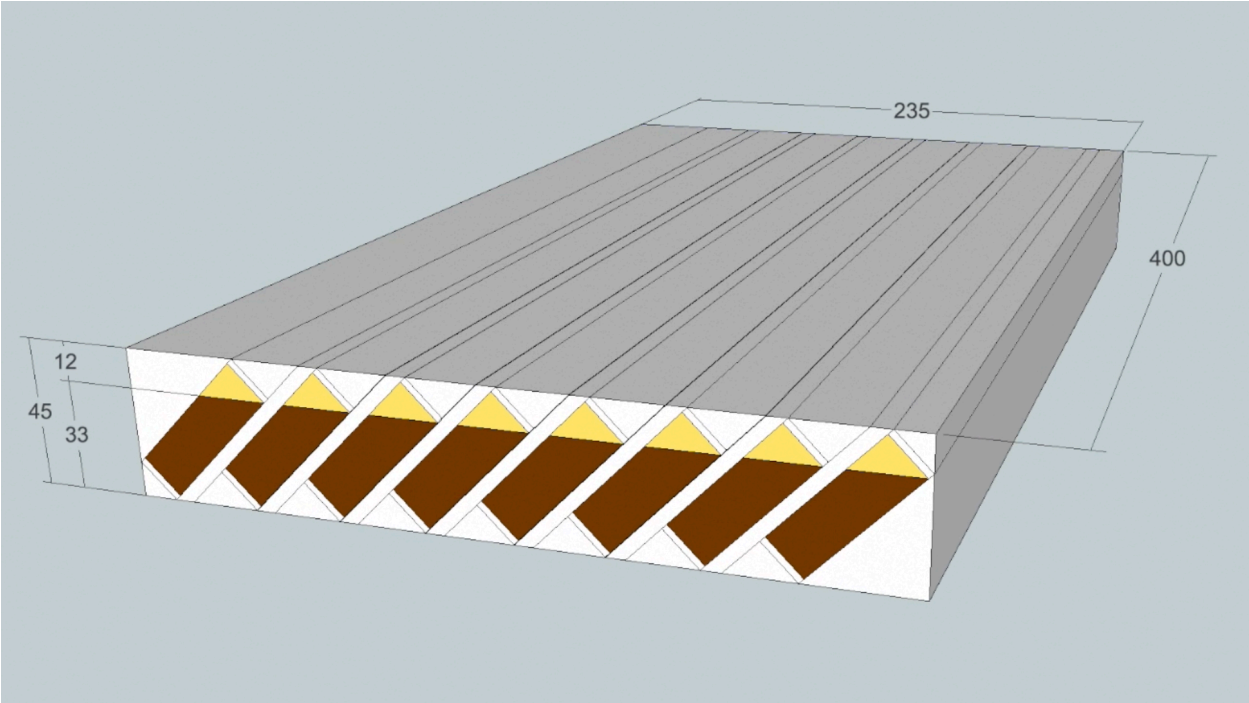


To get the 2nd type you should rotate the 1st type twice – by 180 and then by 90 degrees.

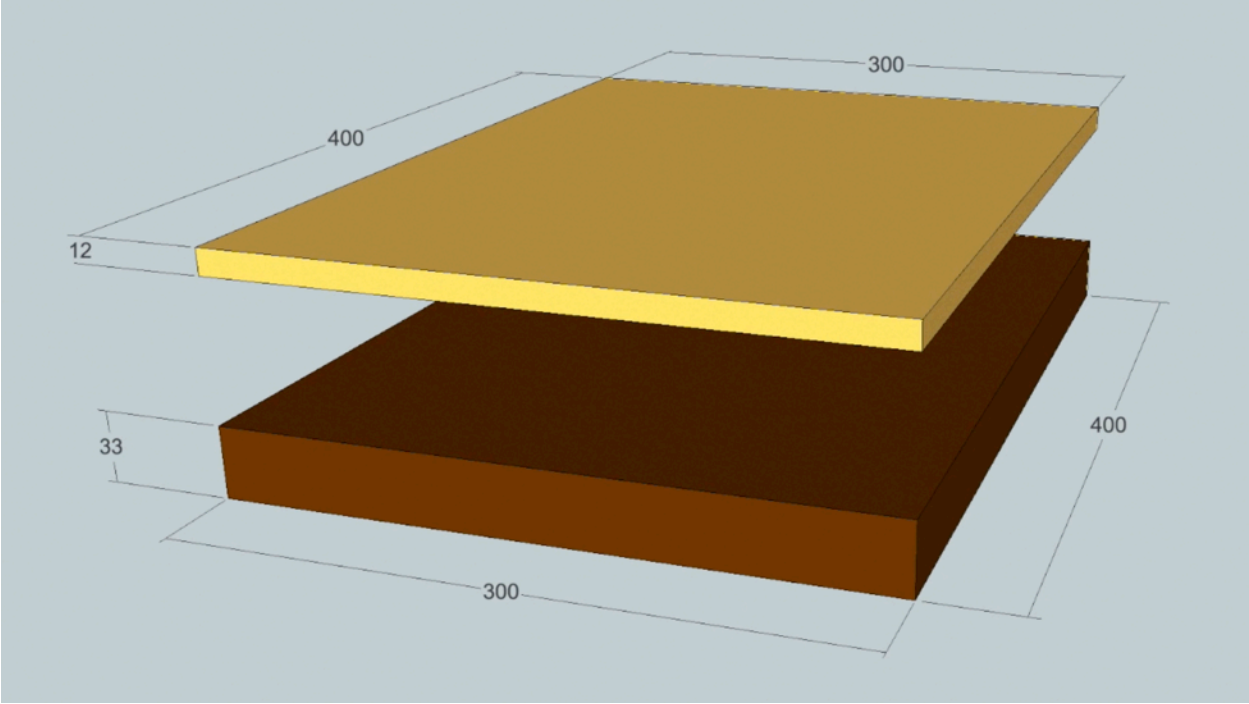
The most complex is the middle part of each type. It is the same in both types.



To make this part you should glue maple and walnut panels, cut the parts at table saw at 45 degrees and remove the reserves. We need 16 part, so it is necessary to make two 300 mm wide panels. The length of the panels should be about 400 mm. To be precise, the width of the panels may be only 235 mm, the length - about 200 mm. I made two 800 mm panels and finally got four cutting boards.



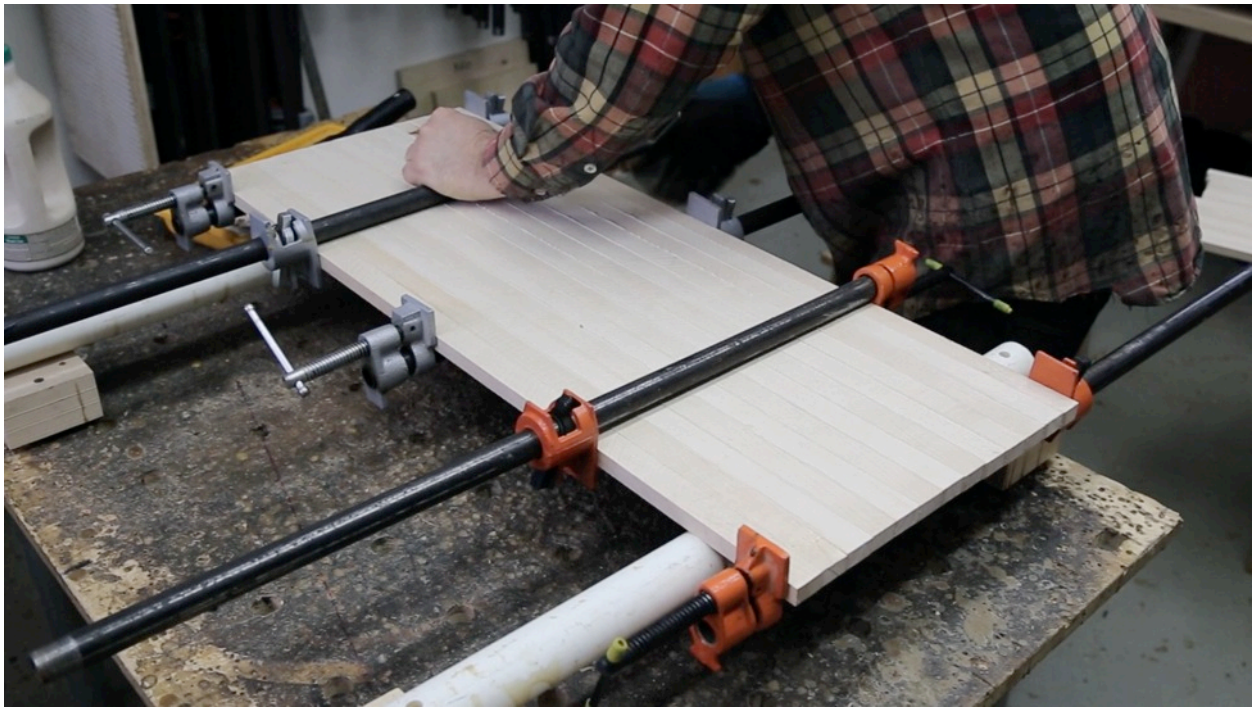
First you should make two maple panels 12 mm thick and two walnut panels 33 mm thick. The width of the panels must be about 300 mm, the length - 400 mm.

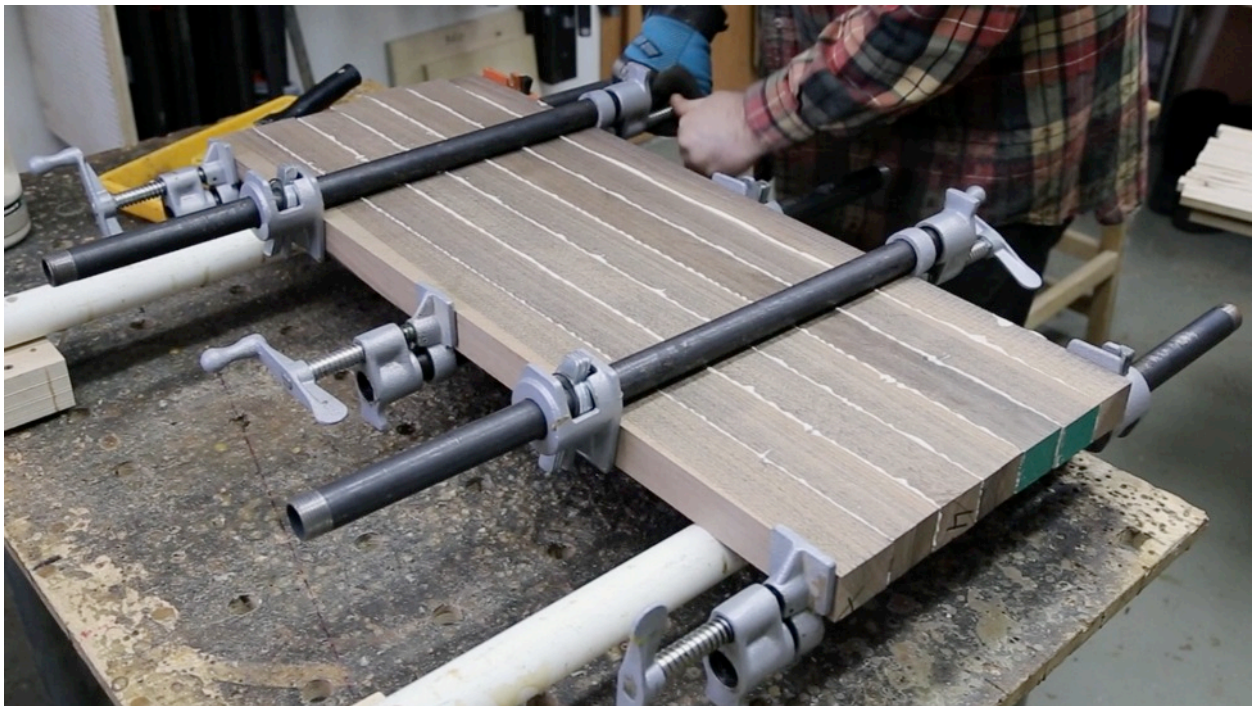


Usually I add 2 mm to the panel thickness. So I make maple panels 14 mm thick in order to get 12 mm after planing.

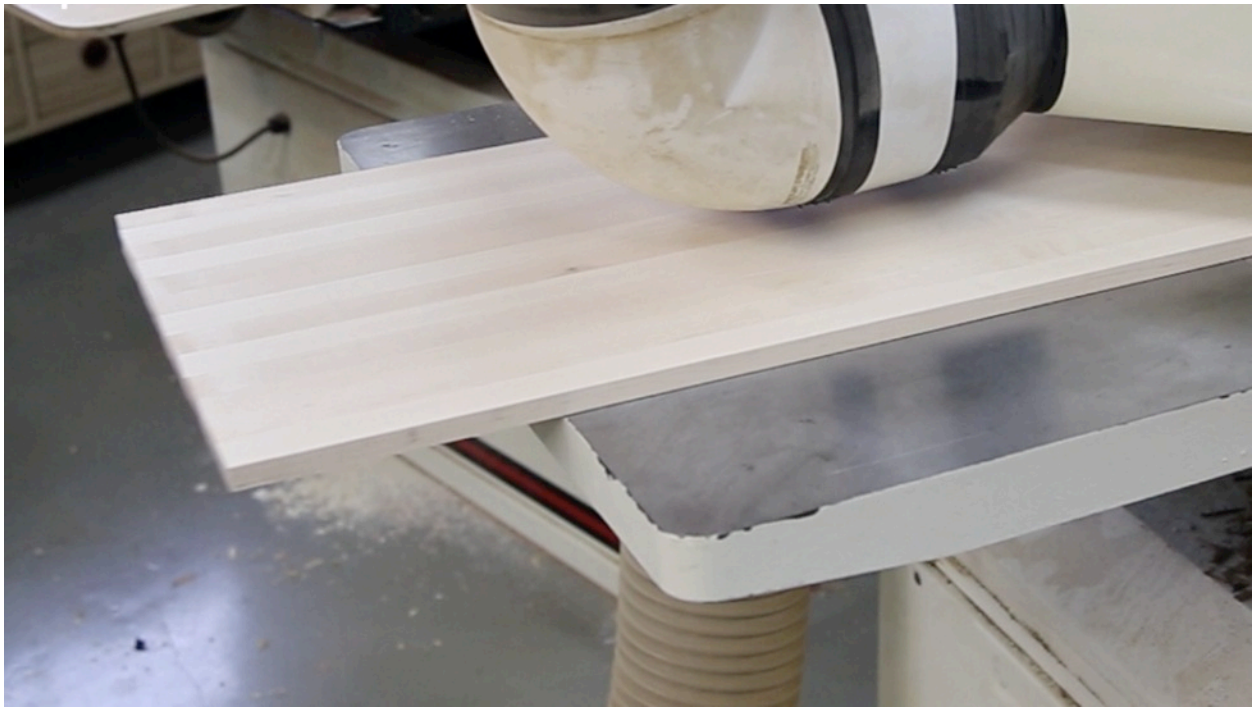
The same with the walnut panels. Make 35 mm to get 33 mm after planing.

Glue the panels. Use Titebond III glue or another type III and food safe glue.





Wait a night and then plane the panels. You should be precise making this board.
Make maple panels 12 mm thick.

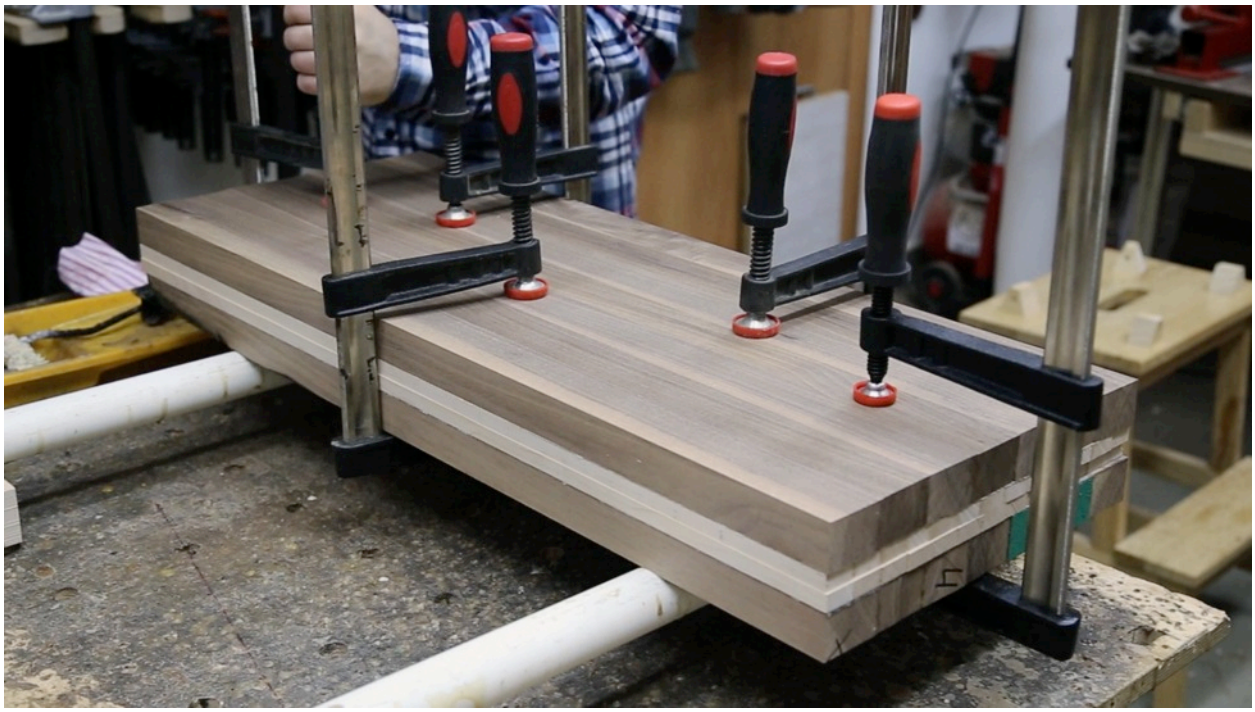


Make walnut panels 33 mm thick.

Make the width of panels the same for more convenient gluing.

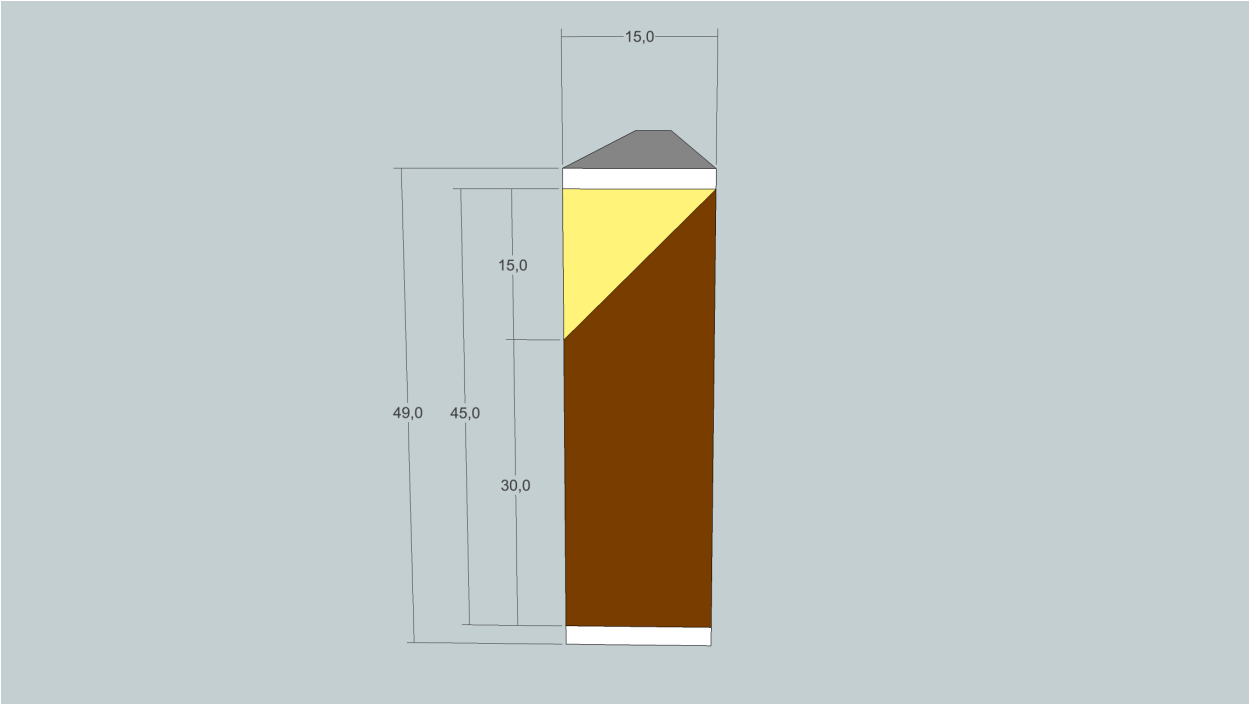
Then glue maple and walnut panels. I glue all four panels at once placing thin maple panels in the center.

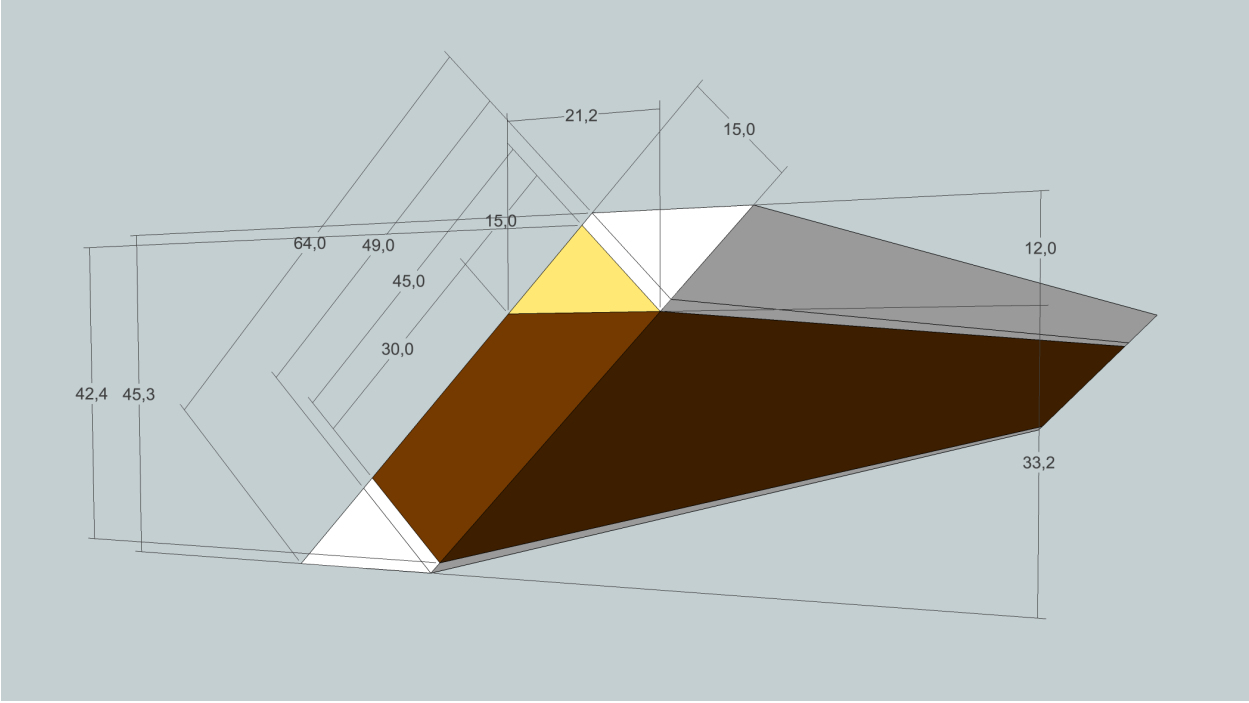
It is important to glue the panels well in the center. So use large F-clamps for this purpose. First clamp the panels in the center to squeeze out the excess glue, then clamp at the edges.



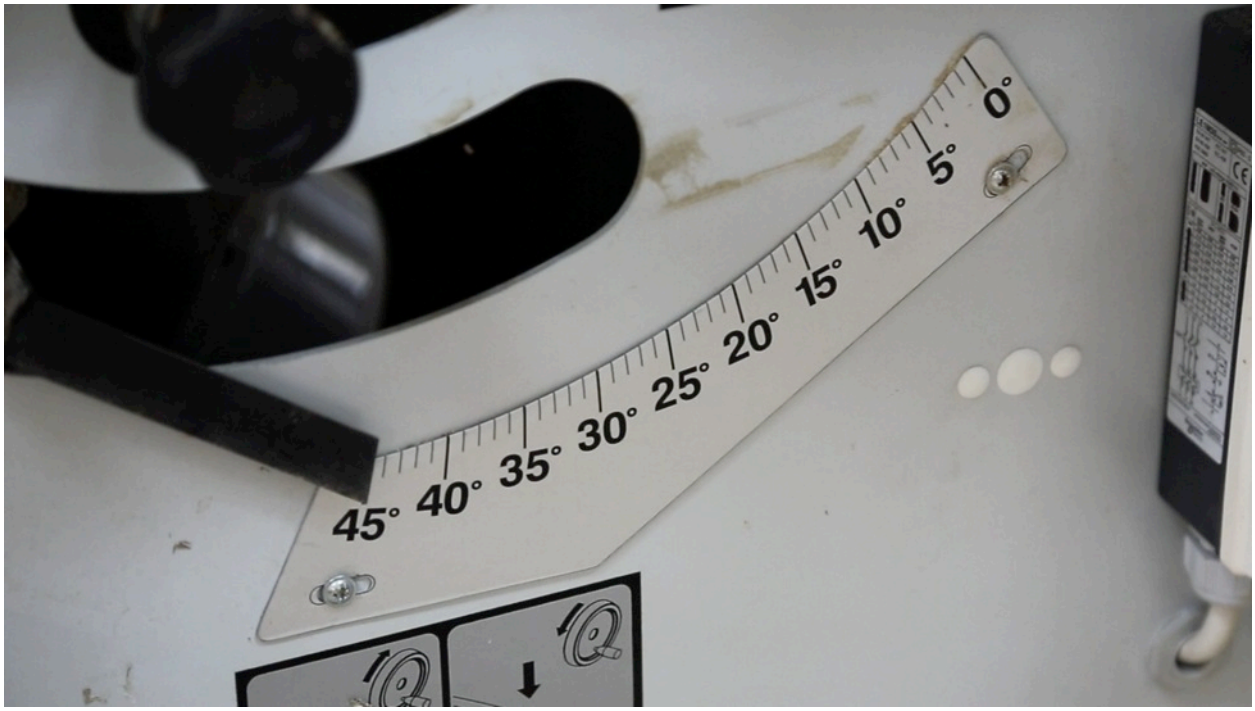
Wait 24 hours. Glue dries for a long time in the middle without air access.

This cutting board consists of square blocks. Now you should make the middle part of the square.

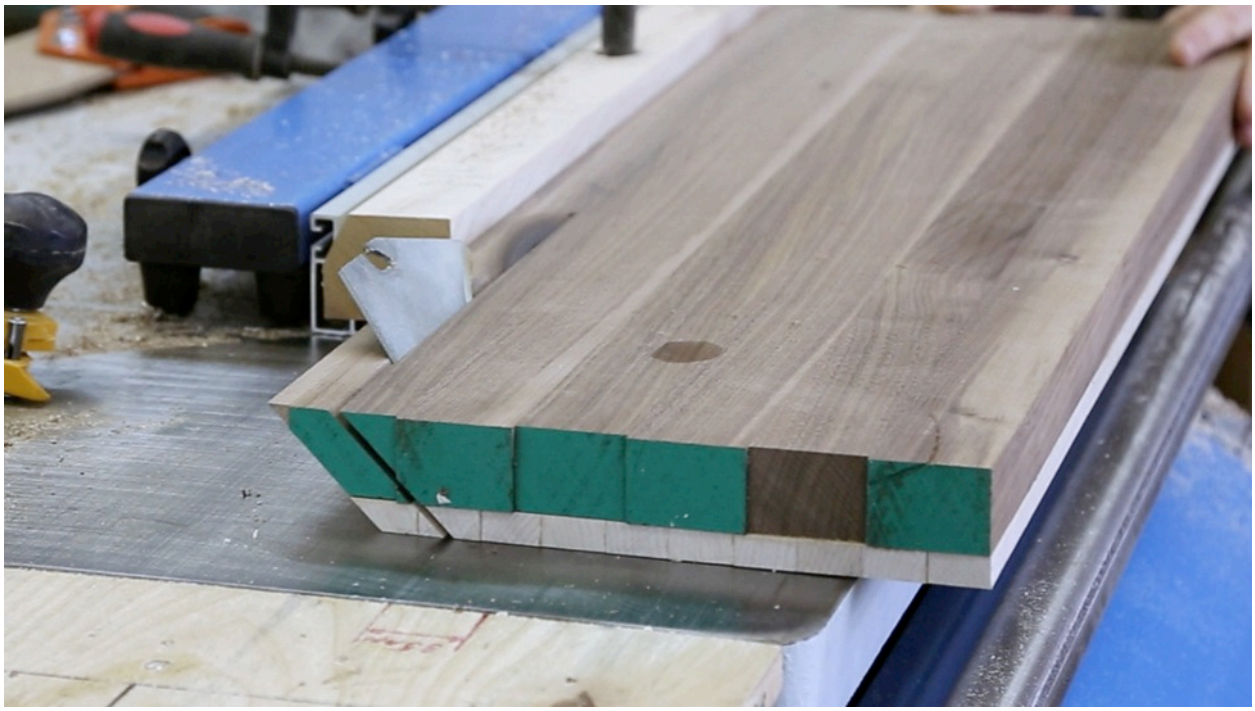




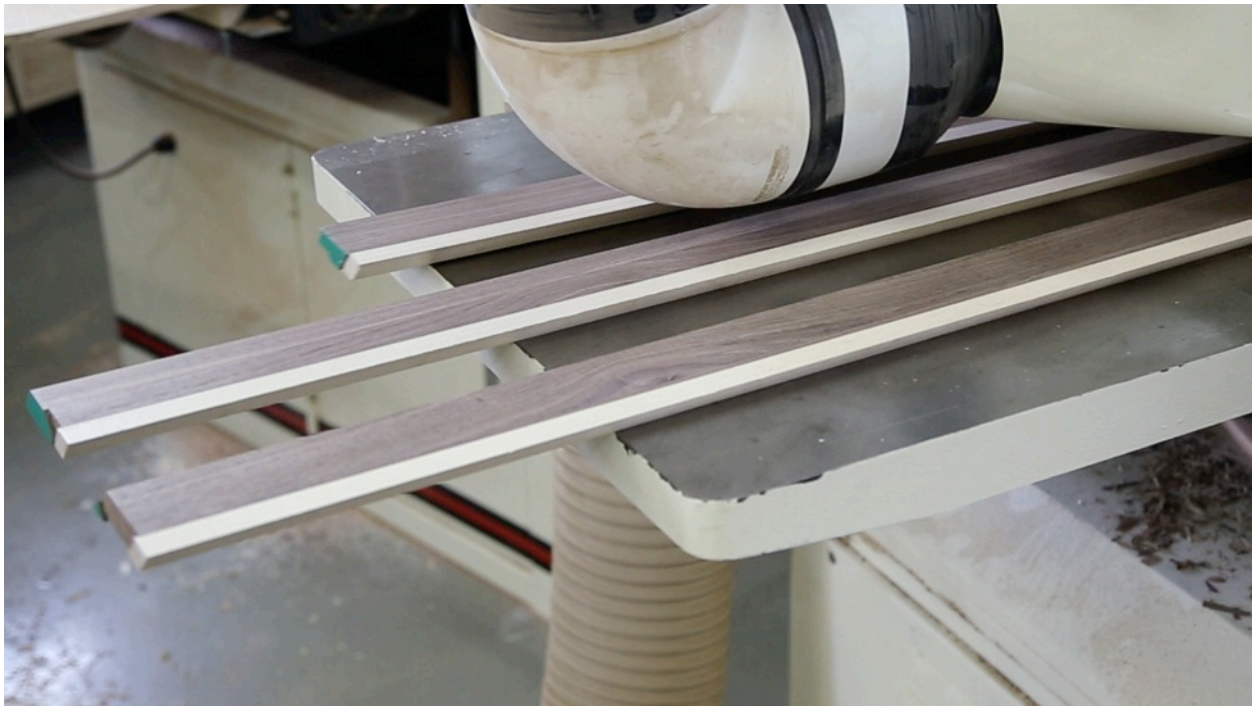
Set the 45° angle at your table saw.



The thickness of the middle strip is 15 mm. Add 2 mm and cut sixteen 17 mm thick strips.



Then plane the strips and make 15 mm thickness.

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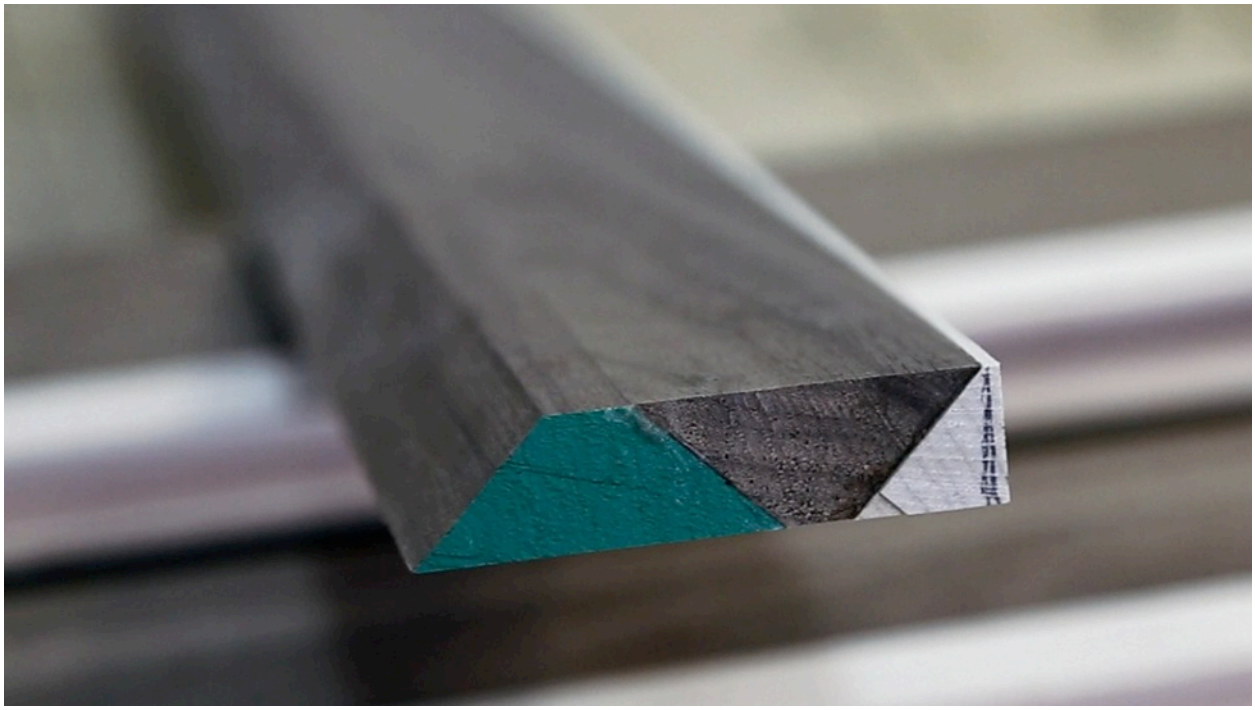
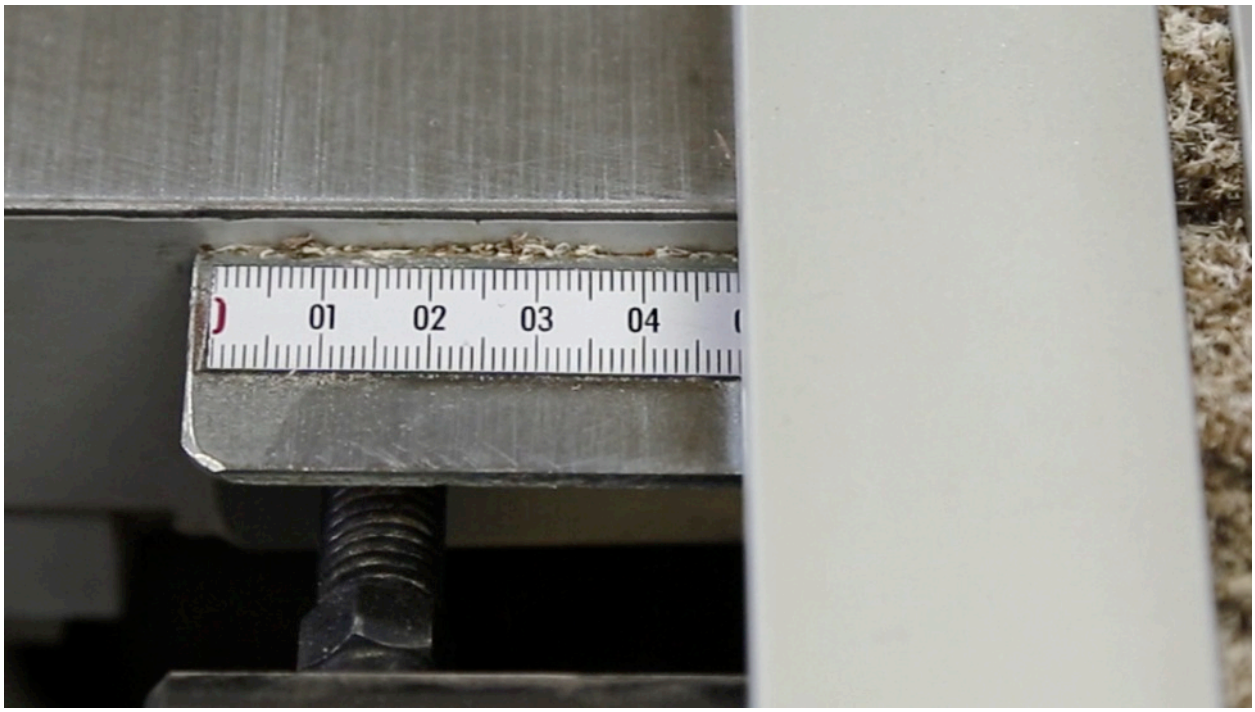
Indent 2 mm from the walnut corner and cut off the remainder of the maple.

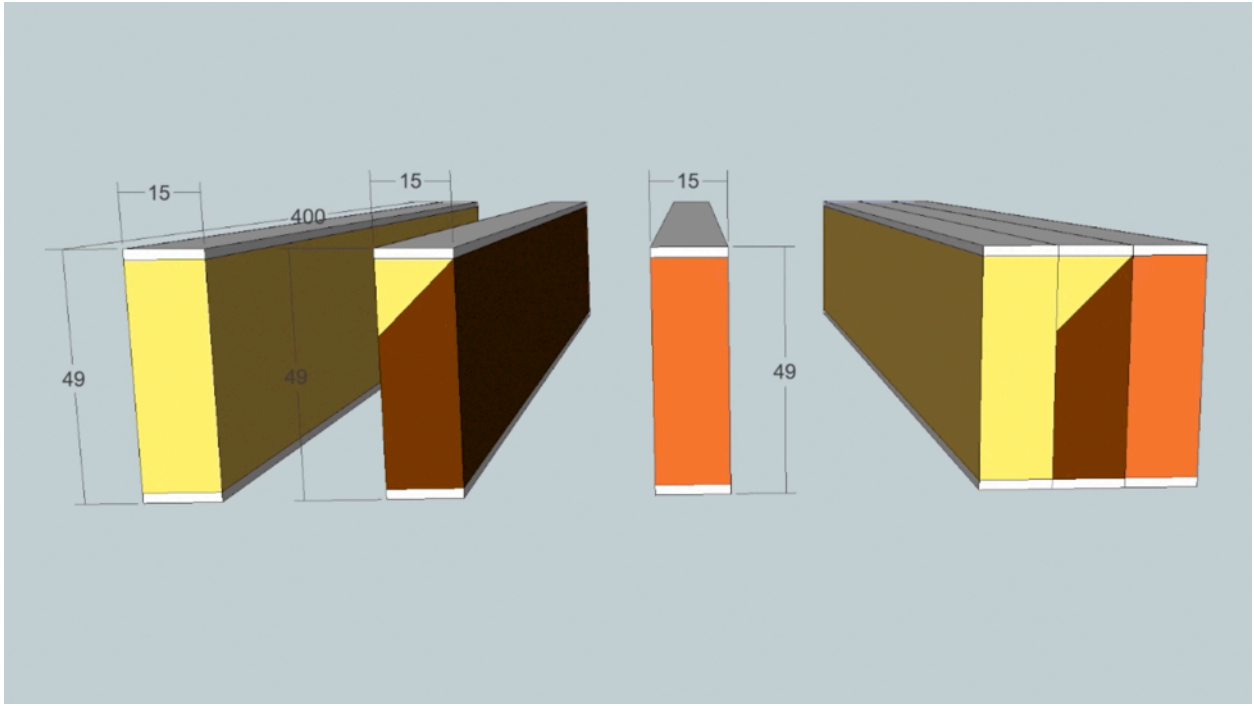


Set the table saw rip fence at 49 mm and cut off the another corner.

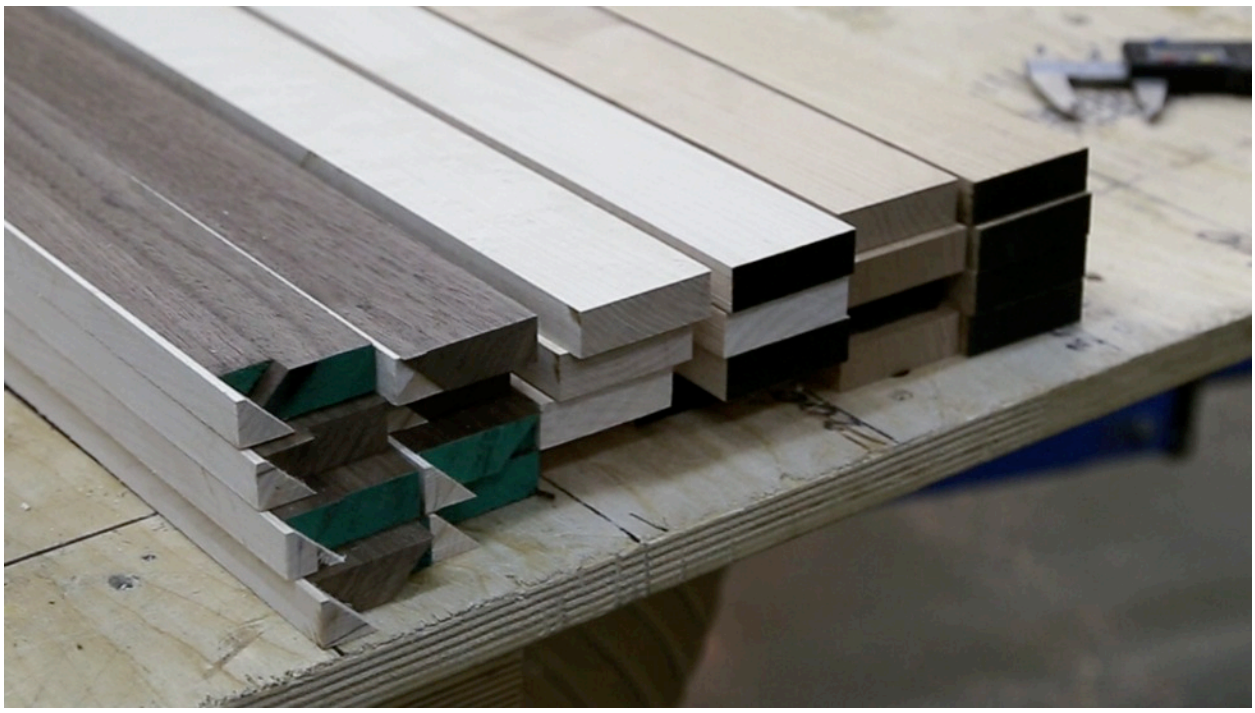


Divide 16 strips at two equal parts and make two types of blocks.

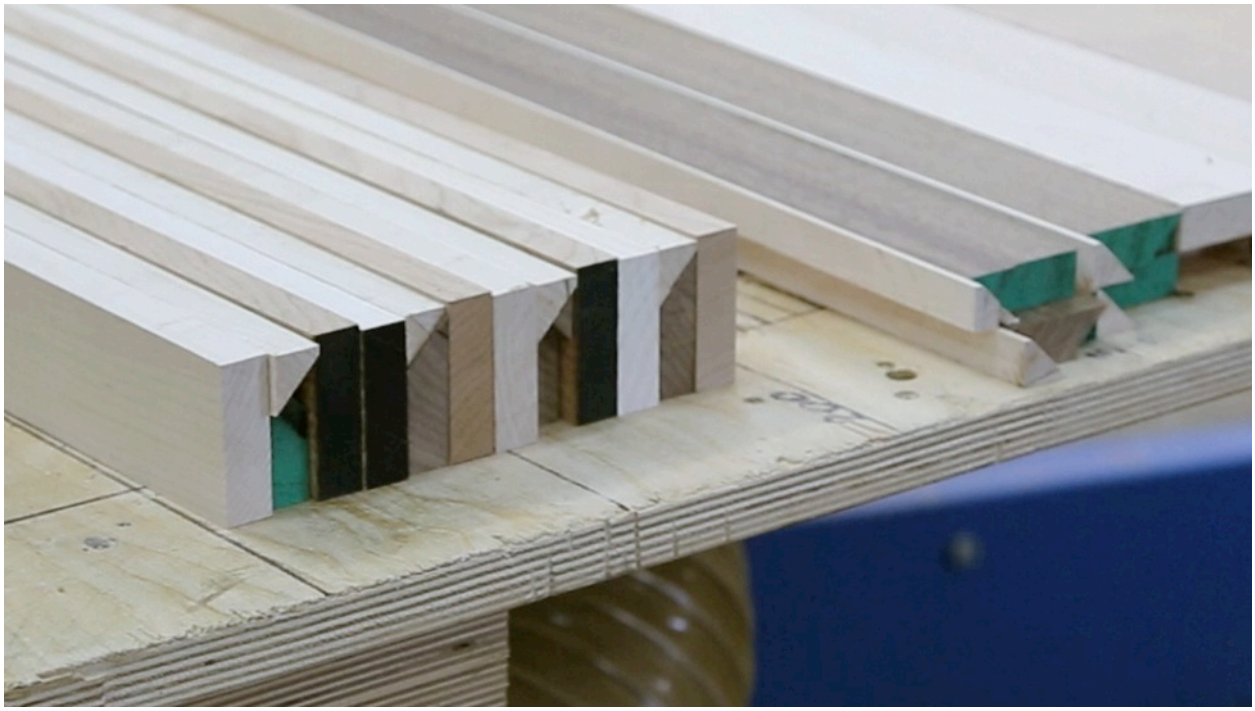
Making the edges parts of the 1st type is simple. You should make 8 maple strips and 8 cherry strips 49x15x400 mm.



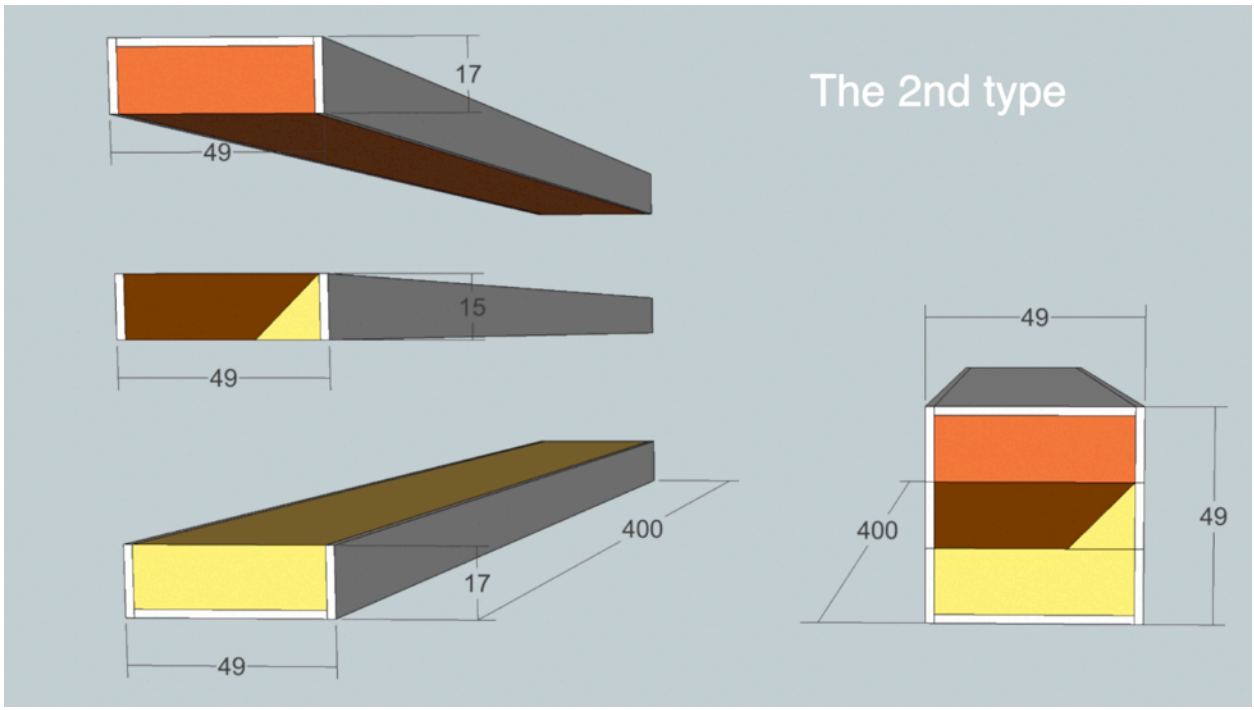
Make eight 49x15 mm maple strips and eight 49x15 mm cherry strips.



Assemble the 1st type blocks.



Making the 2nd type.
You already made the middle part, so it necessary to make edges parts. You should make 8 maple strips and 8 cherry strips 49x17x400 mm.

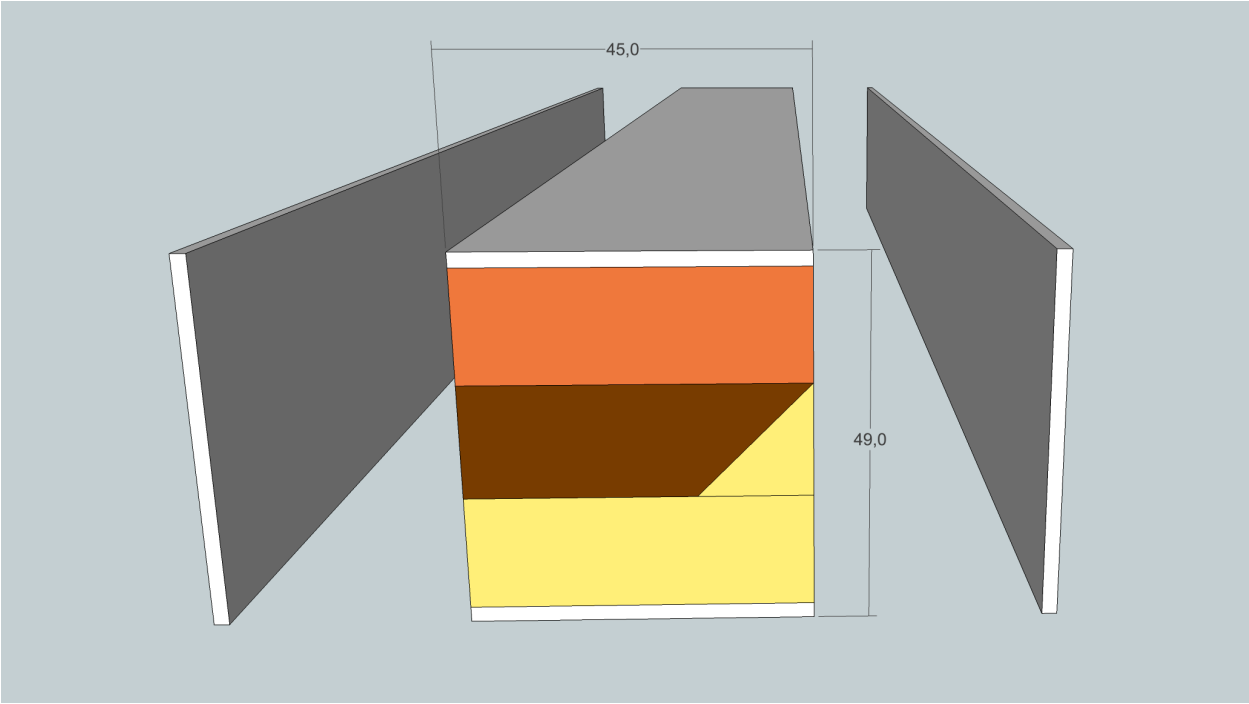


Assemble the 2nd type blocks.

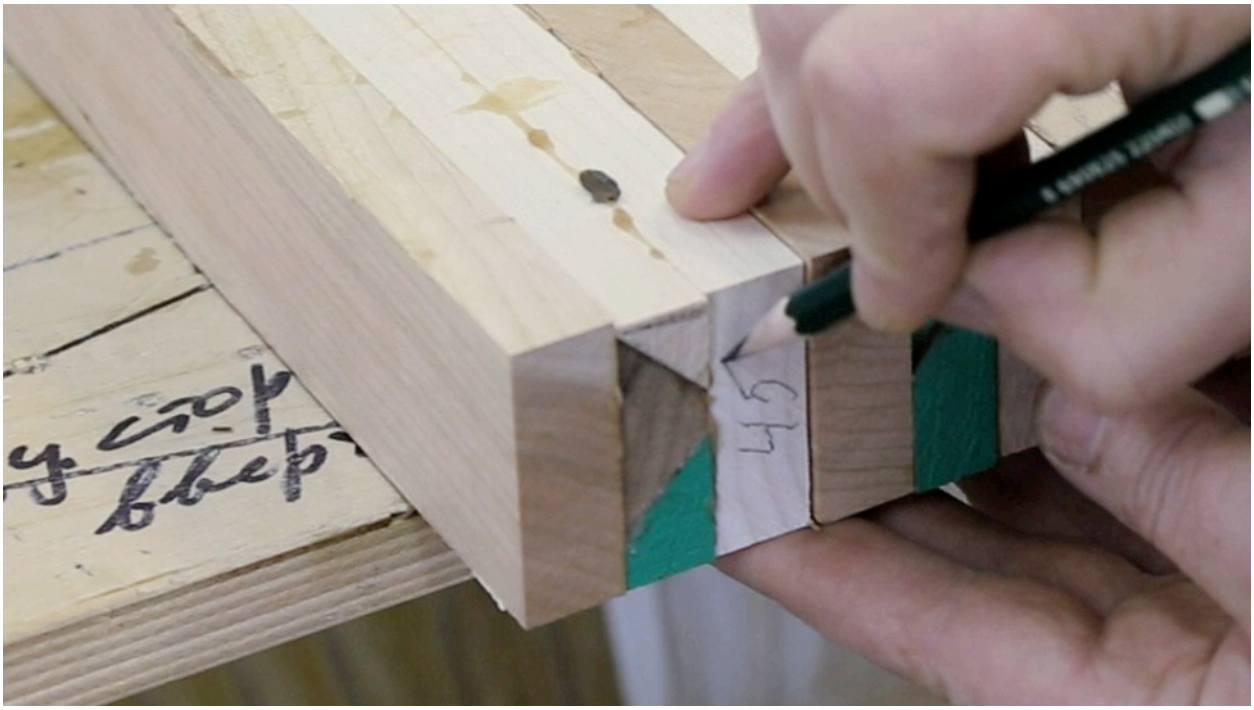
Glue three parts of each block.
NB! Do not glue blocks to each other! In the video I clamp all eight blocks at once, but not glue blocks together.

You should get 8 blocks of the 1st type and 8 blocks of the 2nd type.

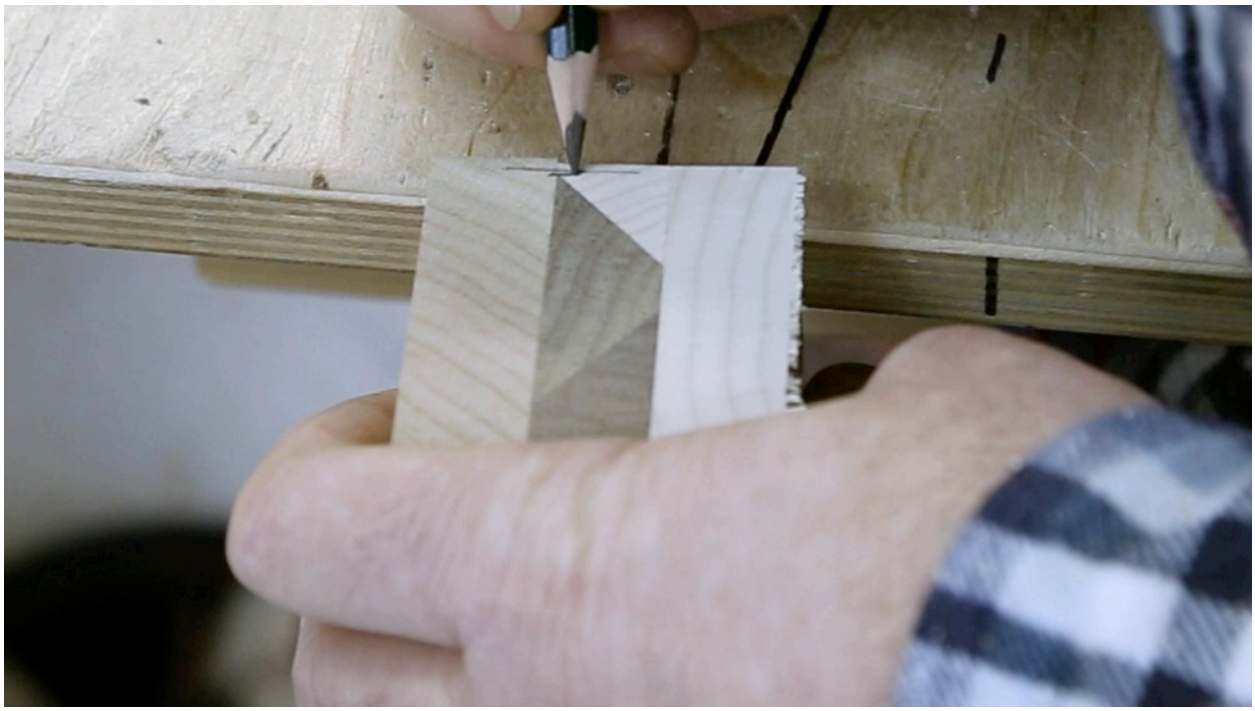
When the blocks of 2nd type dried up remove the reserves from the left and right edges using the planer.

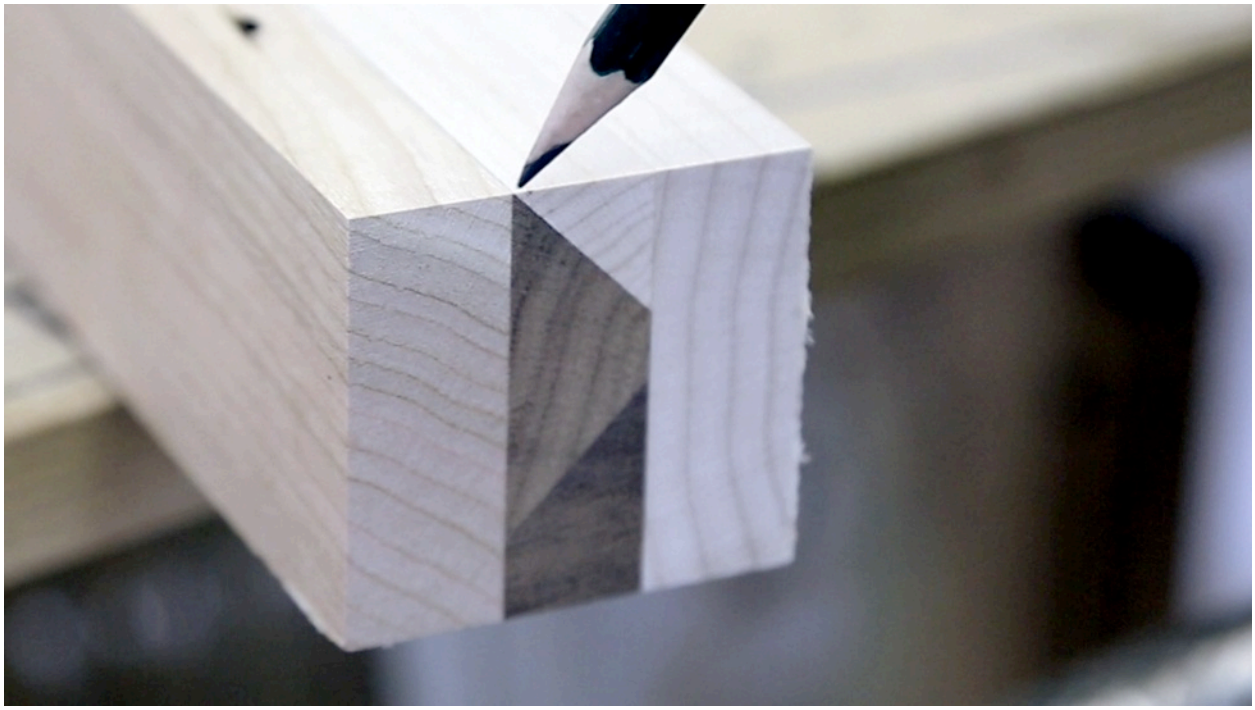


To do this make the shown side of 2nd type block equal to 45 mm.



Make this in two stages.
First you have to remove the material up to walnut corner.

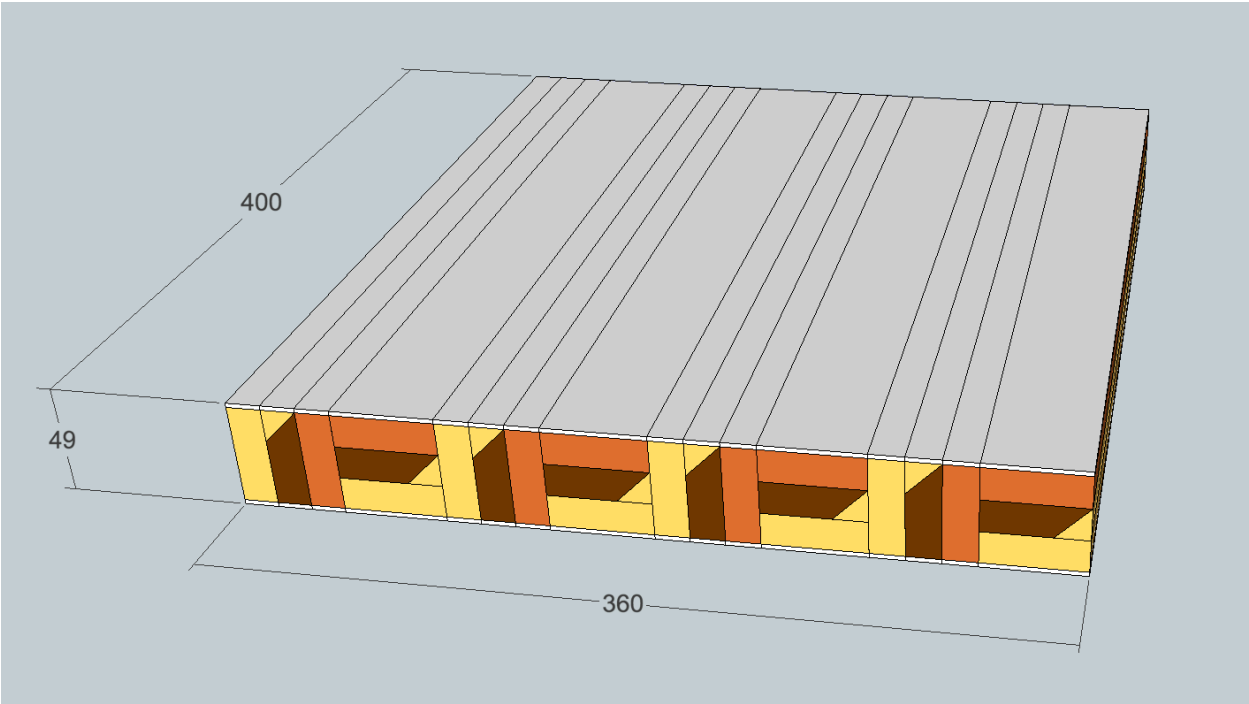




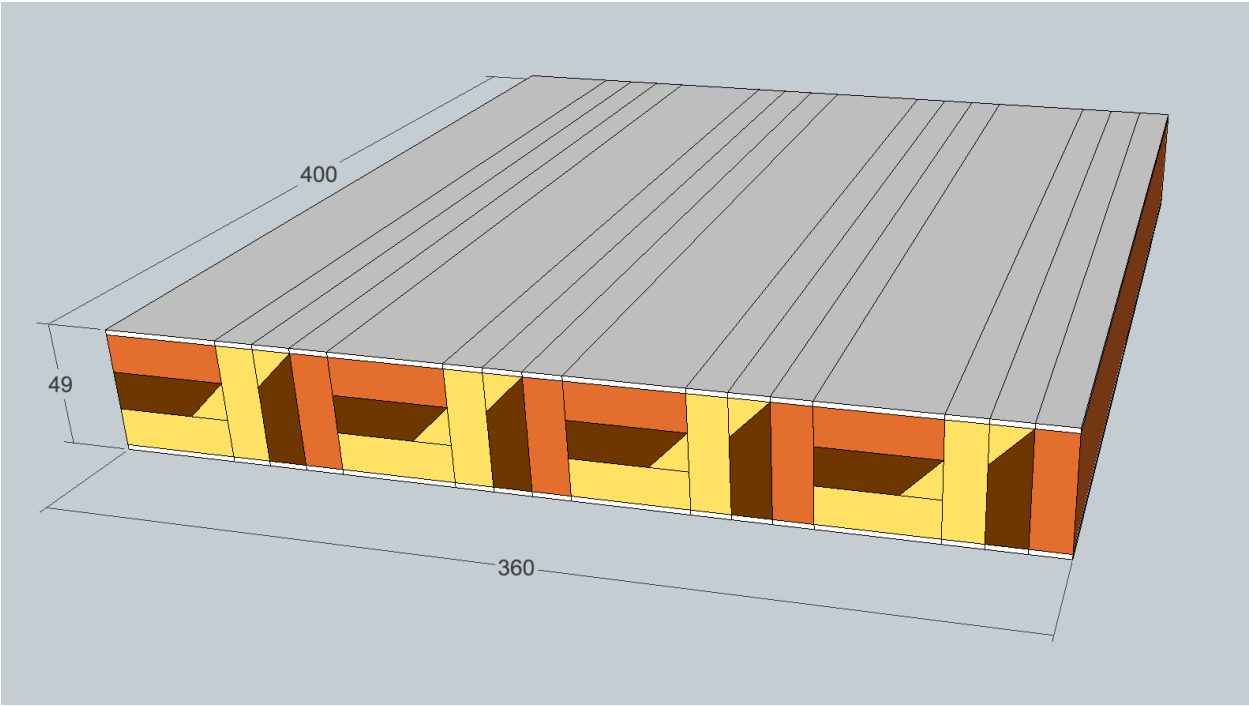
Then set the planer to 45 mm and plane another side.

The next step is making two boards. These boards consist of two types of blocks you just made.

The 1st board.

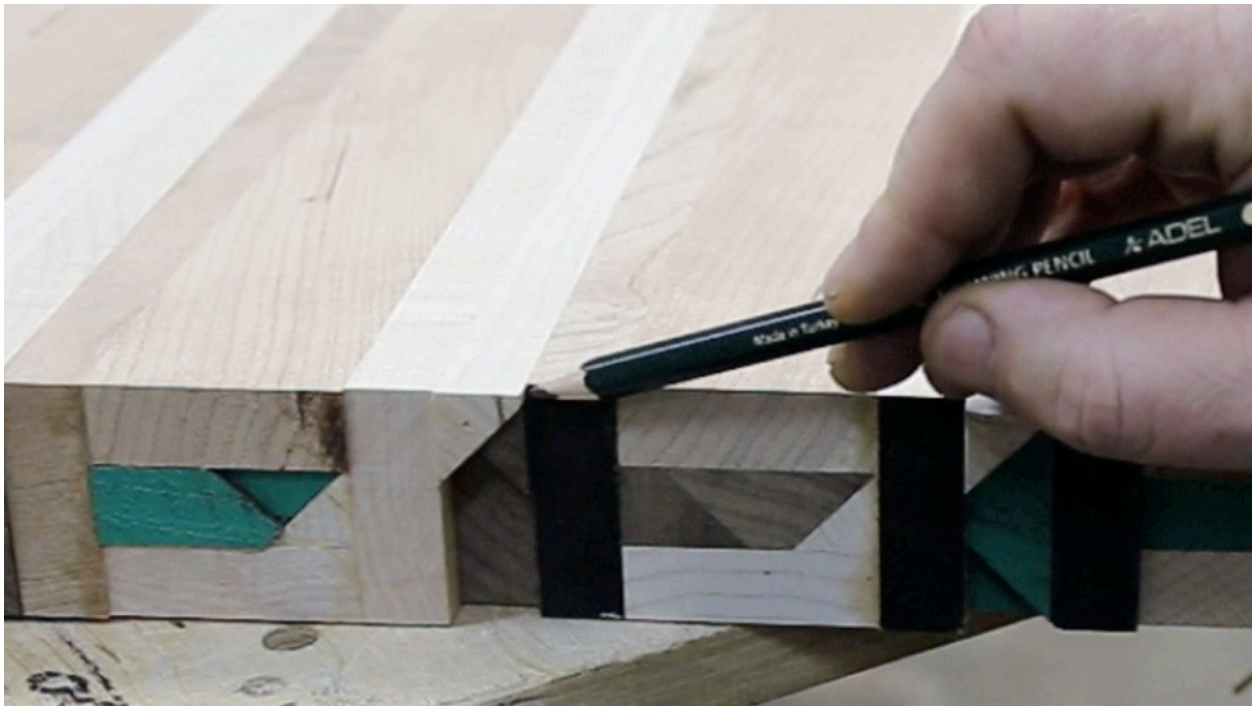


The 2nd board.



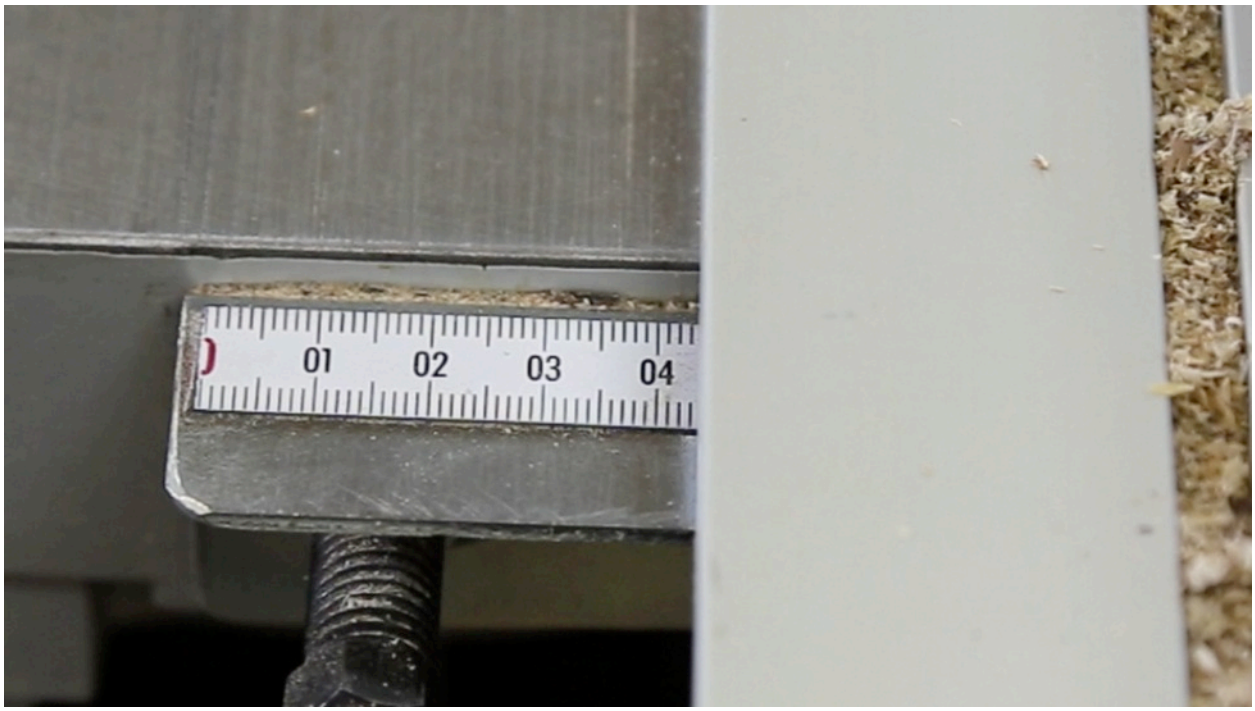
Glue the boards.

Next day plane the boards. Remove the reserves and make 45 mm thickness of boards. While planning the upper side of each board control the walnut corner.



Plane the upper side up to the walnut corner. Walnut strip should not be seen between the maple and cherry strips or it can be very narrow. Then plane another side making the board thickness equal to 45 mm.

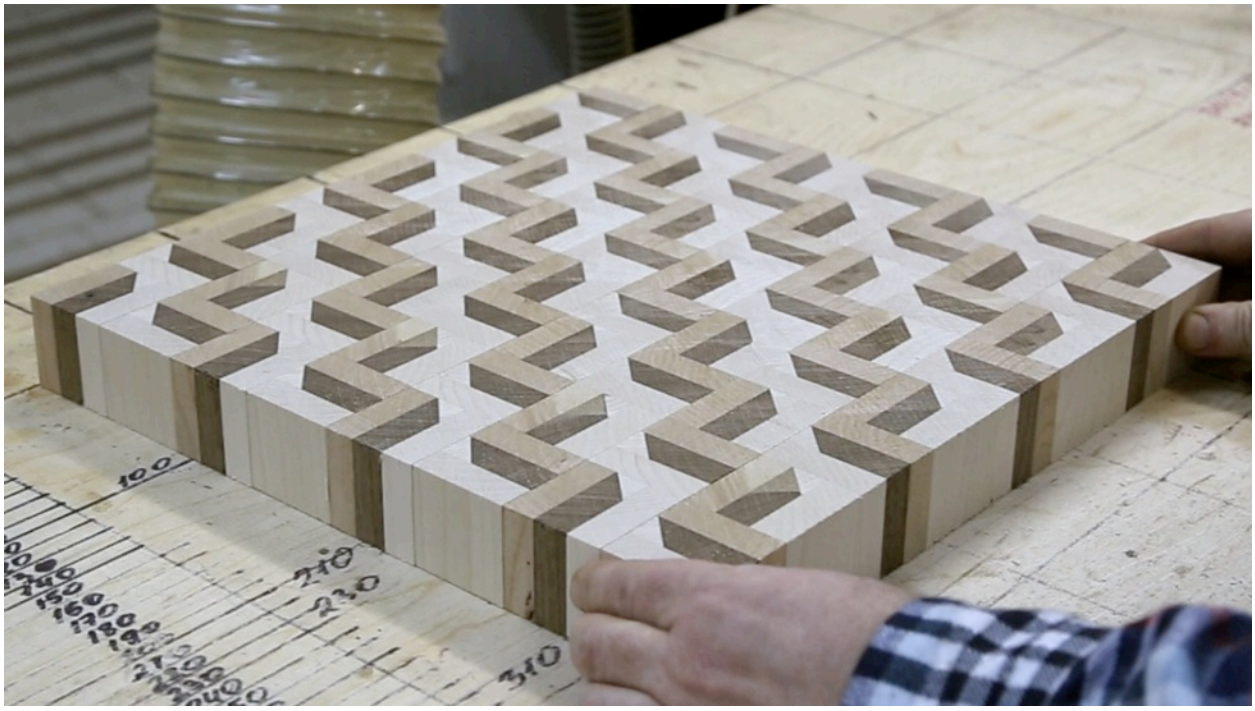
Set the table saw cutting width 43 mm. At the end the thickness of cutting board should be 40 mm.



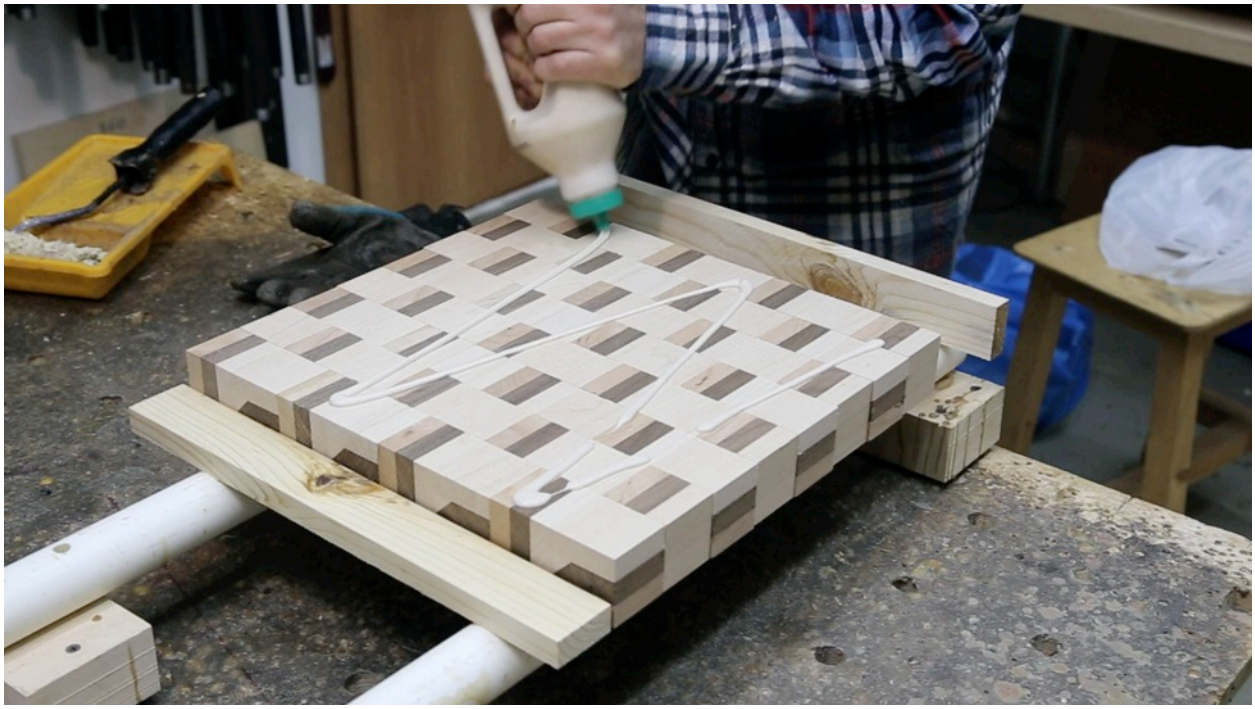
Cut four strips from each board.

Rotate all strips 90 degrees.

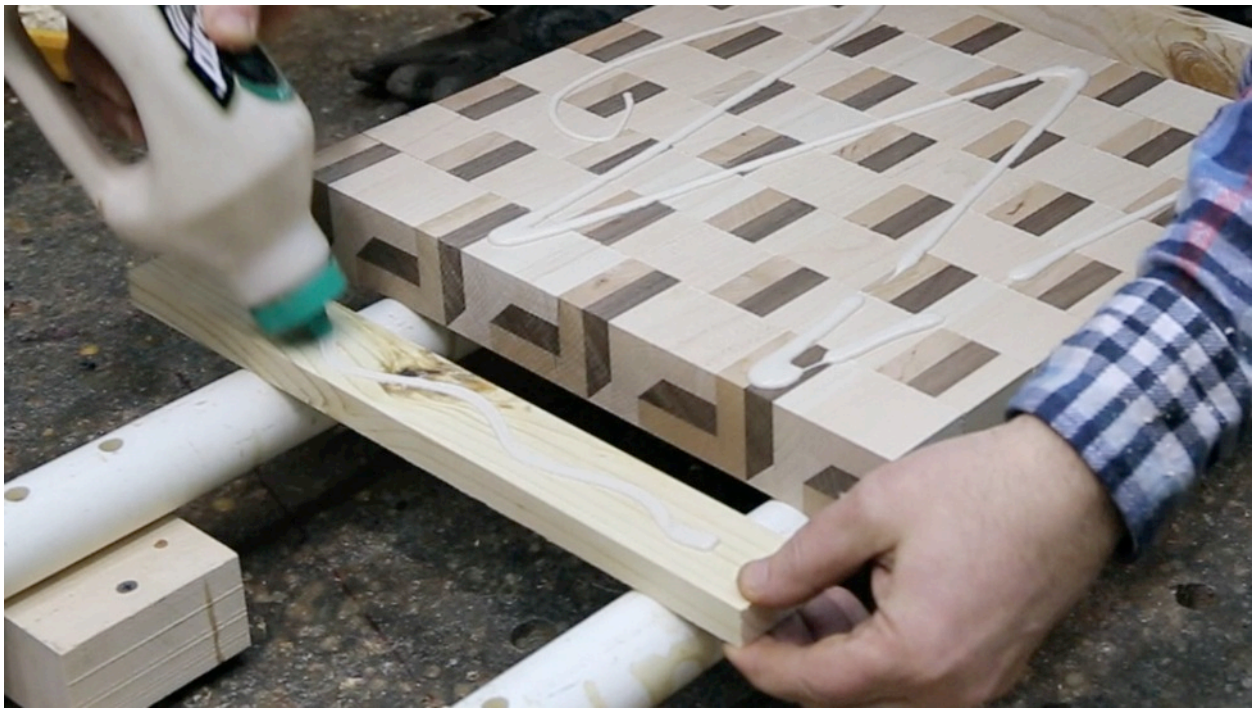
Assemble the cutting board.



Glue the cutting board.

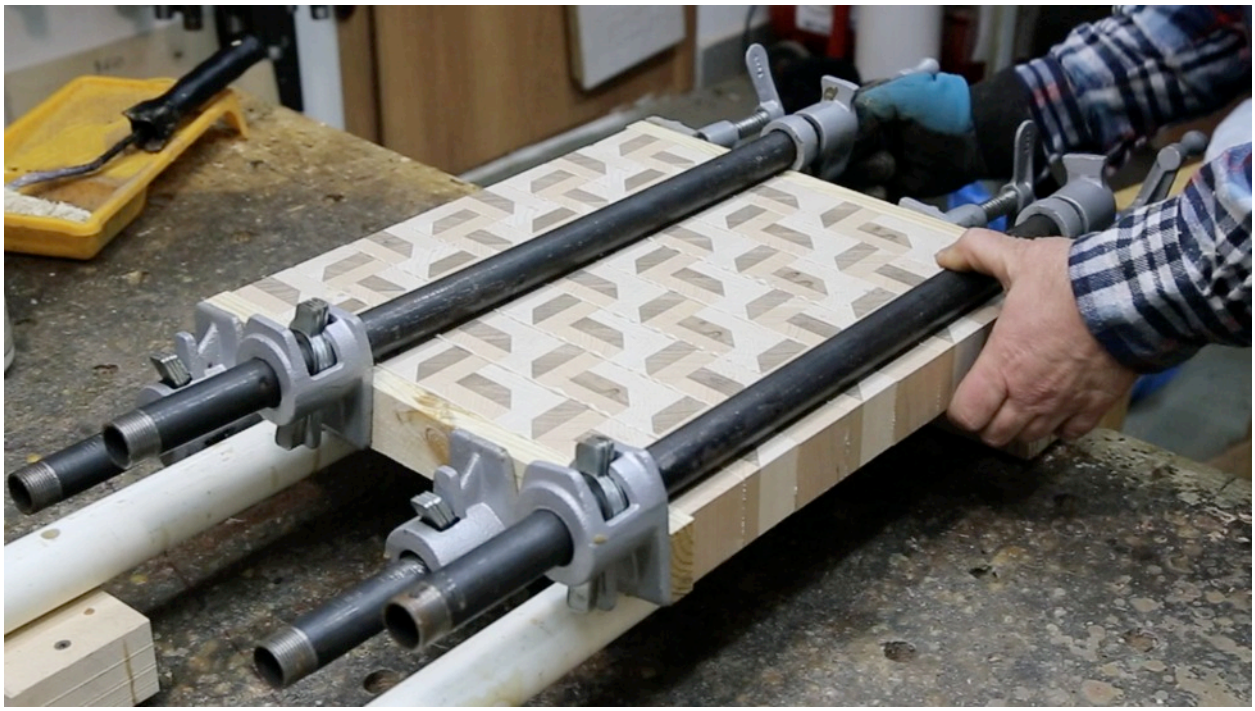


Glue also sacrificial rails. These rails will protect the cutting board edges while planning. Front rail is necessary to ensure a smoother entry the board into the planer. Back rail is needed in order to prevent tearing out the fibers at the exit the board from the planer.



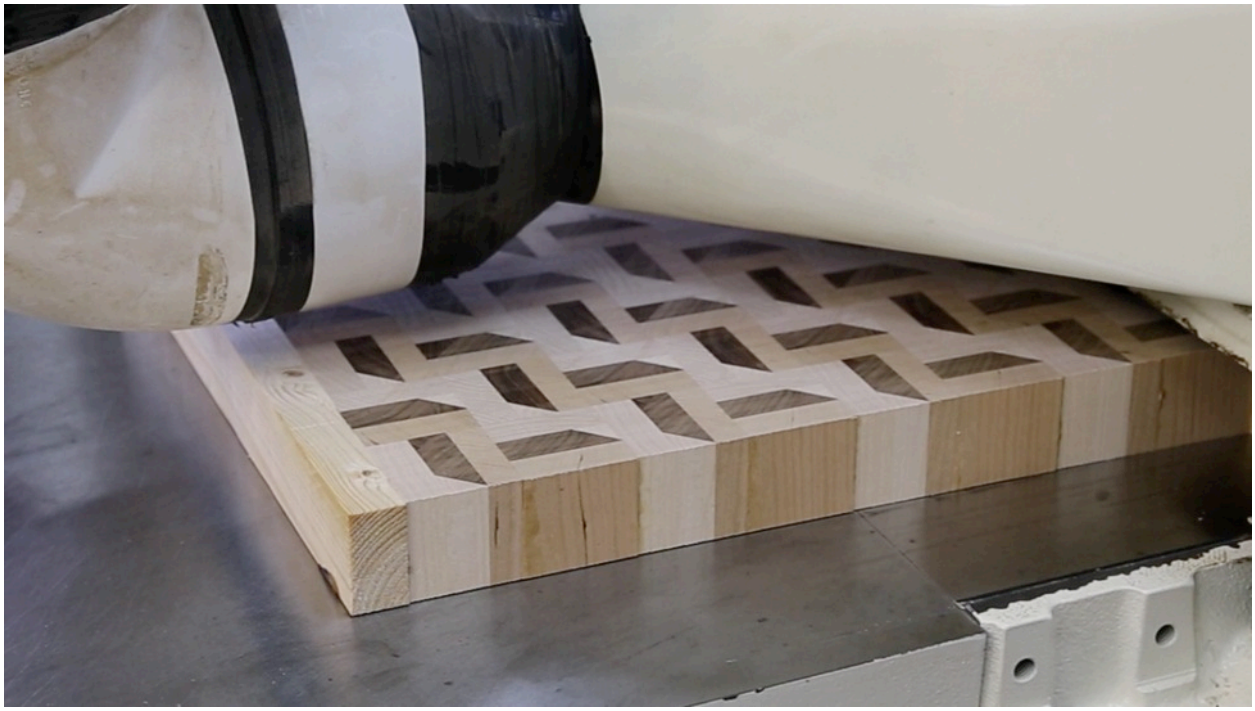
Be precise joining the strips.

NB! Do not move the strips when clamping! Just slightly fix first two clamps. Then rotate the board, clamp another side and tighten all four clamps with the same pressure.



Wait 24 hours.

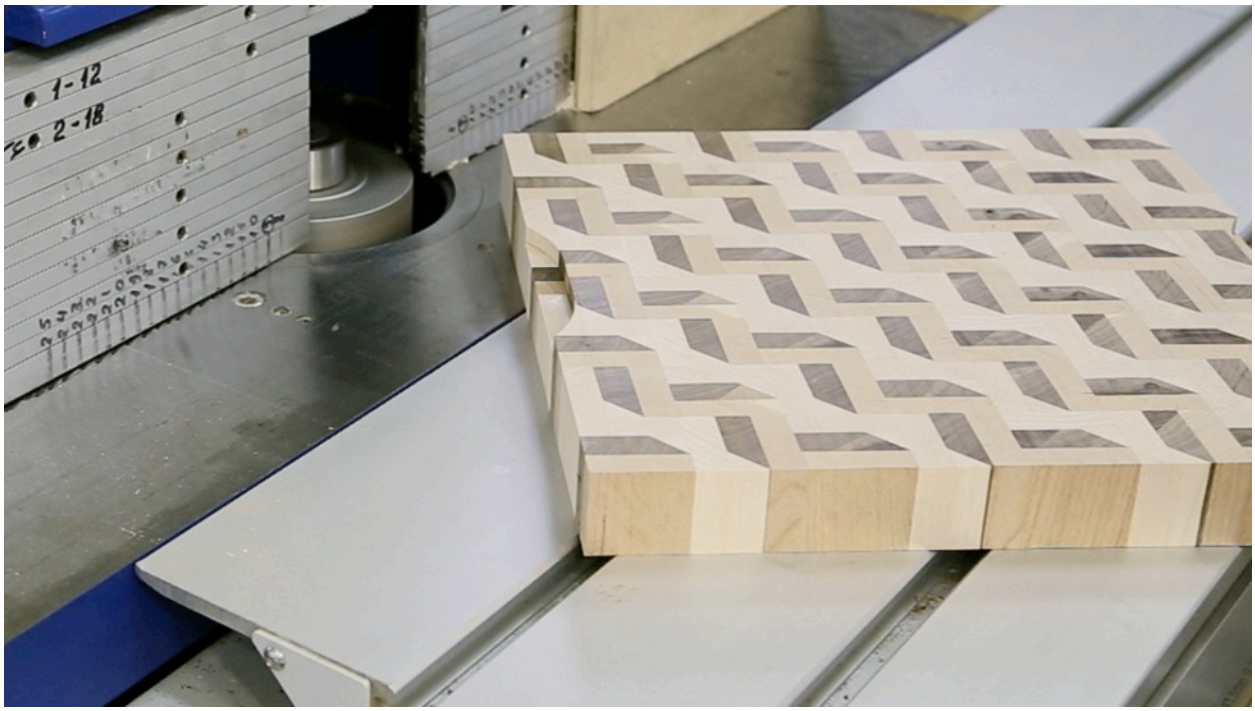
Plane the board. The planer experiences high overloads while planning the end grain surfaces. Therefore it is necessary to remove only 0.5-0.7 mm of material in one pass. It depends on your planer power. Also it is necessary to reduce this value twice during the last pass.



Sand two edges of the board on a belt sander.

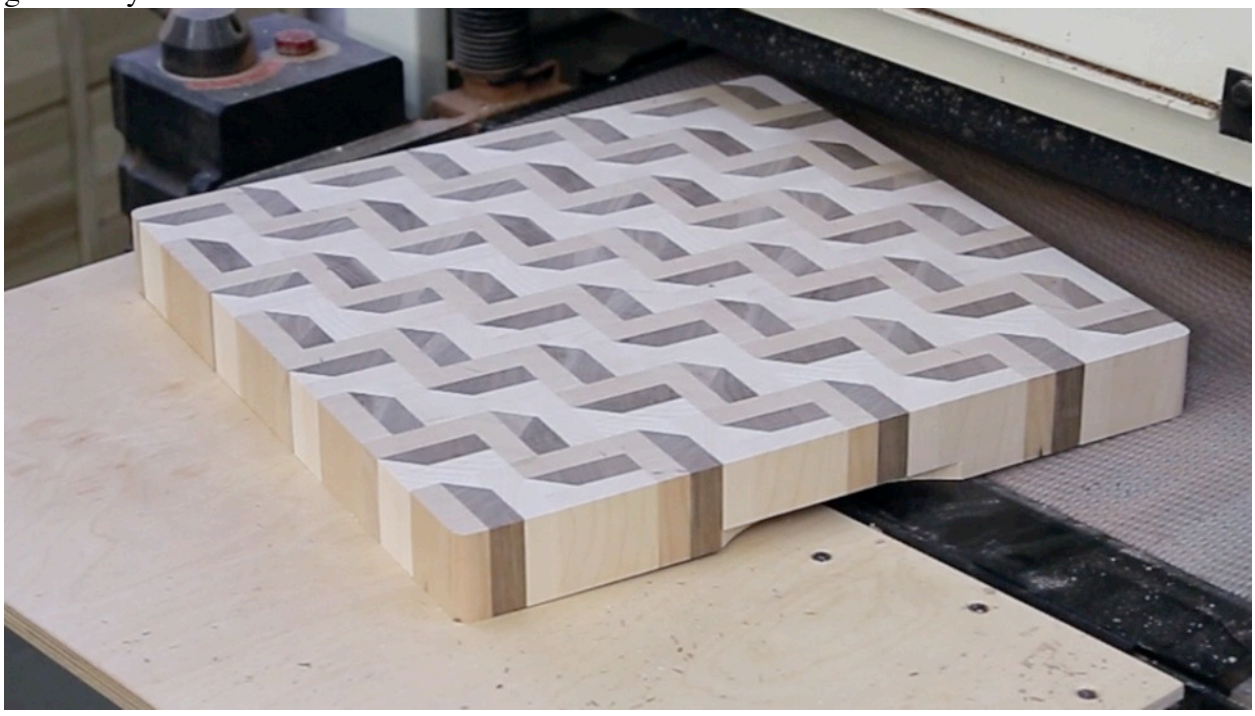
Saw off the sacrificial rails.

Make finger grips by shaper or router.



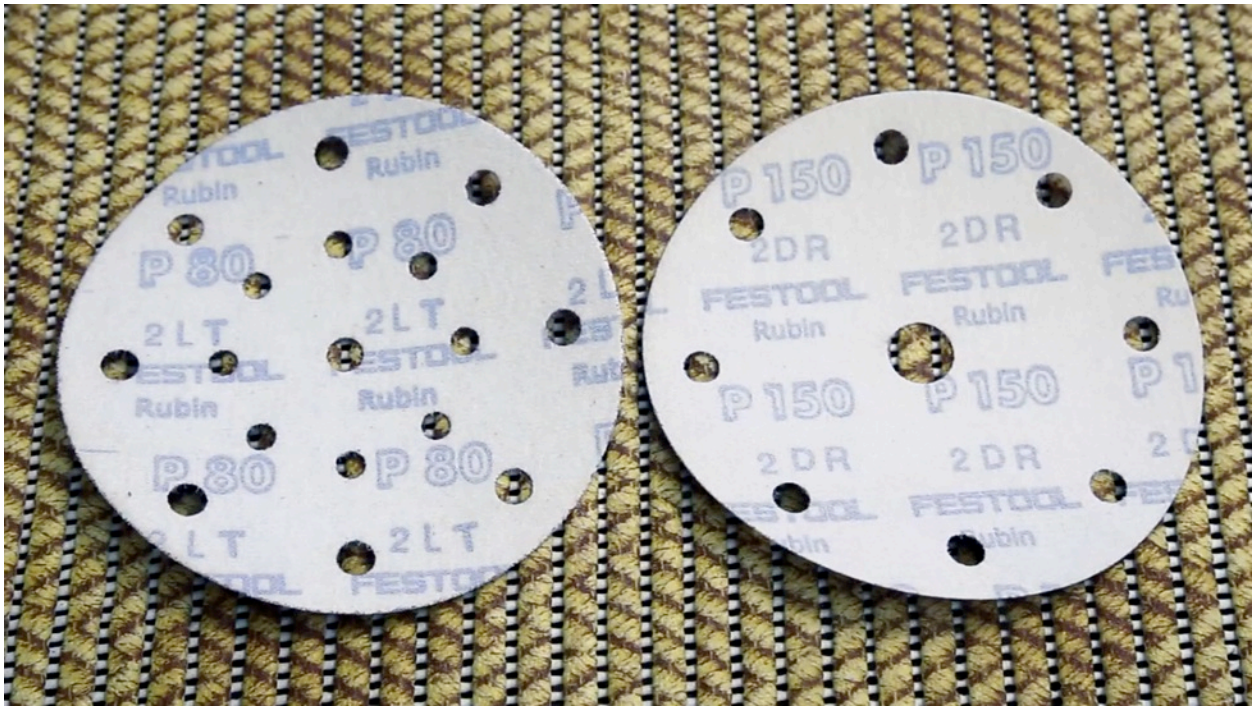
Sand the edges along the grain.

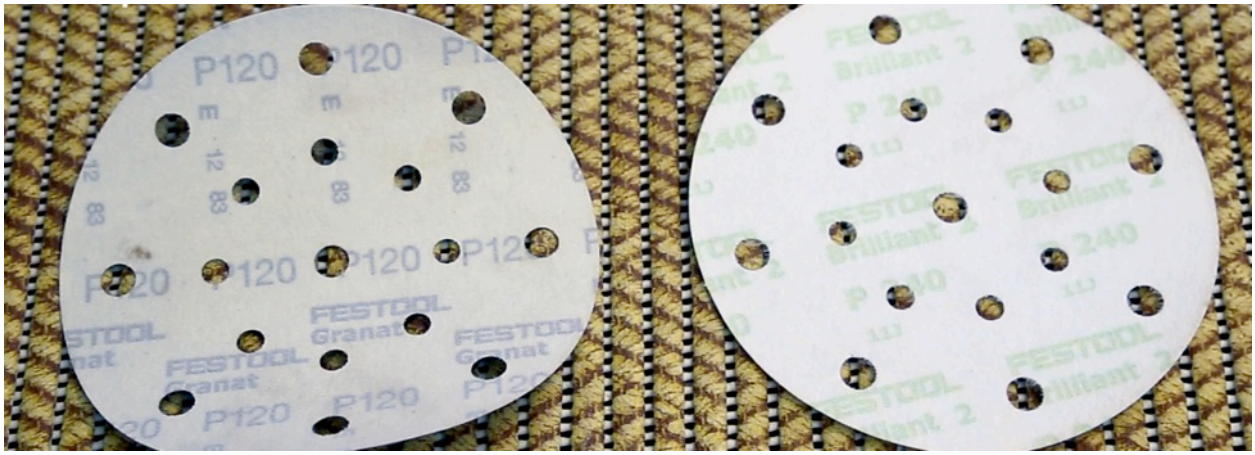
It's useful to use the drum sander for levelling. But if you do not have such a machine you may go directly to the orbital sander.

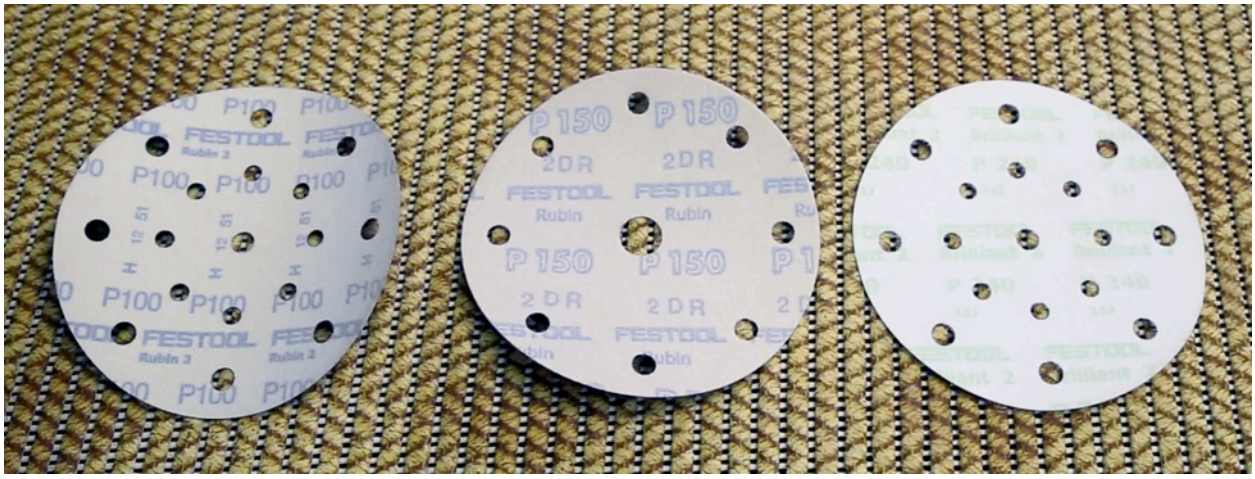


Sand the board with the orbital sander.

You can use different combinations of sandpaper to get the surface you like. Grit number of subsequent paper must not exceed the previous more than twice.

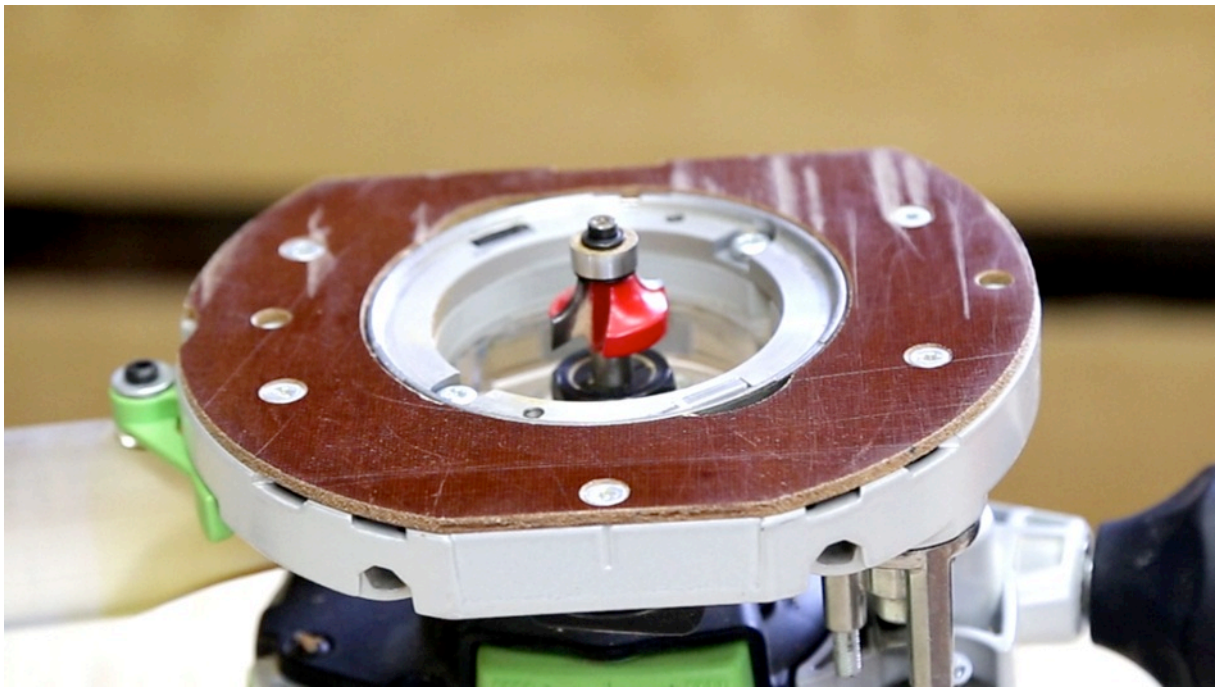




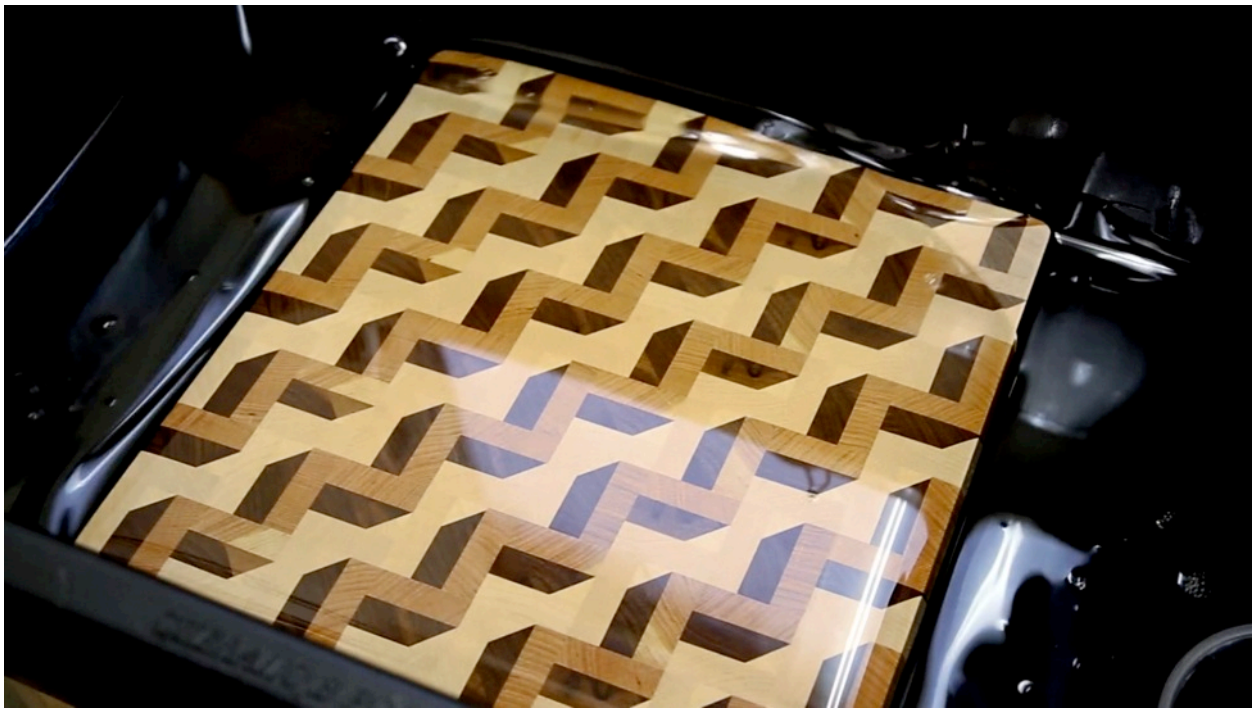


Round the corners by sanding block.

You may also use router or router table.

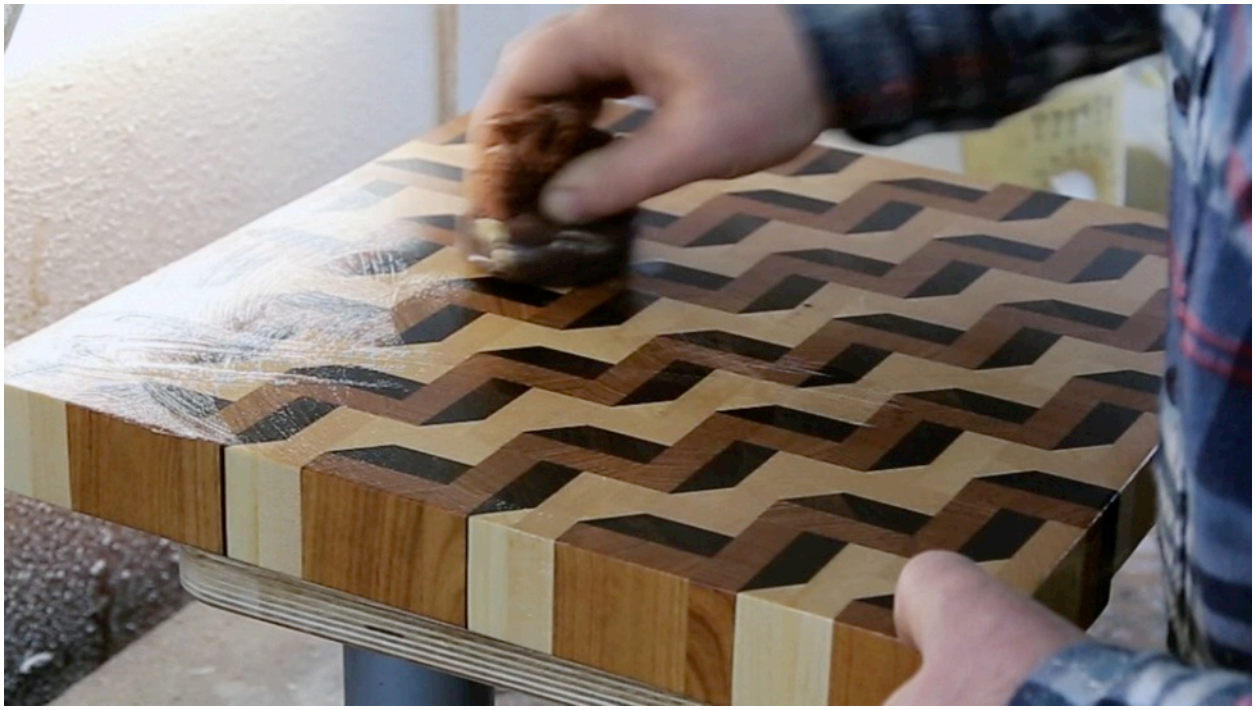


Finally process the board by mineral oil. You should firmly close the pores of the wood and prevent the ingress of moisture into the fibres. You should treat the board by food grade mineral oil to prolong service life, to protect against bacteria and to make beautiful appearance of a board. Mineral oil is tasteless and odourless. Sunflower, olive, and other food grade oils cannot be used for treatment, because after a while they become bitter and will transmit this taste to foodstuff.
I use mineral oil bath for 10-15 sec.

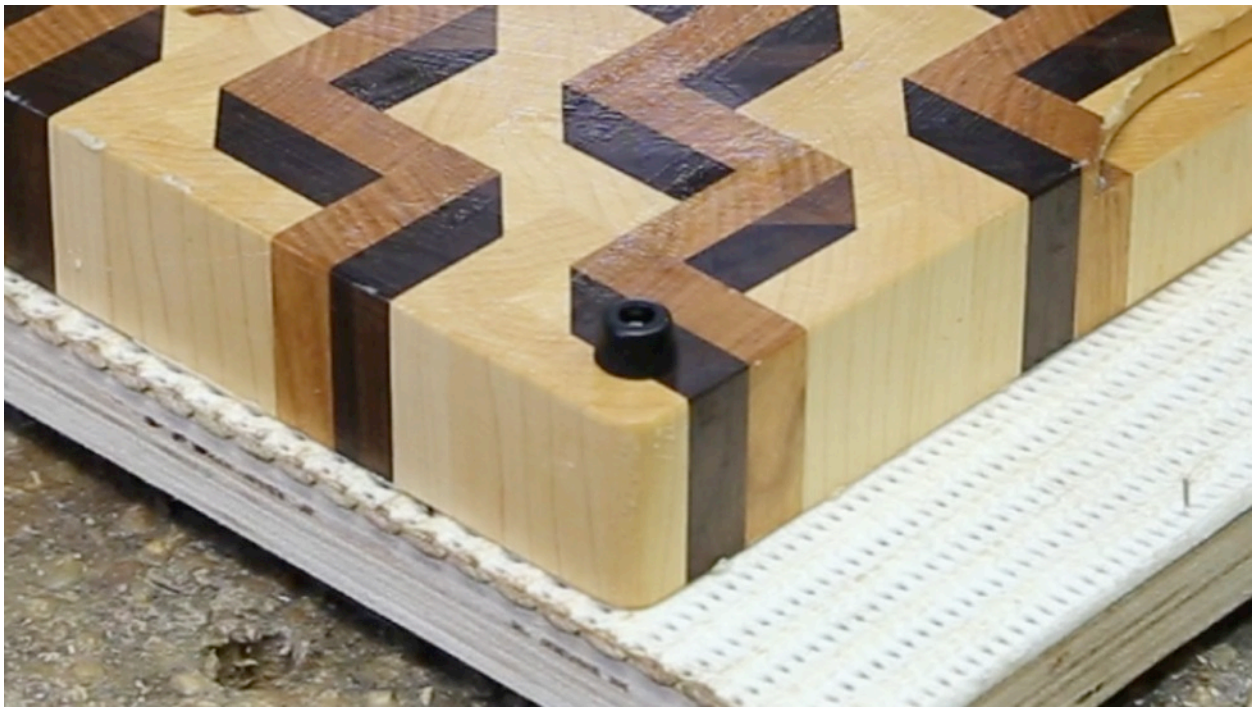


Dry the board for 6 hours.

Then apply the hot mixture of mineral oil and beeswax (4:1 ratio)



Screw rubber or silicon feet. Use stainless steel screws.



Enjoy your cutting board!