Kerf testing tool

Concept

The laser beam vaporises the material as it cuts. The thickness of the vaporised cut is called the kerf. This means that the object you cut is smaller than you intended, as half the kerf is taken from the object and half from the surrounding sheet.

Since the kerf is typically a tiny portion of a millimetre, it usually doesn't matter. Sometimes it does, and then you'll want to adjust for the kerf.

If you are cutting **veneer for inlays**, you'll want to adjust so that there isn't a gap between the veneer and the main block. If you are making an item that relies on **press-fit for assembly**, then the finger and tabs, and slots will need to be adjusted so that there is a tight fit.

The kerf varies depending on the material and the power and speed settings, so you'll need some way of determining the kerf and then adjusting your design.

The gauge I am using is modelled on this one. I made it wide enough to fit 12mm thick material and I added a notch to indicate orientation.

Cutting the gauge

1. On the Ruby Design screen
   1.1. Import *Desktop\Test Cards\ SLMSkerf.svg*
2. On the Prepare screen
   2.1. Choose your Material settings
   2.2. Make sure Black is set to cut and Red to engrave
3. Cut the objects

Using the gauge values

To determine and use kerf for projects where size is important (e.g. veneer inlays):

1. Slide the rectangle, notch forward up the test stick until it engages (sticks)
2. Read the kerf number immediately ABOVE the rectangle
3. Add the kerf number to your object dimensions – see *Adjusting your objects* below

To determine and use press fit (e.g. a finger & slot box):

1. Continue sliding the rectangle up the test stick until the goal tightness is achieved
2. Read the kerf number immediately ABOVE the rectangle
3. Add the kerf to each side of the fingers
   OR
   Subtract the kerf from each side of the slots

Adjusting your objects

If you want to scale the whole object, then use Inkscape's Path Effects:

You must be using the latest version of Inkscape (1.2.x)

1. Select the object
2. Path / Path Effects

3. Plus button
4. Offset
5. Make sure that the units are in mm
6. Set the offset to the kerf value
7. Click away from the field to apply

If you are adjusting finger joints, you can't scale the whole object, because the slots would end up too deep for the sheet thickness. The easiest way is to include the kerf correction when designing the box.

On Makercase:

1. Design the case
2. Press Download box plans
3. Kerf and corner compensation
4. Kerf
5. Enter the kerf

If you have already made the box design, you'll need to adjust certain nodes of the fingers and slots manually:

In Inkscape:

1. Select the object
2. Edit paths by nodes tool
3. Click and drag to select the relevant nodes
4. In the X and Y coordinate fields at the top of the screen, enter maths to adjust the position by the kerf (e.g. if the X is already 12.89765, change this to 12.89765+0.2) and press enter to apply