POLITECNICO MILANO 1863

Blade cutter: file preparation

Labora model making

Contents

Allowed materials

Cardboard from 160 to 700 gr/mq

Cardboard up to a thickness of 2,5 mm

Soft plastics up to a thickness of 1 mm
(acetate sheets and polypropylene)

Forex up to a thickness of 2mm

Forbidden materials

Methacrylate

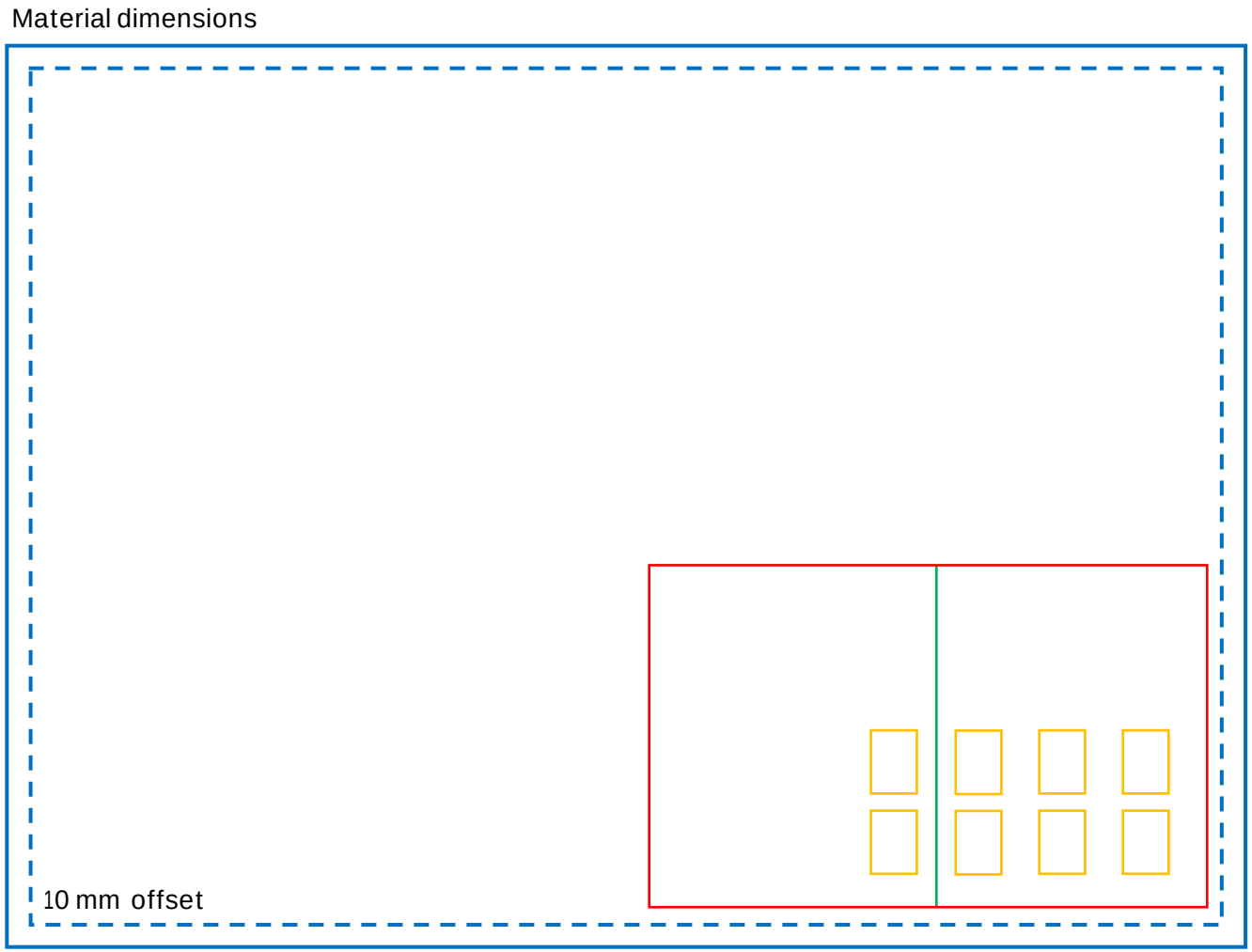
Wood sheets

Metal materials

Dimensions

In order to draw the pieces correctly, you need to think as if you were cutting them manually.
It is necessary to draw the geometries with the **real life measurements** already reduced to **the scale of the model and in mm**.

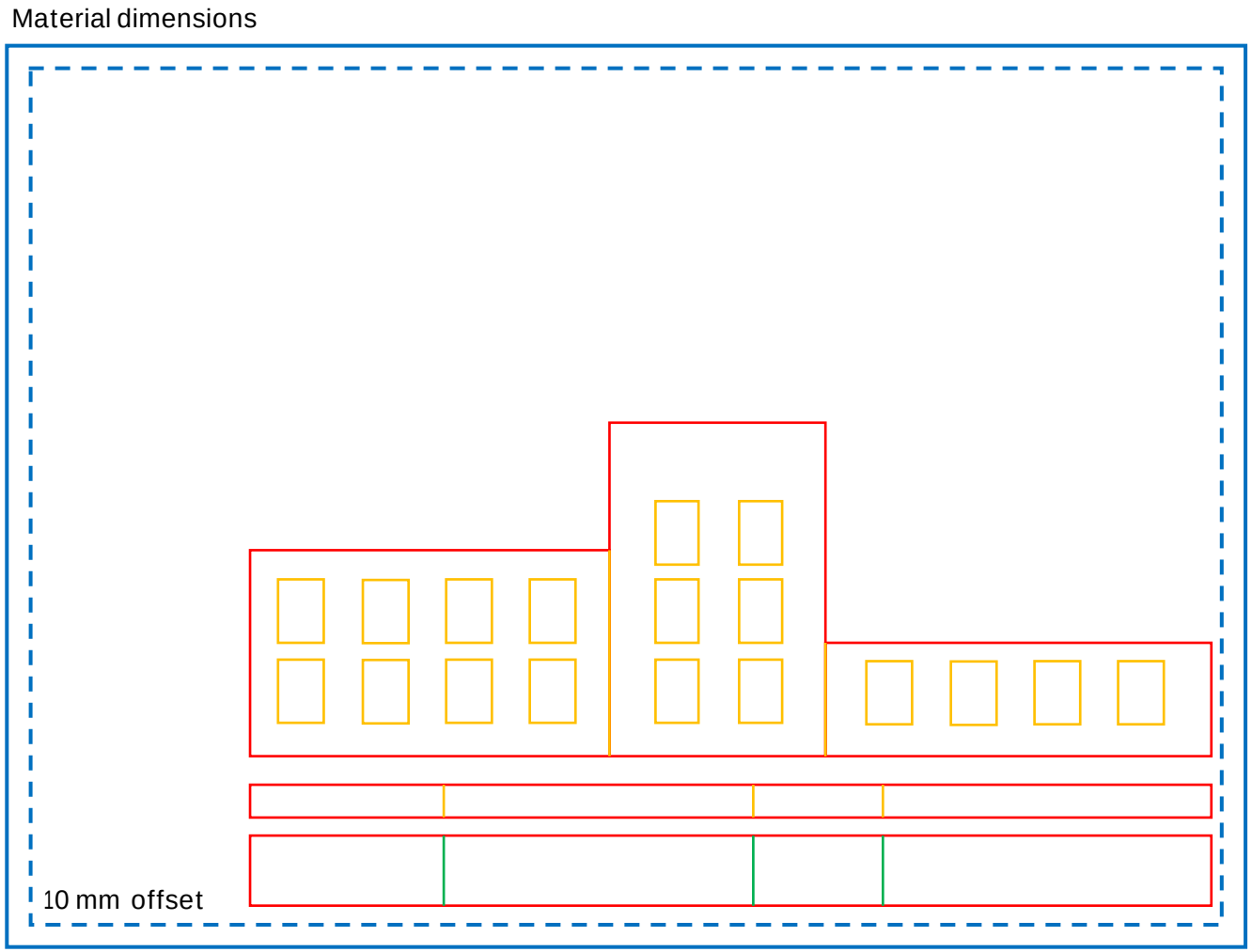
Only the pieces that have been agreed with the tutor should be included in the file.



Placement of the pieces

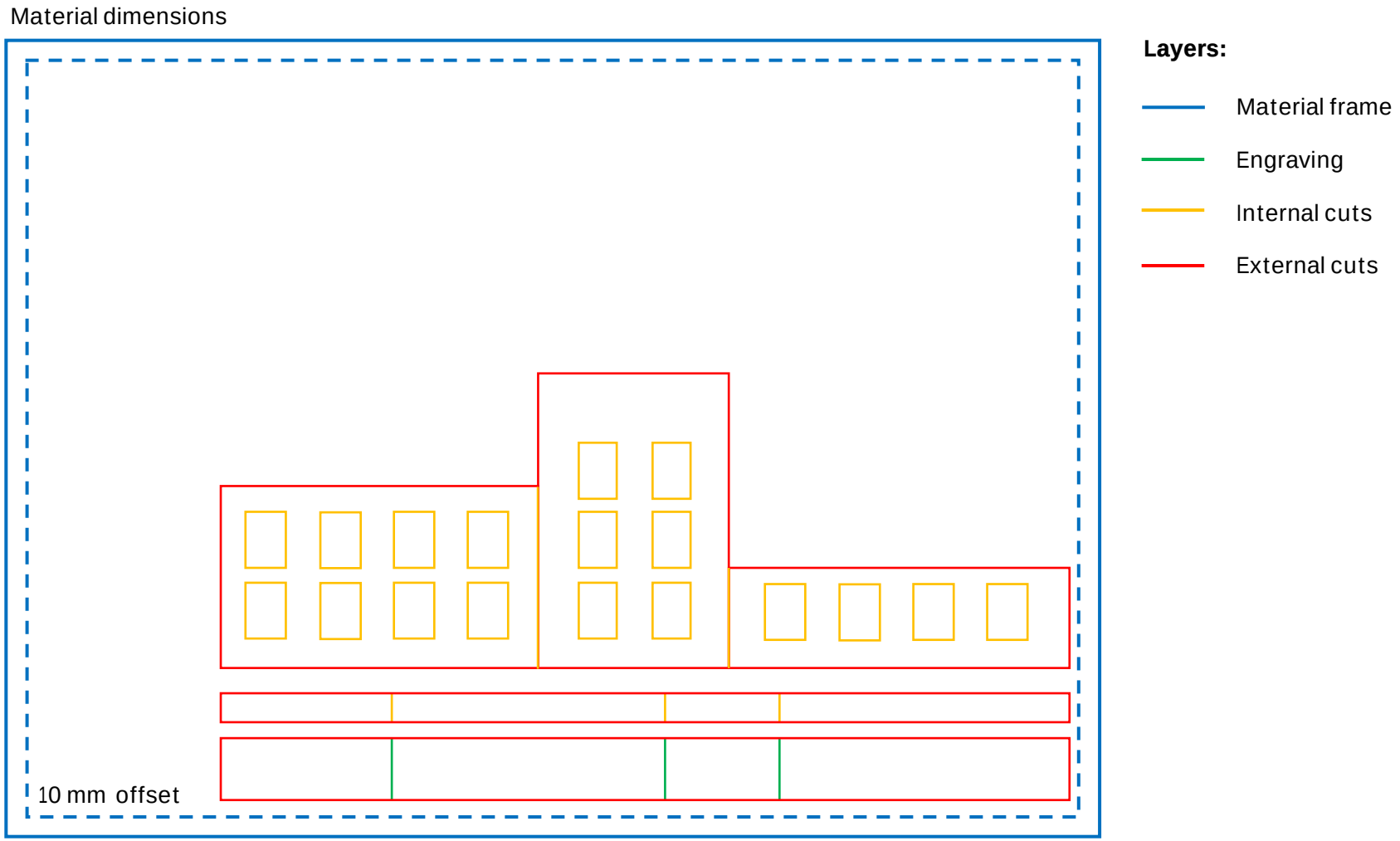
Arrange your pieces in the frame of the material leaving **an offset of at least 10 mm from the edge.**

If the shapes are simple and straight, as in the example alongside, you can join them to speed up the process.



Layers

For a successful cutting, differentiate the **frame of the material**, the elements **to engrave**, **internal cuts** and **external cuts** by assigning a different layer for each process as in the example alongside.



Please note

Overlapping lines

Before exporting, make sure there are **no overlapping lines**, which could ruin the the outcome of the process.

Use command *_overkill,* if the file was prepared in AutoCAD, to delete duplicate lines.

Complex geometries

Make sure the file is drawn with simple drawing elements, namely **lines, polylines, arcs**. We recommend using the *_join* command, so you can merge the lines.

In case splines are present, turn them into polylines through the *_pedit* (AutoCAD) command.

Complex entities such as **groups, series and blocks must be exploded**, as they are not recognized by the software.

Exporting

The file must contain **only the pieces to be made, the frames and the corresponding layers**. Clear all unused, turned off or frozen layers.

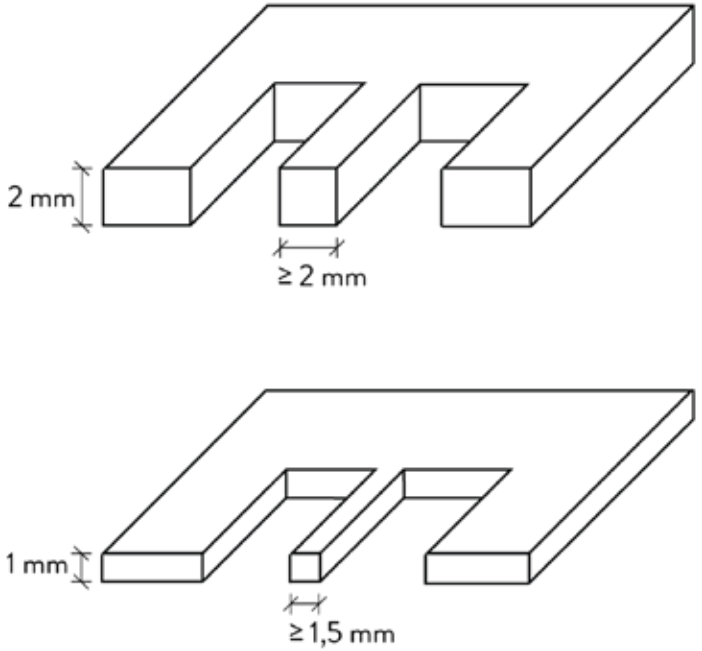
Export the file in **.dxf 2000 format** and save it to USB stick.

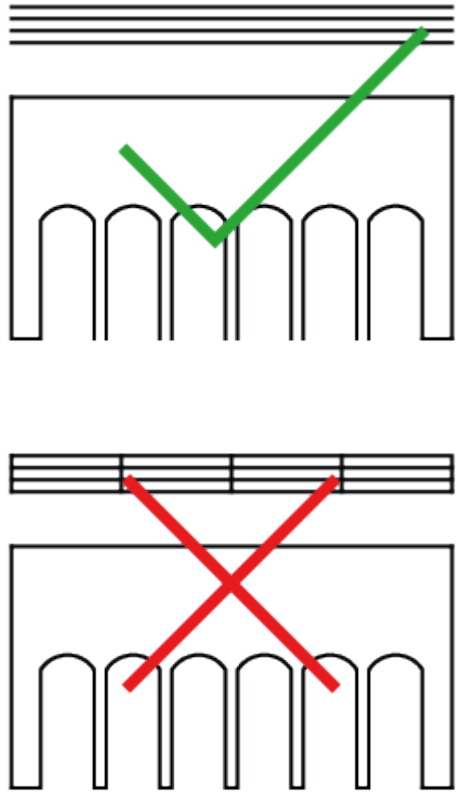
To cut multiple sheets of material, you need to arrange an equivalent number of files.

Minimum dimensions

In order not to produce pieces that are too fragile, check that there are **no elements with dimensions smaller than the thickness of the material** and, in any case, **not less than 1.5 mm.**

To prevent tears and keep **elements under 3 mm wide** together, remove lines that are orthogonal to the longer side.

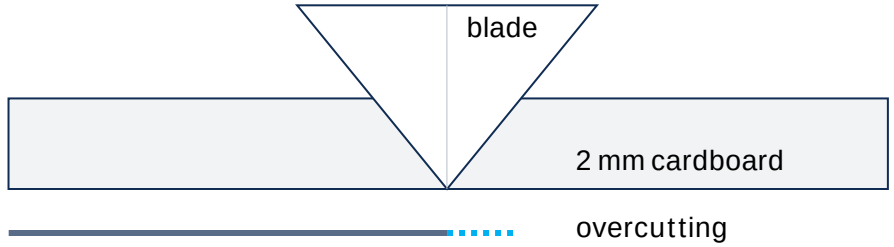


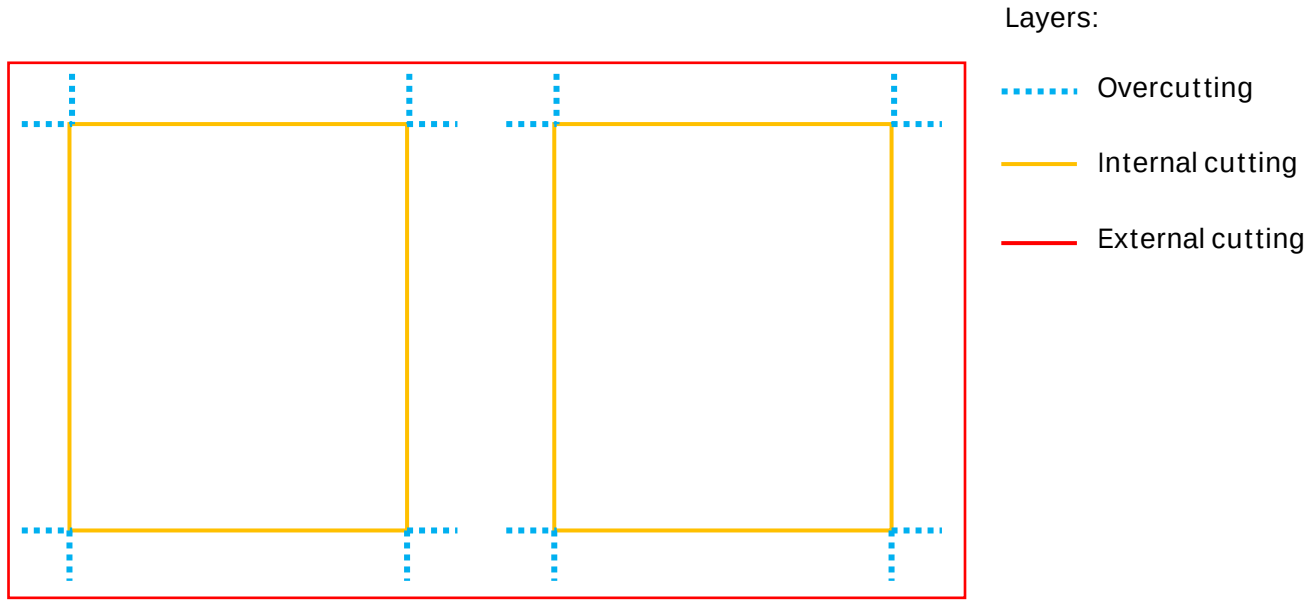


Overcutting

Limitations regarding minimum cut sizes depend in part on the **overcutting** produced by the blade during processing.

The term overcutting refers to an **extension of the cut beyond its limit,** due to the geometry of the blade.
The thicker the material, the more noticeable the overcutting is. For this reason some precautions must be followed.

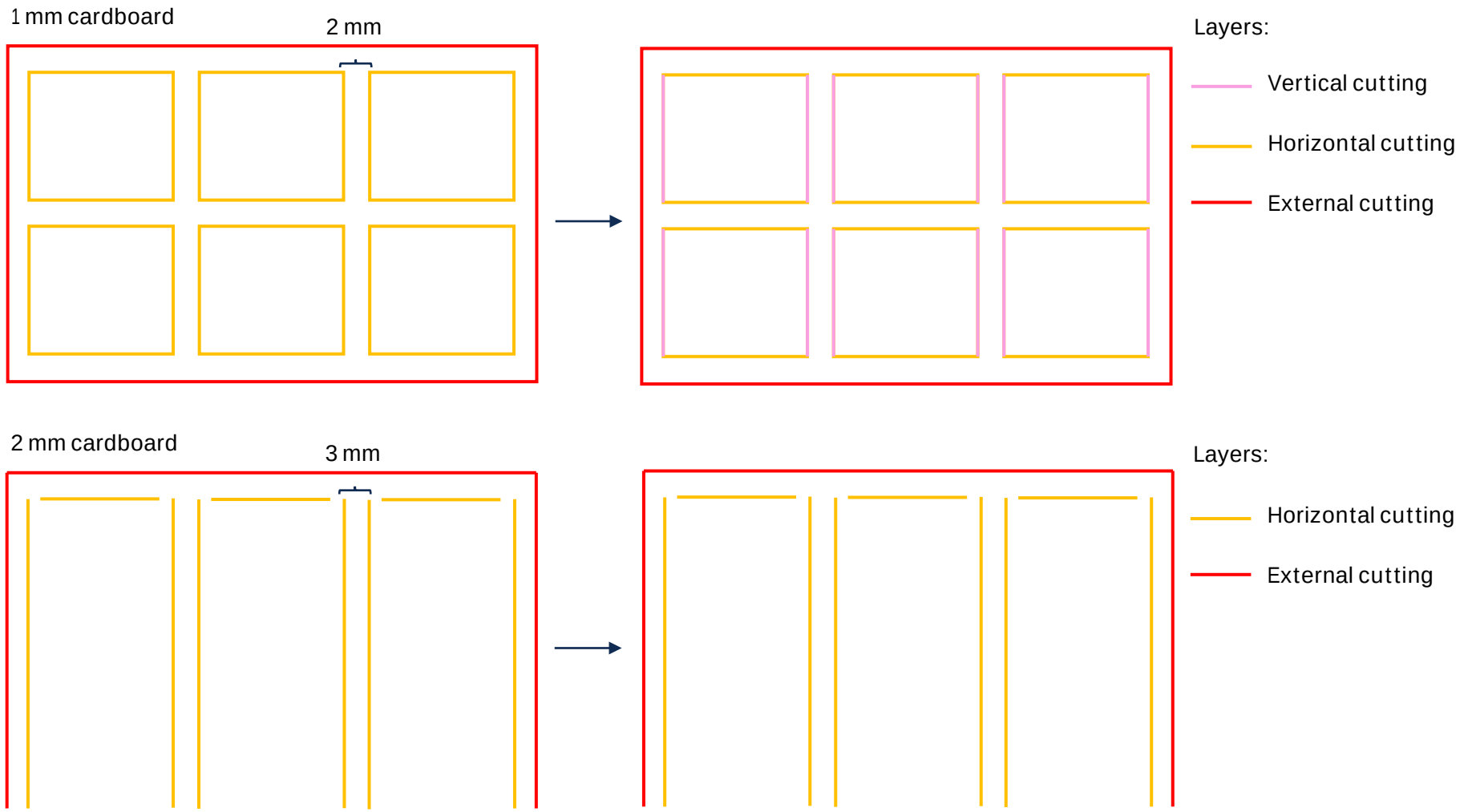




Overcutting

In case there is a need to cut **a grid** or a **facade with many holes close together**, we suggest you follow the advice illustrated alongside **to prevent the overcutting from affecting the fragility** of the piece.

Remember that **the distance between cuts must be bigger at least 1 mm** more than the thickness of the material.

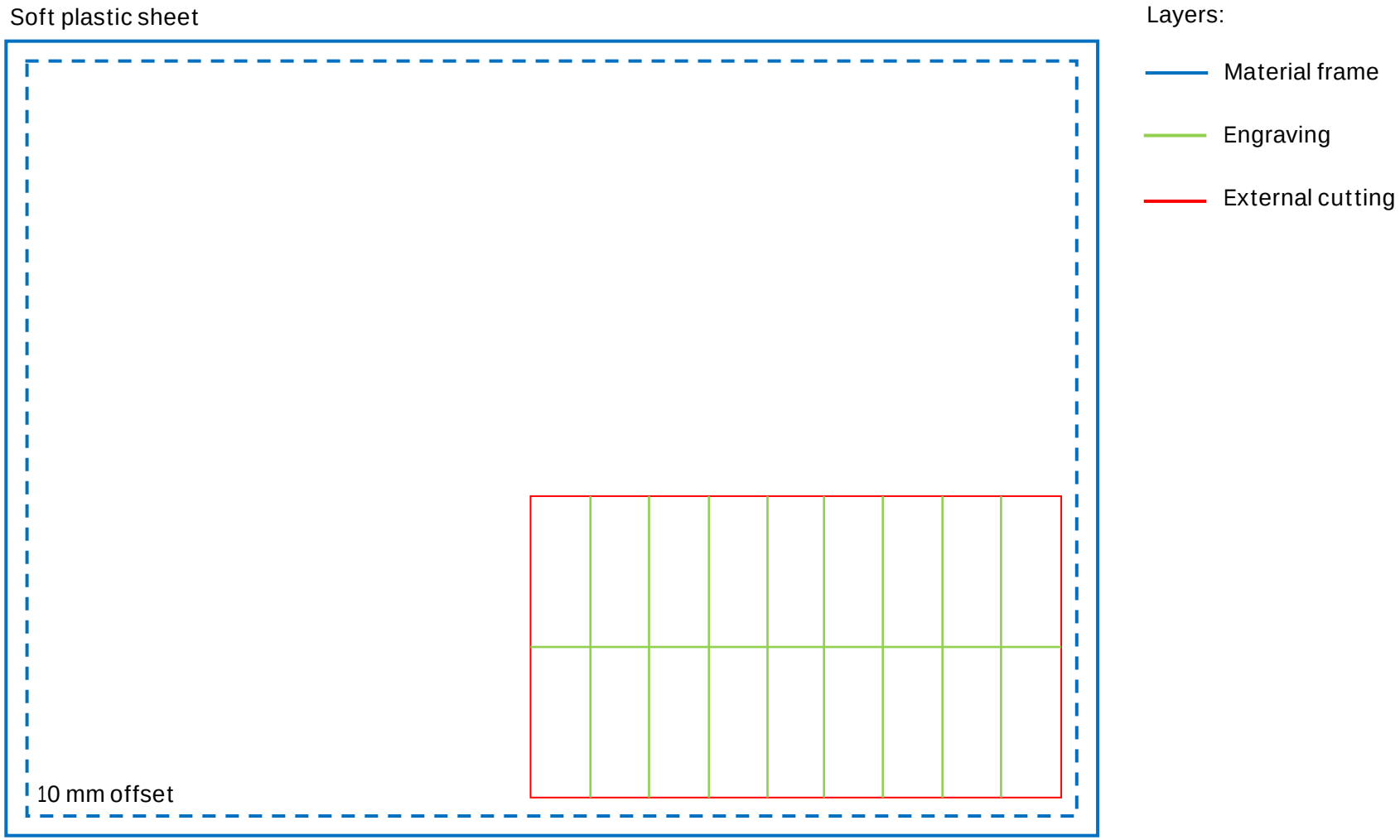


Engraving

The blade plotter is able to make engravings, which are cuts that do not completely cross the thickness of the material.

This type of engravings on **cardboards** can only be used for **folding the piece** (no decoration).

Soft plastics can also be engraved to show the **division of windows** and doors, as demonstrated alongside.



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