

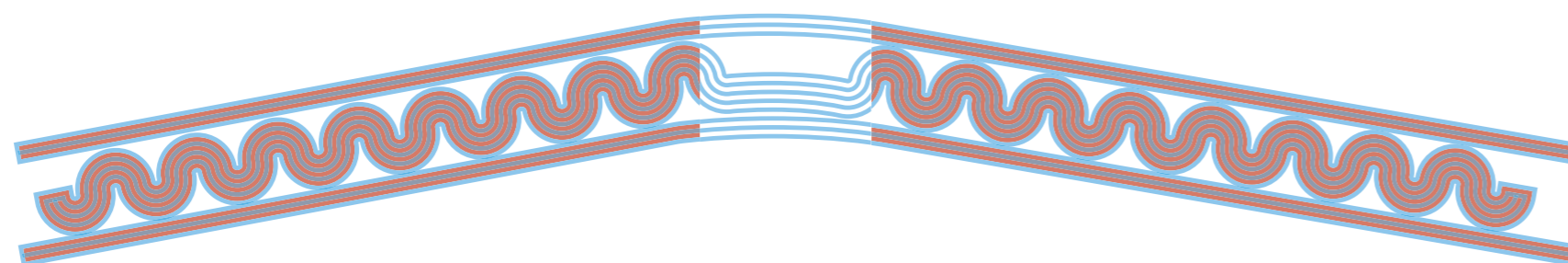
Z



furniture through partial lamination

developed by: Xueqing Jiang / Lina Rodríguez

Melted and then rigid PLA
Rigid and flexible Cotton



The concept of partial lamination refers to laminar composite materials, which combine rigid and flexible areas. Partial Lamination is aided by the thermoforming compression and adhesion of multilayered thermo textiles to give specific structural strength and rigidity.

Delimited by this technology we decided to develop a piece of furniture. Moreover, the team agreed to work with cotton fibres and thermoformable textiles compounded by polylactic acid (PLA), which has great advantages in terms of biodegradable properties.

Then, the "Z" idea came up. Z is a wall-supported chair made of cotton fibres, which give flexibility to our product, and PLA fibres, that enhance structural strength and rigidity without adding extra weight and keeping the shape light, to define the configuration and structure.

One of the obvious requirements of the furniture project was to support a person's weight. This structural quality is only possible by a multilayered construction (sandwich structured composite) with the materials previously mentioned. One referent of the multilayered construction is the material proved developed in the facilities of the Fibres Institute of Bremen.

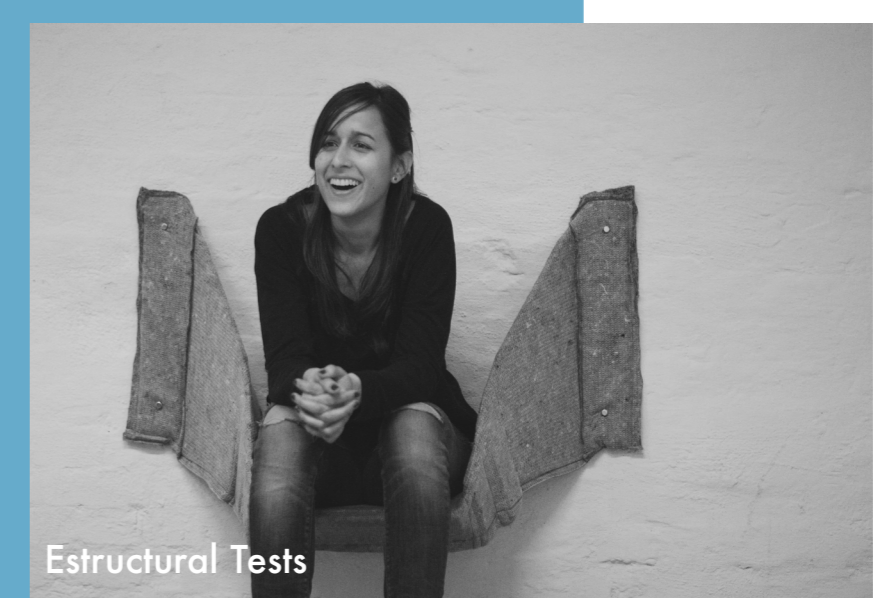
They have been developing laminar material made out of cotton and sealed with epoxy resins. The construction obtains better possibilities to deal with deformations and increment its strength by mixing sheets of textile (tridimensional napped and flat layers).

In addition, the process of partial lamination gives the advantage to obtain not only rigid pieces. It also provides flexible parts in specific areas of the piece. Moreover, the team recalled that advantage of develop flexible areas. They were a key part to define the concept of the one piece shape in the wall chair. The challenge of the last function was to offer a product able to join and even camouflage with the support's wall in terms of functionality and aesthetics. It has to be able to fold and bend without losing physical capabilities to support a person's weight.

Some of the possible scenarios this product can fit are places such as: museums, fairs, waiting rooms or areas, beside others. Therefore, those places have the need of multiple reposing areas for visitors, yet they have great spatial disposition to fix the product on walls or vertical panels.



First Model



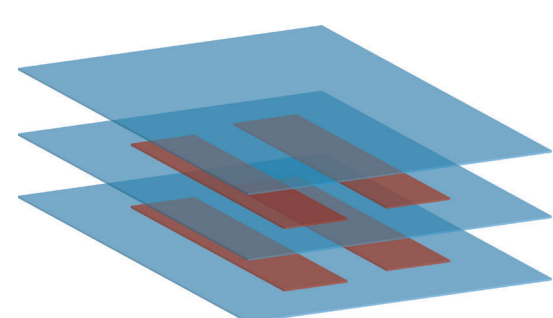
Structural Tests



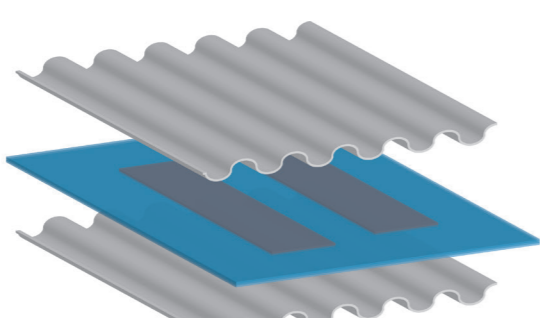
Material Development



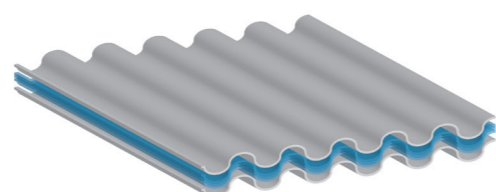
Second Model and Structural Tests



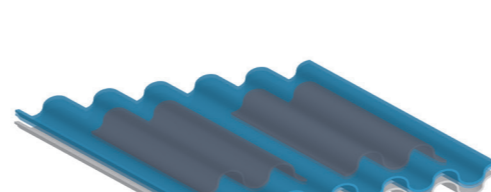
Layer construction
Cotton and PLA



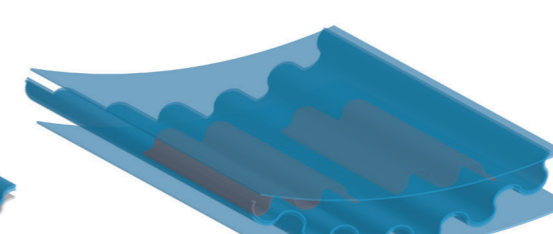
Thermoforming
compression at 160°C



Cooling



Unmolding



Adhesion with other
layers