

TEXTILES

< 3D Printed >



3D PRINT OVER TEXTILES

Apply a three-dimensional design to the surface of a fabric through the casting of a thermoplastic filament.

Textile

Geometry

Filament



3D PRINT OVER TEXTILES

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Textile	Geometry	Filament
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**The success of printing depends on
the interaction of these three
components.**

TEXTILES



ARTIFICIAL FIBERS

Fabrics with composition of polyamides facilitate filament adhesion.

Natural

Viscose - Rayon
Lyocell - Tencel
Modal

Synthetics

Poliester
Nylon
Elastane
Spandex (Lycra)

TEXTILES



Textil Tulle

<Rigid and elastic>



Mesh Tricot

<Nylon & Spandex>
<Sport textiles>

TEXTILES



Organza

<Thin and strenght>
<Natural Silk>



Muslin

<Natural cotton>

FILAMENTS

IMP 3D

RIGID

<Hard>
<Stability>
<Volumes>



EIN. DRUK

<PLA: Geetech - eSun>

FLEXIBLE

<Adaptability>
<Softness>
<Light>



<Smartfil flex>
<TPU 95A - 82A>

Ana Correa

GEOMETRIES

LAYER HEIGHT

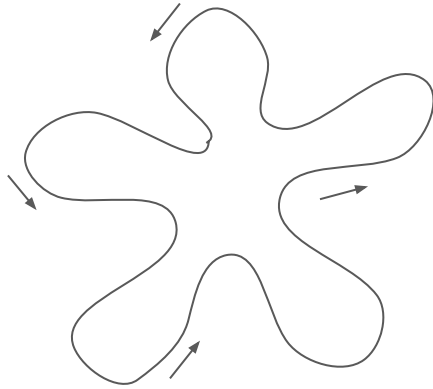


Object Height must be a multiple of 0.2

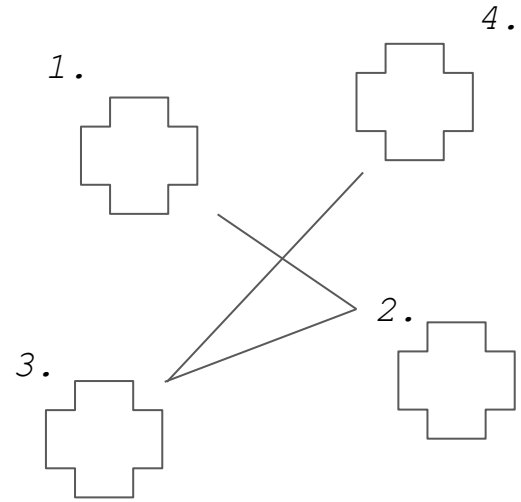


GEOMETRIES

CONTINUOUS LINES



Flexible Filaments



Rigid Filaments

*Traveling marks the textile

3D PRINT OVER TEXTILES



Correct placement of
fabric

Calibrate the
Build plate

Print Speed: 35mm/s

Correct T and
avoid retractions

ERRORS

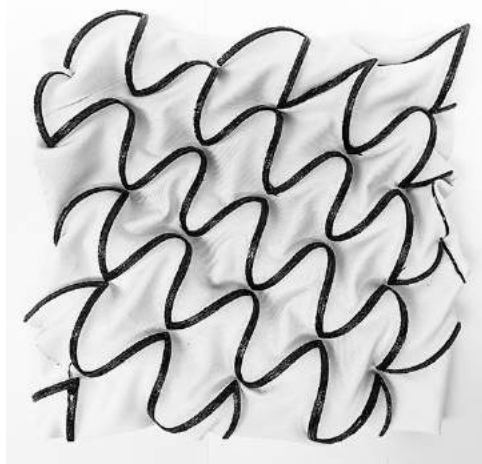


GEOMETRIES

STRETCHABLE FABRICS



< Short heights = small
and continuous waves >



< Medium heights =
homogeneous and long
waves >



< Big heights = waves
broad and sinusoidal >

GEOMETRIES

STRETCHABLE FABRICS

**Pattern
Design**

Wide lines = Sinusoids



GEOMETRIES < TEXTURES >

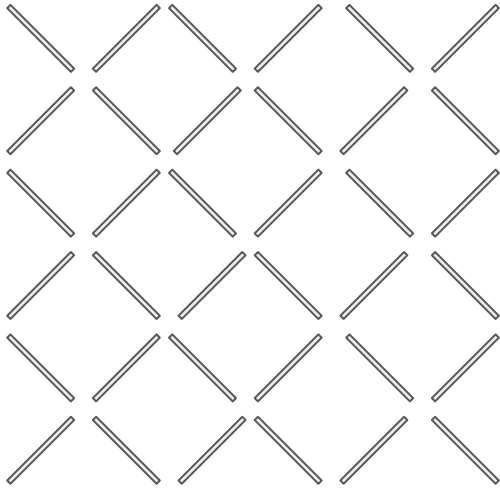
STRETCHABLE FABRICS



GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS

The textures are generated due to the **different tensions** in the textile created **between the spaces with deposited filament and those without**. It is key to study the flexibility of the fabric before placing it in the machine.



**Pattern
Design**

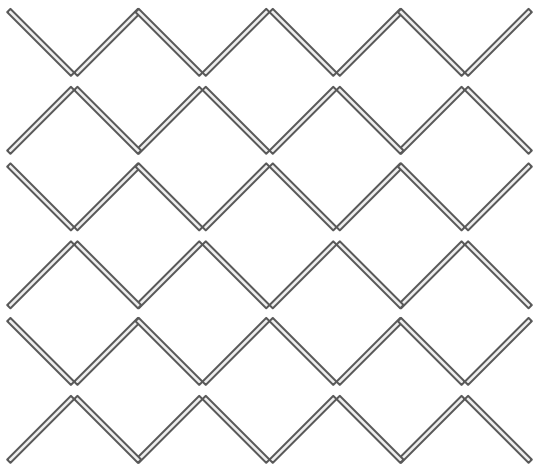
Short lines = Sinusoids



GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS

Tensions between wide and short spaces are interpreted as **valleys and mountains**, resulting in **textures** once the fabric returns to its natural state.



**Pattern
Design**

Short lines = Sinusoids

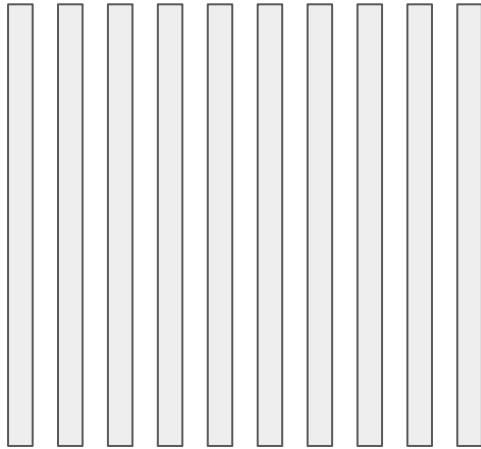


Photography by Ana Correa

GEOMETRIES < TEXTURES >

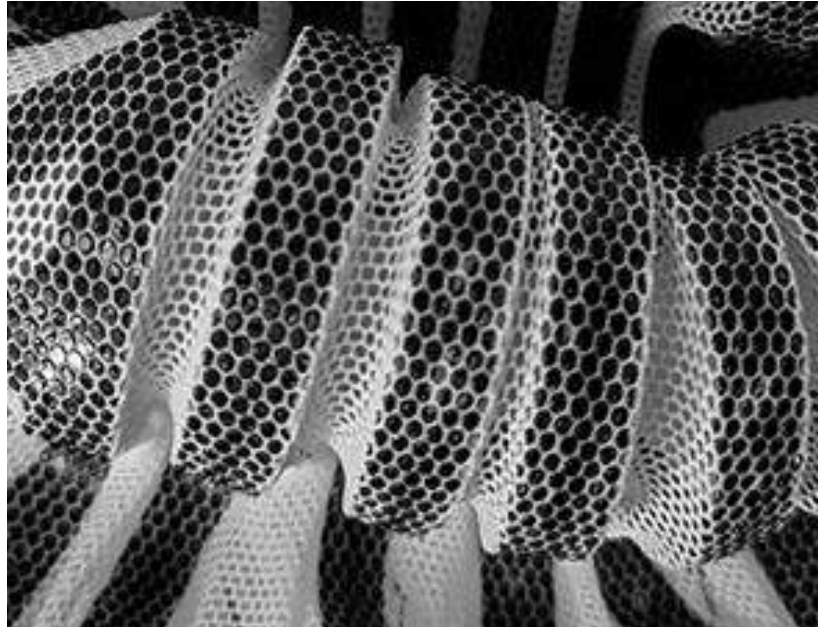
STRETCHABLE FABRICS

By expanding the textile, the fibers **maintain their expansion** in the printing area and **contract** in the absent areas of filament



**Pattern
Design**

Wide lines = pleats

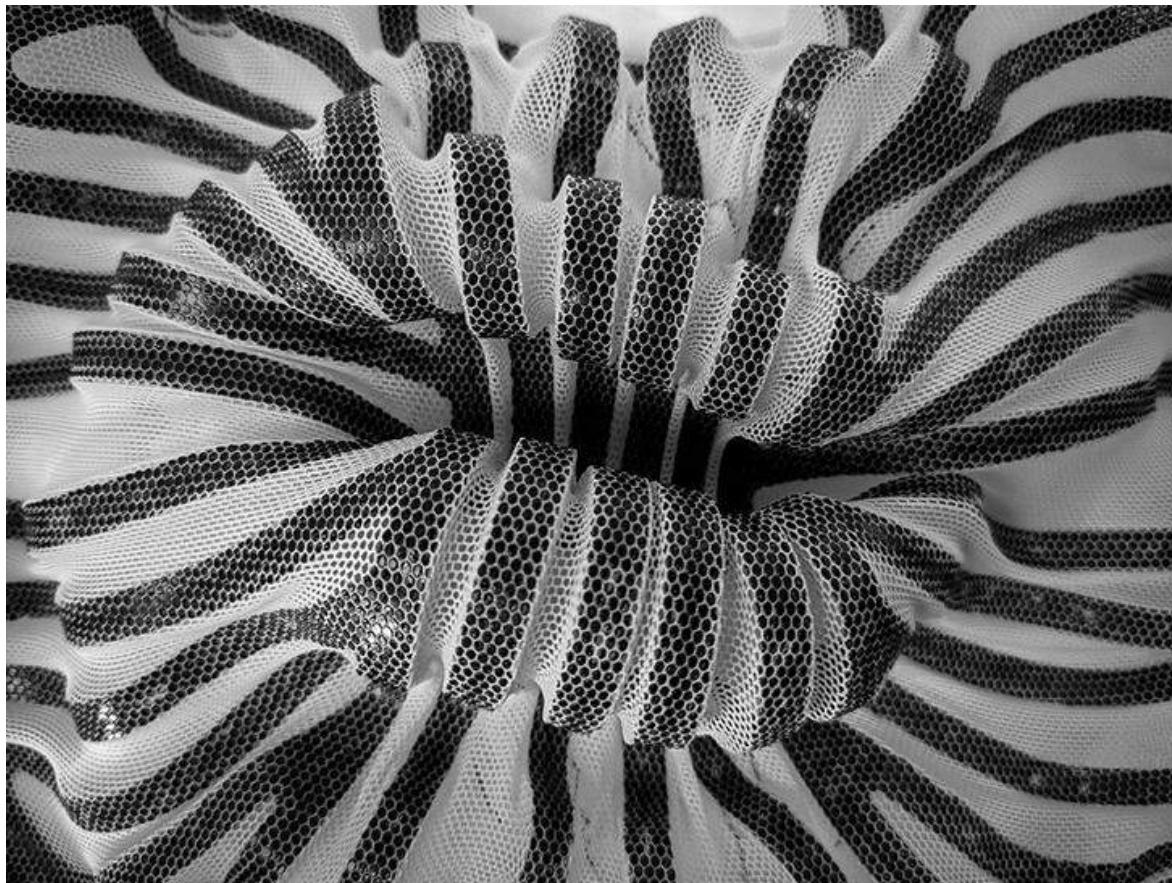


GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS

**Pattern
Design**

Wide lines = pleats





GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS

Drag and Drop
DESIGN MORPHINE



GEOMETRIES

STRETCHABLE FABRICS

Drag and Drop
DESIGN MORPHINE



GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS

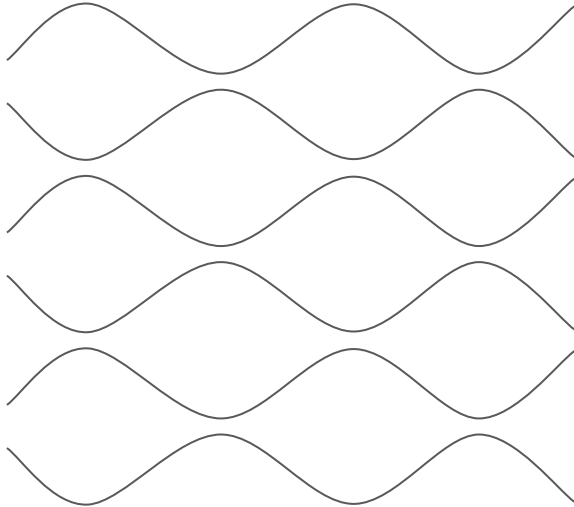
Flor de la Exploración

ANA CORREA



GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS



**Pattern
Design**

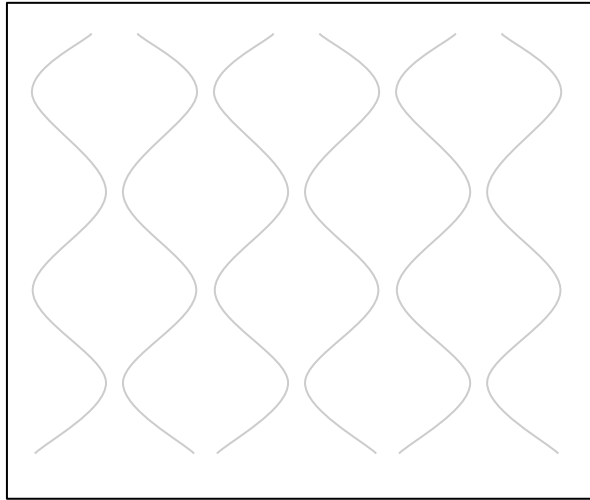
Wide lines = pleats



GEOMETRIES < TEXTURES >

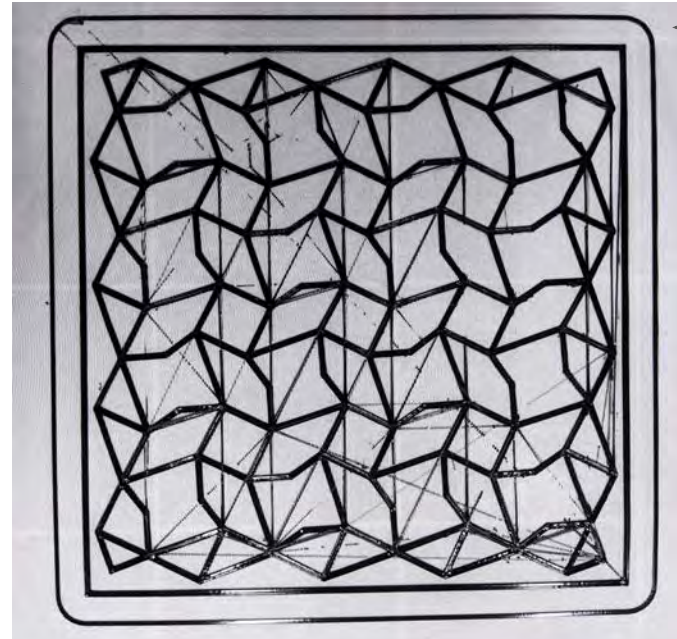
STRETCHABLE FABRICS

Building a frame around the print area preserves the textures on the fabric after cutting the textile with a garment pattern



SKIRT

Keeps the tension area



GEOMETRIES < TEXTURES >

STRETCHABLE FABRICS

REFERENCE



[Impresión 3D sobre textiles - Mecanismos dinámicos - Laboratorio Biomimético](#)

ZER COLLECTION



mmc³

GEOMETRIES < VOLUMES >

SANDWICH TECHNIQUE

<Adaptability through patterns
with separate designs>

<Add weight to fabric>



SÁNDWICH

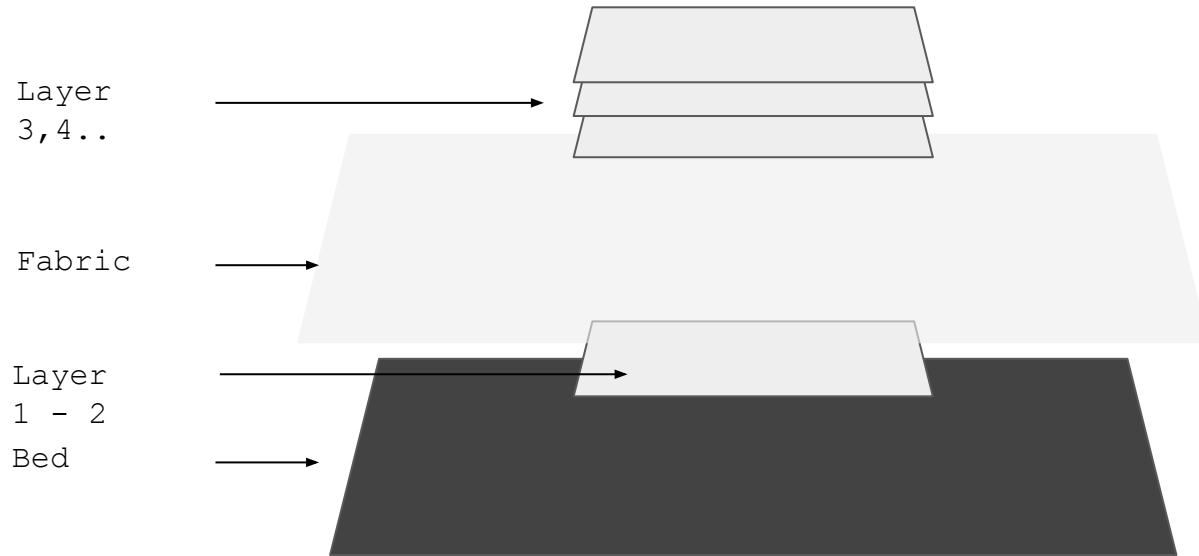


3D Printing On Fabric

TÉCNICAS < SÁNDWICH >

Tejidos rígidos + Filamento rígido

IMP 3D

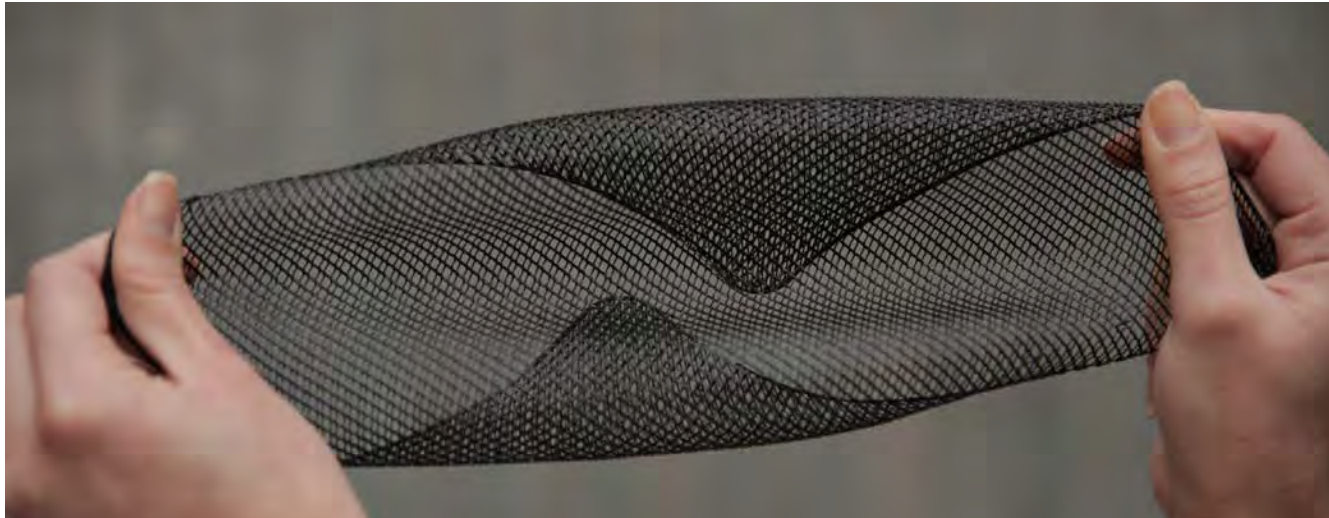


*The textile must be a mesh

3D PRINTED TEXTILES

FLEXIBLE FILAMENT

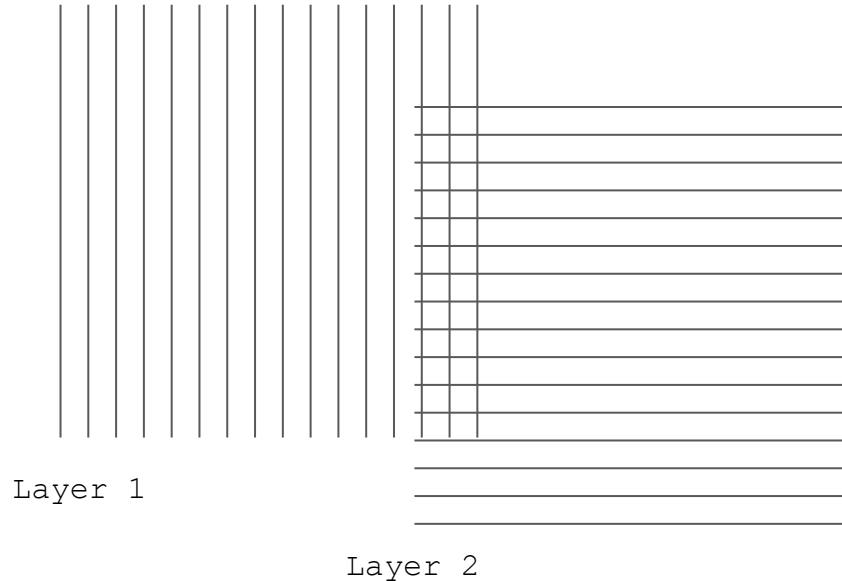
3D Printed textiles are geometries designed with the union of filament threads with the mechanical properties simulating conventional fibers.



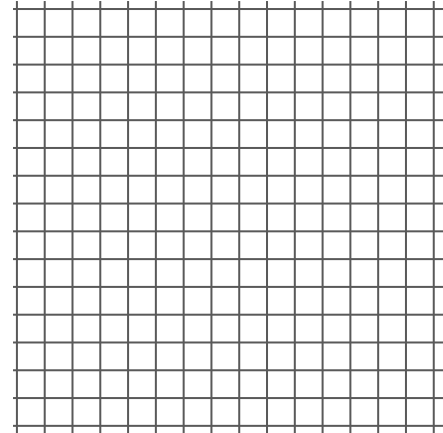
3D PRINTED TEXTILES

FLEXIBLE FILAMENT

The key in the design of 3D printing textiles is the creation of patterns with **lines perpendicular** to each other, creating meshes of different thicknesses and sizes.



Result

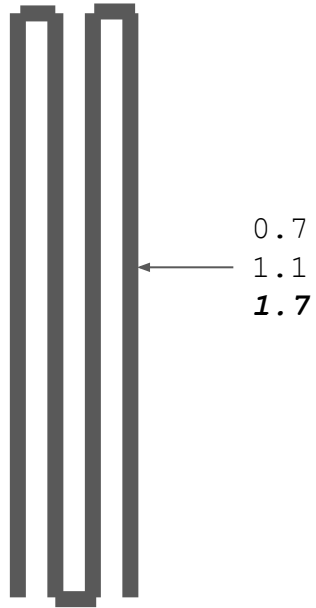
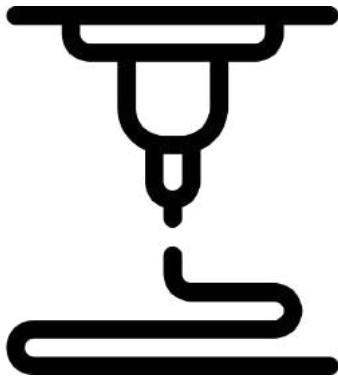


3D PRINTED TEXTILES

FLEXIBLE FILAMENT

NOZZLE DIAMETER

0.4
0.6
☆ **0.8**



3D PRINTED TEXTILES

FLEXIBLE FILAMENT



Digital Pattern: CLO

Textil Design

3D PRINTED TEXTILES

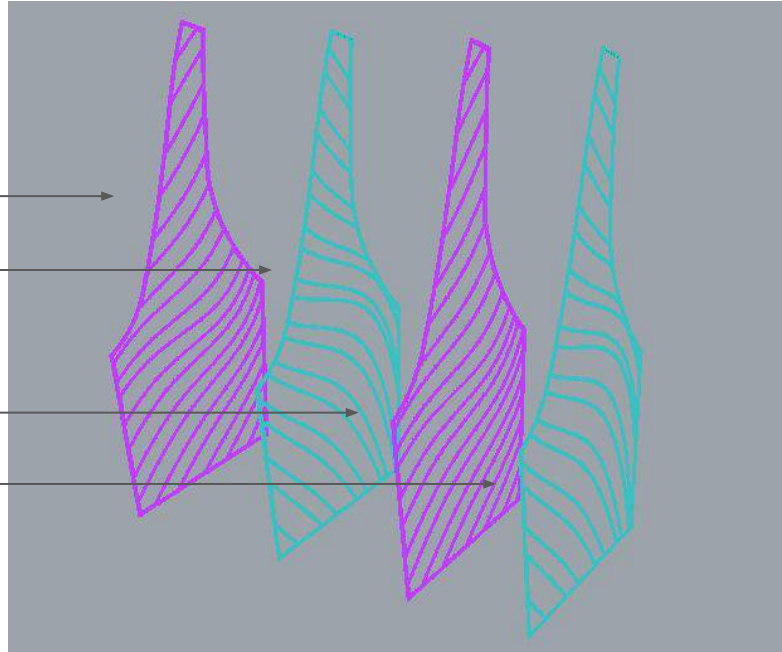
FLEXIBLE FILAMENT

Layer 1 →

Layer 2 →

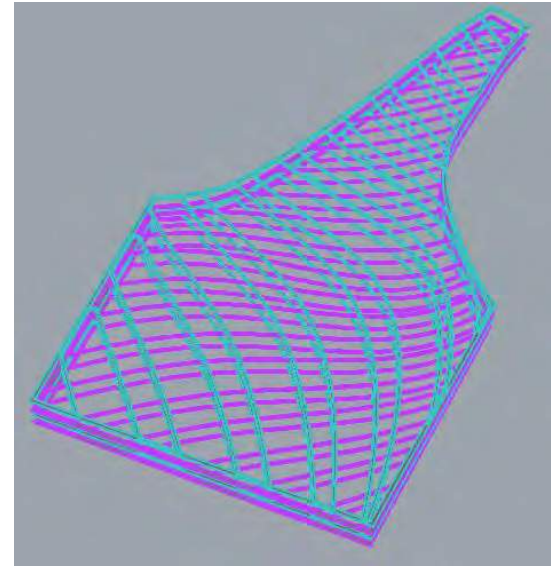
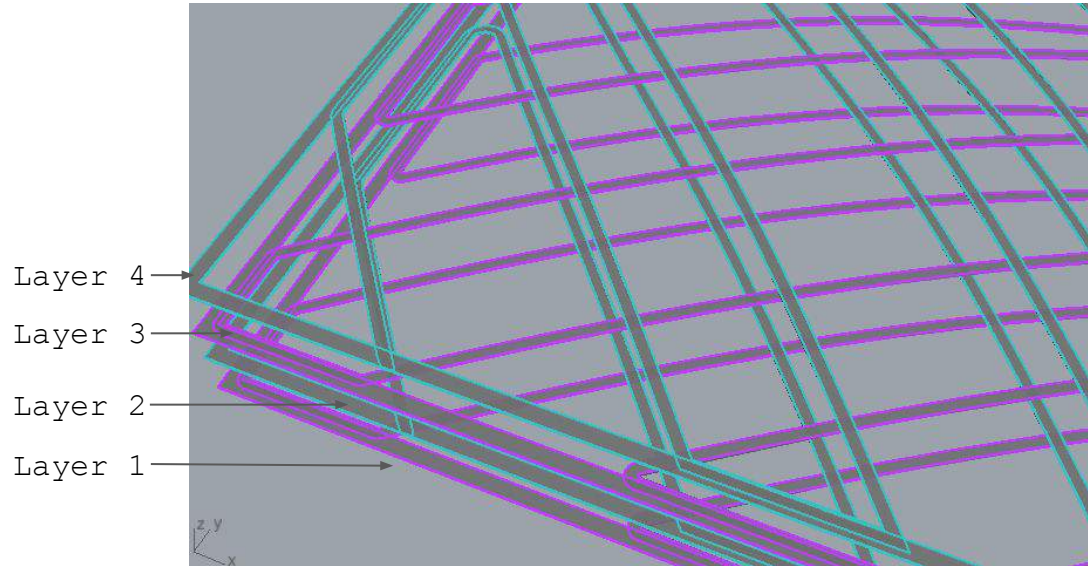
Layer 3 →

Layer 4 →



3D PRINTED TEXTILES

FLEXIBLE FILAMENT



DANIT PELEG



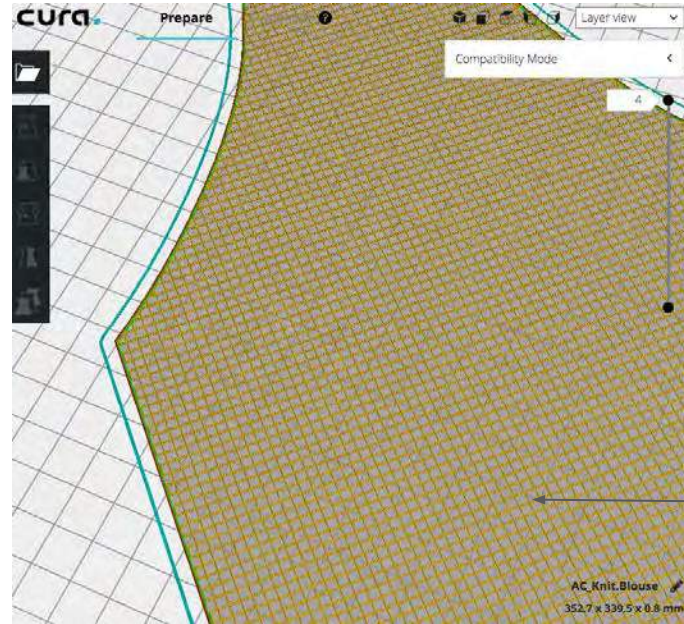
3D PRINTED TEXTILES

FLEXIBLE FILAMENT

Pattern



Knit.Blouse.stl

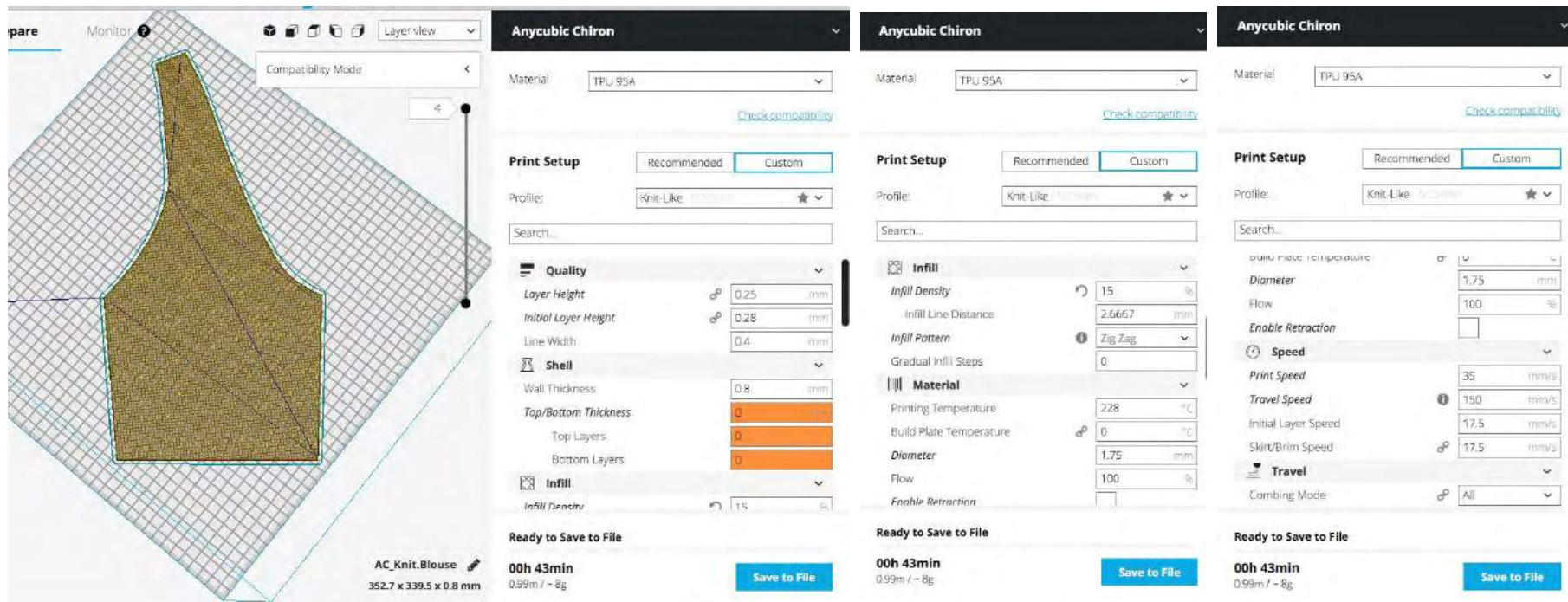


Cura



3D PRINTED TEXTILES

FLEXIBLE FILAMENT

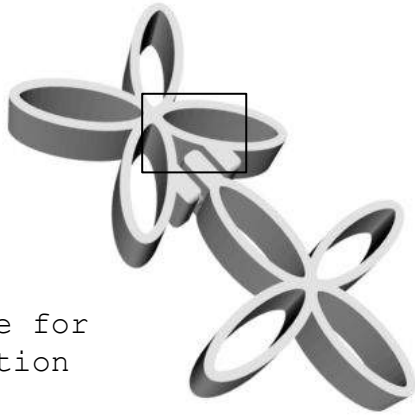


The image displays a 3D printing software interface for Anycubic Chiron, showing a 3D model of a garment (a brown, textured piece) on a grid. The interface is divided into several panels:

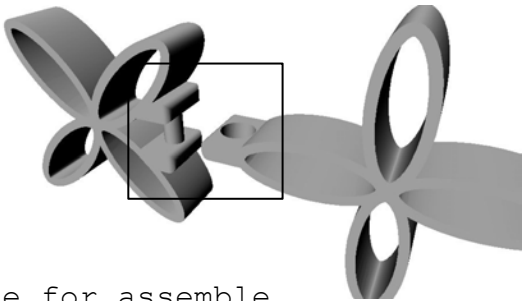
- Left Panel:** Shows the 3D model of the garment, a "Compatibility Mode" dropdown, and a "Layer view" dropdown. At the bottom, it displays the filename "AC_Knit.Blouse" and dimensions "352.7 x 339.5 x 0.8 mm".
- Top Panel:** Displays the printer name "Anycubic Chiron" and the material "TPU 95A". A "Check compatibility" link is visible.
- Print Setup Panel:** Includes a "Print Setup" section with "Recommended" and "Custom" tabs, a "Profile" dropdown set to "Knit-Like", and a search bar.
- Quality Panel:** Contains settings for "Layer Height" (0.25 mm), "Initial Layer Height" (0.28 mm), and "Line Width" (0.4 mm).
- Shell Panel:** Includes "Wall Thickness" (0.8 mm) and "Top/Bottom Thickness" (0 mm) for both "Top Layers" and "Bottom Layers".
- Infill Panel:** Shows "Infill Density" (15%), "Infill Line Distance" (2.6667 mm), and "Infill Pattern" (Zig Zag).
- Material Panel:** Lists "Printing Temperature" (228 °C), "Build Plate Temperature" (0 °C), "Diameter" (1.75 mm), "Flow" (100%), and "Enable Retraction".
- Speed Panel:** Includes "Speed" settings: "Print Speed" (35 mm/s), "Travel Speed" (150 mm/s), "Initial Layer Speed" (17.5 mm/s), and "Skirt/Brim Speed" (17.5 mm/s).
- Travel Panel:** Shows "Combing Mode" set to "All".
- Bottom Panel:** Displays "Ready to Save to File", the estimated time "00h 43min", and dimensions "0.99m / ~ 8g". A "Save to File" button is present.



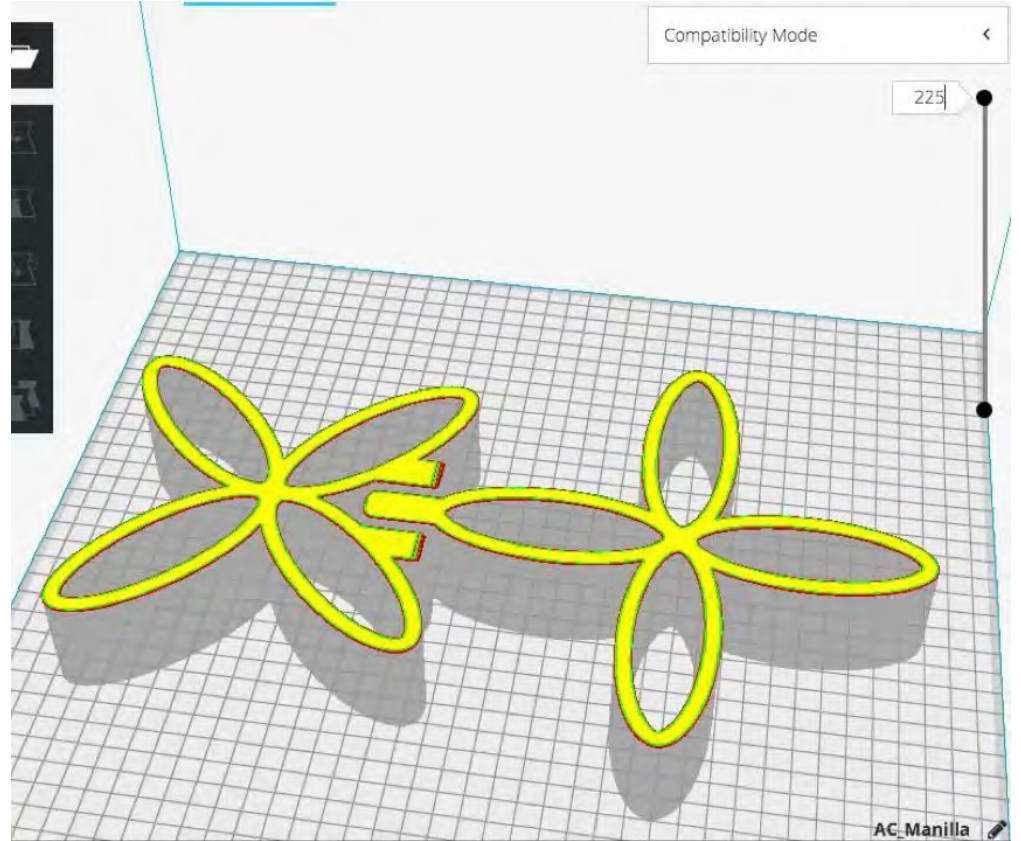
3D TEXTILES



Space for rotation



Space for assemble



3D PRINTED TEXTILES

RIGID FILAMENT



Nervous System

1.600
Pieces
Nylon





< THANK YOU >