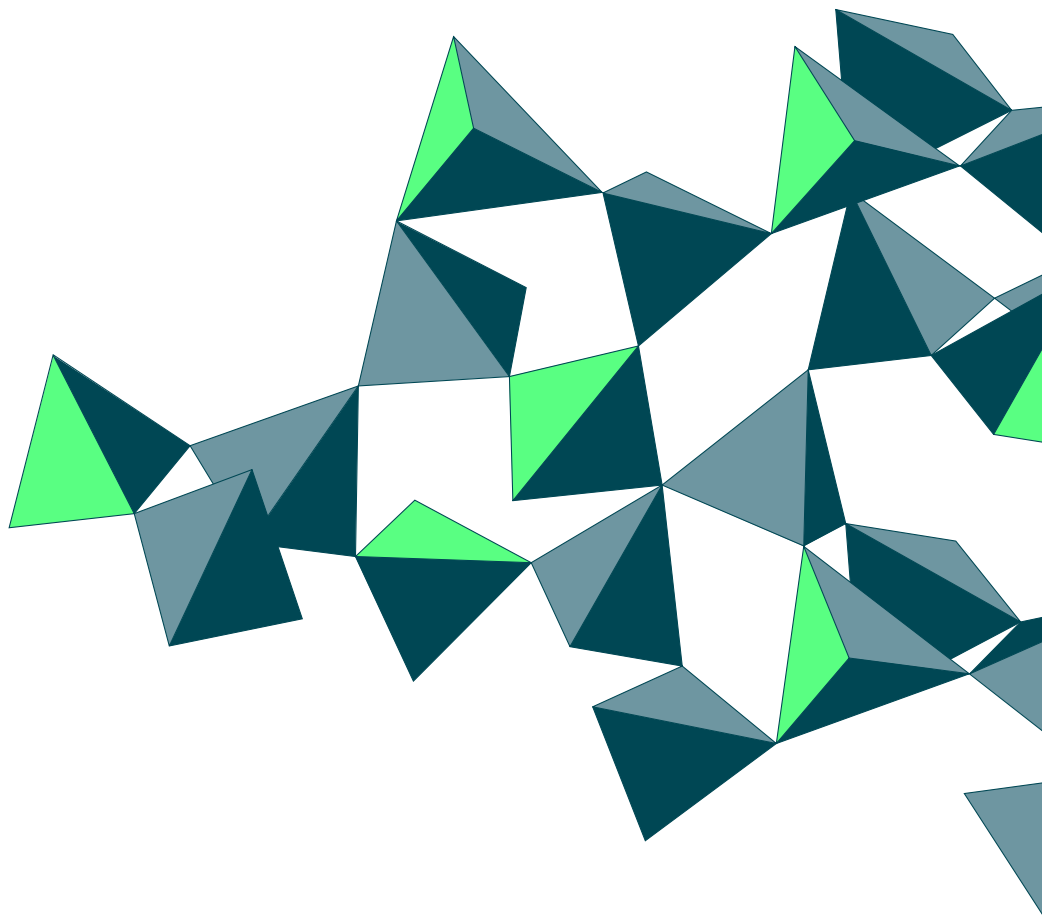# Design Guidelines

Introduction

ACEO® offers 3D printing services based on Wacker silicone elastomers.

The printing strategy as well as the orientation on the build platform is decided by ACEO® in order to achieve an optimal printing quality.

The guidelines in this document are intended for developers to achieve the best print results.

If you wish to print more than one part of a design, we recommend to get them printed in one print job to ensure the best part-to-part consistency.

Quality of the Product

ACEO® 3D printing with silicones uses an additive manufacturing process in which parts are build layer by layer. Thus results a layered structure typical for this kind of process.

Complex structures, inner cavities, lattices etc. are filled up with ACEO® Support Material. The same applies to overhangs and bridges. After finishing the print job the ACEO® Support Material is removed. Therefore an outlet needs to be designed in order to wash the Suppport Material out.
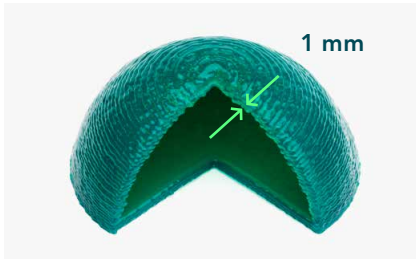
Designing a Model

The following is provided for **general information** only. It does not constitute a legally binding agreement and does not describe the quality of the ordered product.
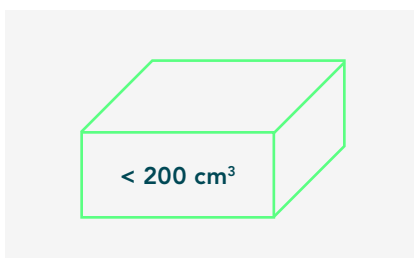
< 200 cm³

Bounding Box

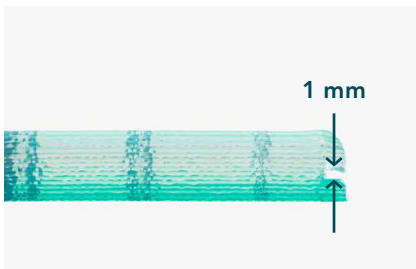The standard set-up of the ACEO® Print Fab accepts digital models up to a 200 cm³ bounding box.
For bigger part designs please contact ACEO® at info@aceo3d.com

Wall Thickness

In order to achieve the best possible quality of the 3D printed part we recommend to design a wall thickness of at least:
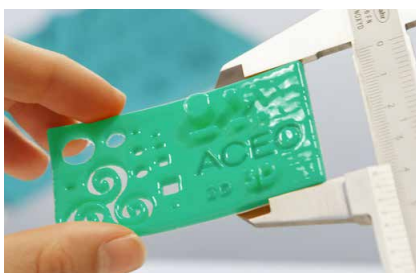
1 mm

Spacings / Holes

In order to achieve the best possible quality of the 3D printed part we recommend to design spacings, of at least:
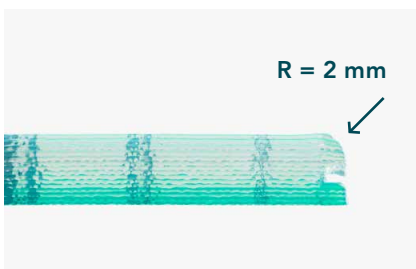
1 mm

Tolerances

The tolerances of our 3D printed parts in the length dimensions, are in line with:
DIN ISO 2768-1 v

Edge Radius

In order to achieve the best possible quality of the 3D printed part we recommend to design edge radii, of at least:
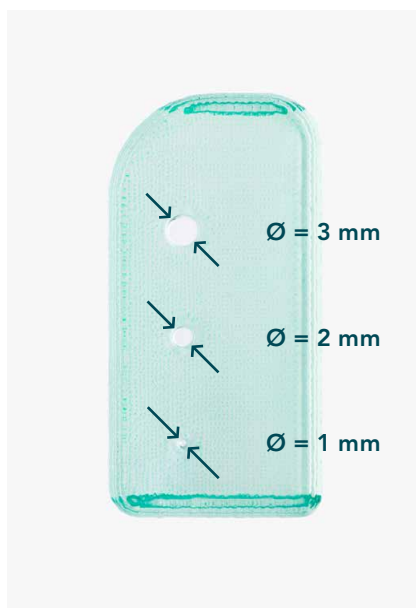
2 mm

Visual Appearance of Printed Parts

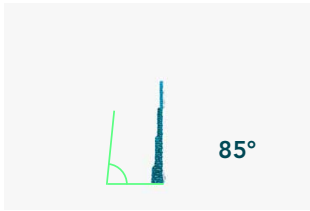Below you will find general information on the visual appearance of parts printed with ACEO® Technology
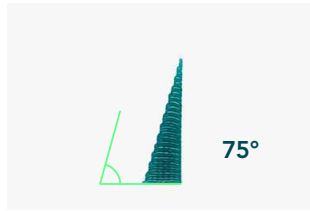

Edge Radius

R = 10 mm
R = 5 mm
R = 3 mm
R = 2 mm

Spacings / Holes

Ø = 3 mm
Ø = 2 mm
Ø = 1 mm

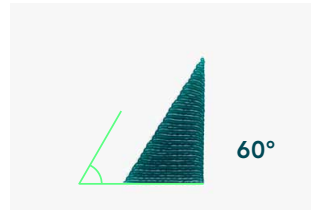# Visual Appearance of Printed Parts (continued)

Below you will find general information on the visual appearance of parts printed with ACEO® Technology

A 85 degree angle

B 75 degree angle

C 60 degree angle

D 45 degree angle

E 30 degree angle

F 15 degree angle

G 5 degree angle
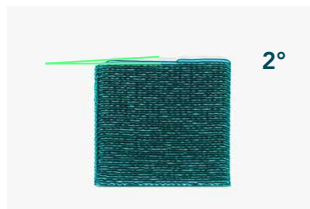
H 2 degree angle

Visual Appearance of Printed Parts (continued)

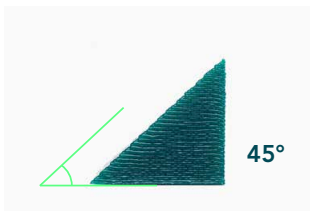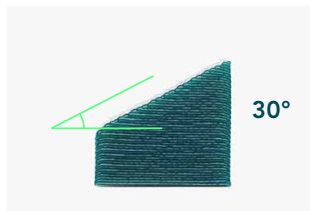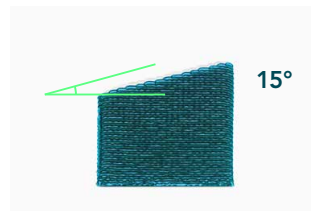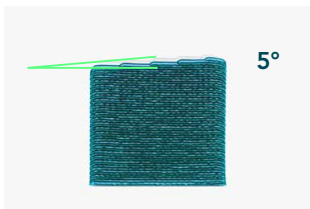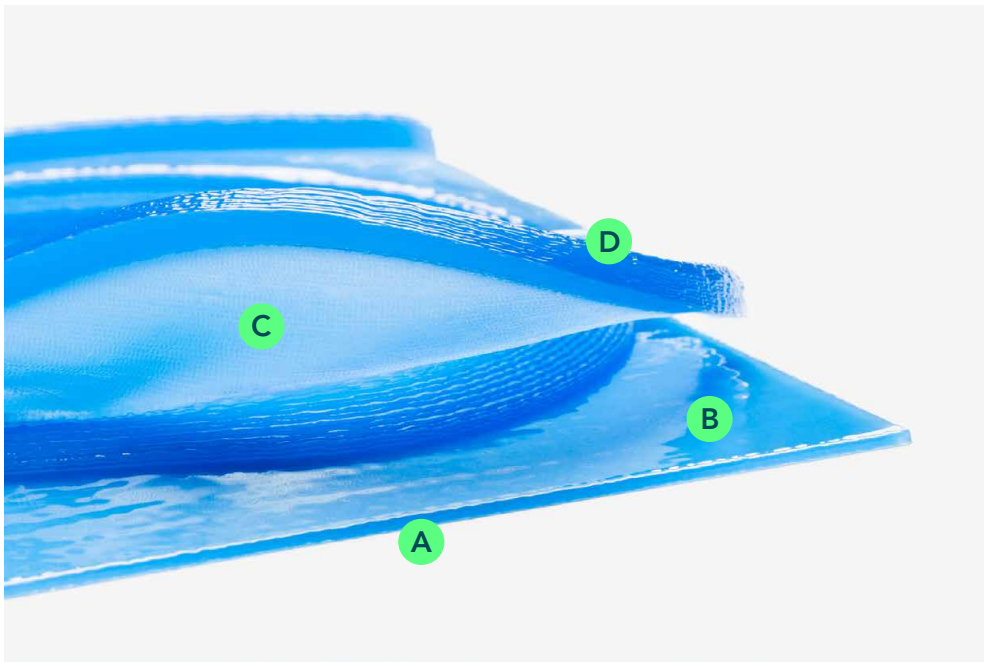Below you will find general information on the visual appearance of parts printed with ACEO® Technology

Surfaces

A Smooth bottom surface on build platform

B Smooth top surface from last printed layer

C Surface from contact to support material

D Side walls with layer structure, layers ≈ 0,4 mm

Available Silicone Elastomers

Shore A Hardness

ACEO offers a range of different hardnesses, currently ranging from 20 to 60 Shore A (Shore A 50 coming soon)

Soft   **Hard**

| A 10 | **A 20** | **A 30** | **A 40** | A 50 | **A 60** | A 70 | A 80 |

Available Colours

The colors listed below are part of our standard range and include translucent, skin, gentian blue and graphite black, pure white, flame red and silver gray. Some colors such as luminous yellow or grass green may need a minimum order size. For colors outside this range please contact ACEO®.

Trans-lucent	Pure White	Luminous Yellow	Pure Orange	Flame Red
Except for Shore A 20	RAL 9010	RAL 1026	RAL 2004	RAL 3000

Skin	Gentian Blue	Grass Green	Silver Gray	Graphite Black
PANTONE 7513 C	RAL 5010	RAL 6010	RAL 7001	RAL 9011

For more information, please see the material datasheet which can be requested at info@aceo3d.com.

Requirements for 3D CAD Files

We support the following formats

Preferred file formats:

- STEP (.stp / .step)
- STL (Standard Tesselation Language / Stereo Lithography) (.stl)

- JT (.jt)
- OBJ (.obj)
- Parasolid XT (.x_t)
- PRC (.prc)
- Pro/Engineer (.prt, .asm)
- Rhino (.3dm, .rhino)
- SAT (.sat)
- Siemens PLM Software's NX (.prt)
- Solid Edge (.par, .asm)
- SolidWorks (sldprt, .prt / .sldasm, .asm)
- Universal 3D (.u3d)
- VDA-FS (.vda)
- VRML (.wrl, .wrml)

The formats below may also be used:

- Inventor (.ipt / .iam)
- CATIA V4, V5, V6 (.CATPart, .CATProduct)
- Creo Parametric (.prt / .asm)
- IFC (.ifc)
- IGES (.igs, .iges)

.stl ACEO® printing technology uses .slt format, all files are converted to this format.

Tip: When you prepare your .stl file, please select a high triangulation level. This is especially valid for curves, rounds, corners, etc.
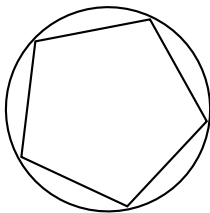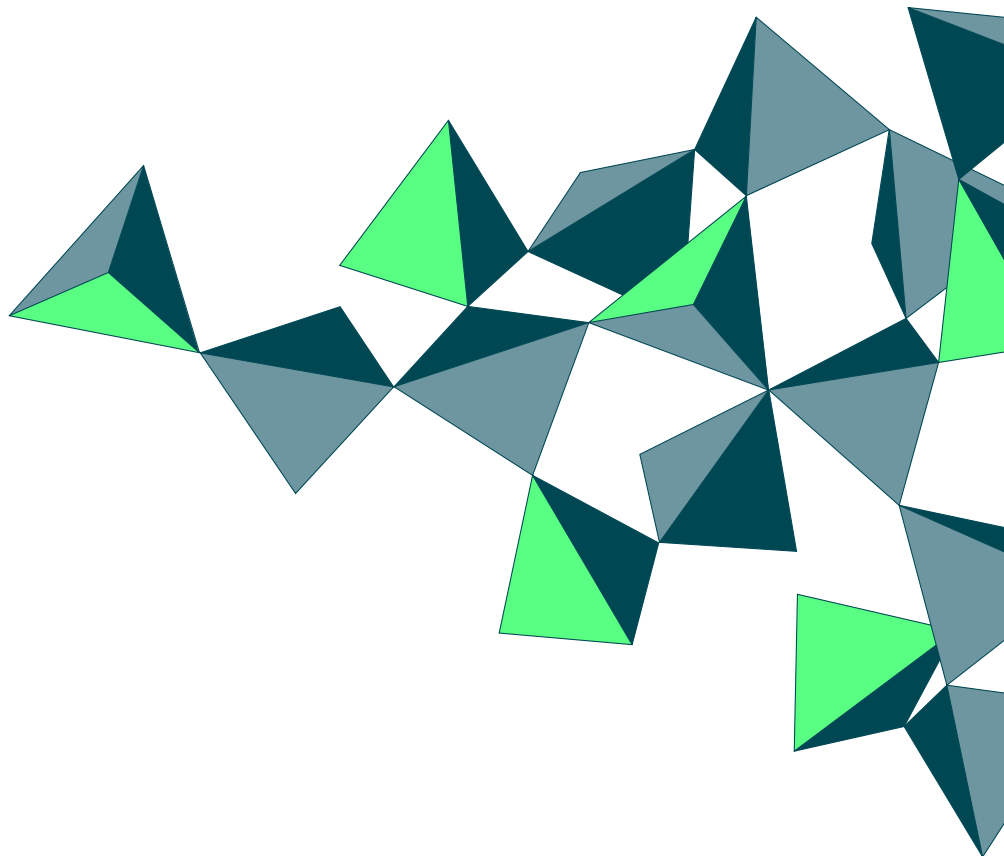

Low triangulation level
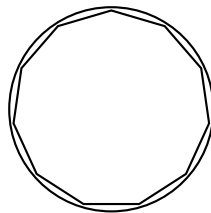
High triangulation level

IMAGINE …
what could be your novel product design?

Contact ACEO® Team

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WACKER