3D printing

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02-08-2022

3D printing

From Wikipedia, the free encyclopedia

3D printing or **additive manufacturing** is the construction of a three-dimensional object from a CAD model or a digital 3D model.

What you need: 3D printer

Consumer models €200 - €3.000

What you need: 3D printer

Xebia has a Prusa i3 MK2S and MK3 which you can use.

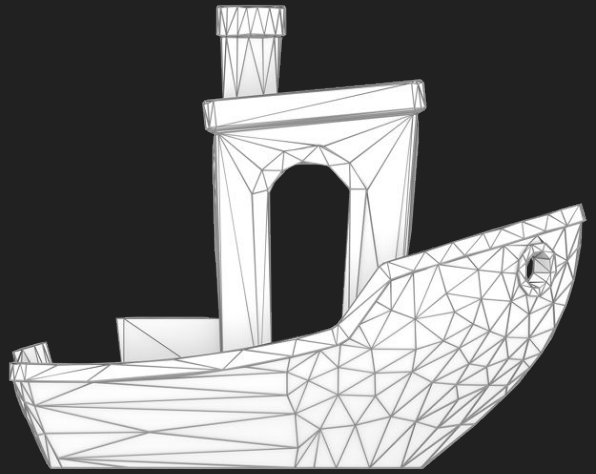
Good and easy to use, MK3+ costs about €1200

What you need: Filament

About €20-€35/kg

Plastic type usually “PLA”

What you need: 3D model



Lots of free downloads on printables.com, thingiverse.com

Can design your own with CAD or 3D-modeling software

Slicer

3D models are usually shared or exported as .stl files

Slicers turn .stl files into “G-Code”, instructions for your specific 3D printer

Slicer

Lot’s of slicers

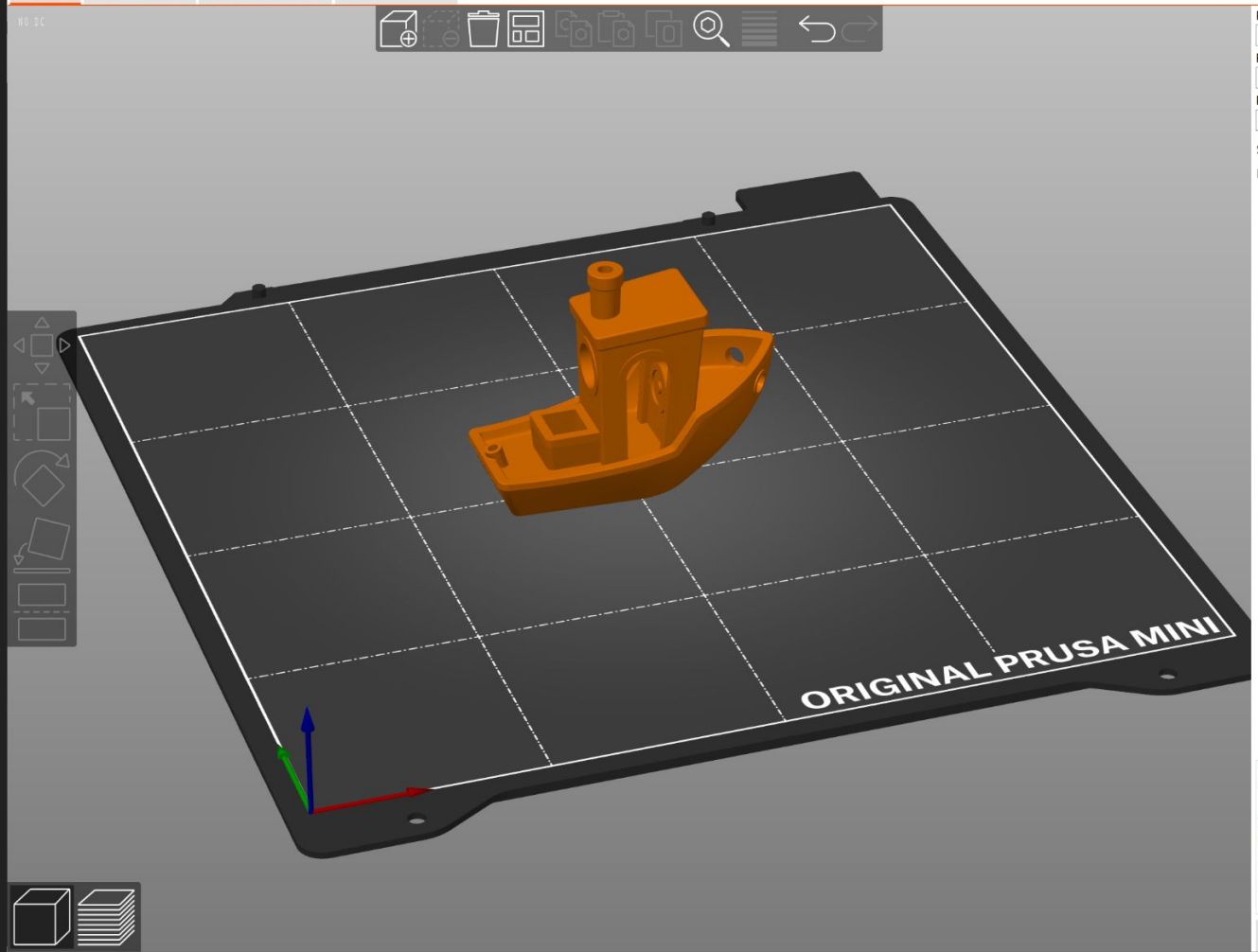
- PrusaSlicer - Also for non-Prusa printers
- Cura
- Simplify3D - Paid
- Creality Slicer - Creality printers only

PrusaSlicer-2.4.2 based on Slic3r

File Edit Window View Configuration Help

Plater | Print Settings | Filament Settings | Printer Settings

Simple | Advanced | Expert



Print settings :
0.15mm SPEED

Filament :
Prusament PETG

Printer :
Original Prusa MINI & MINI+

Supports: None

Infill: 20% Brim:

Sliced Info

Used Filament (g) (including spool)	13.64 (214.64)
Used Filament (m)	4.46
Used Filament (mm^3)	10737.45
Cost	0.49
Estimated printing time: - normal mode	1h52m

Export G-code

Important tuning knobs

Layer height: detail v.s. printing time trade-off

Detailed prints: 0.07 or 0.1mm

Large or simple shapes: 0.2mm or 0.25mm

0.4mm
Layer Height

0.3mm
Layer Height

0.2mm
Layer Height

0.1mm
Layer Height

15min 45sec
Print Time

20min 14sec
Print Time

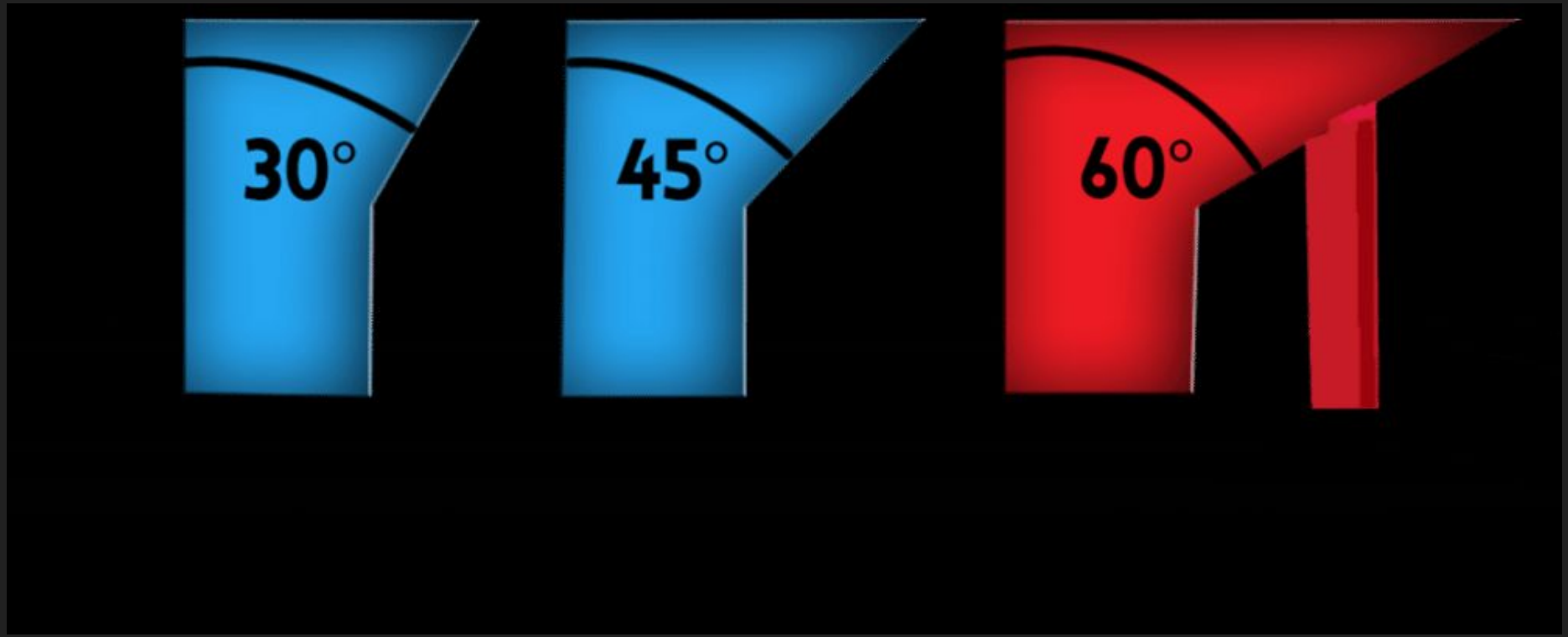
28min 15sec
Print Time

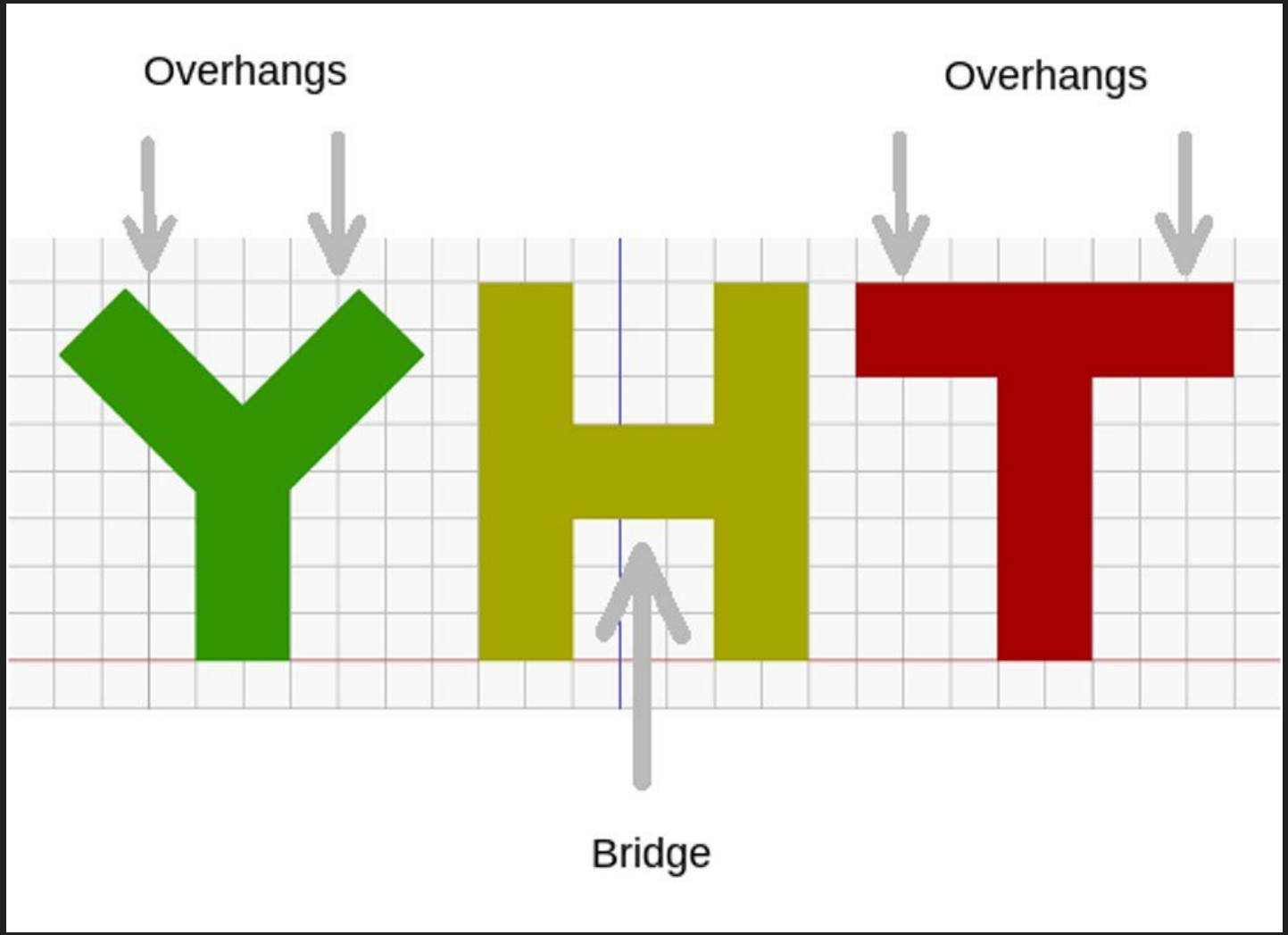
55min 44sec
Print Time

(all examples printed at 50mm/sec)

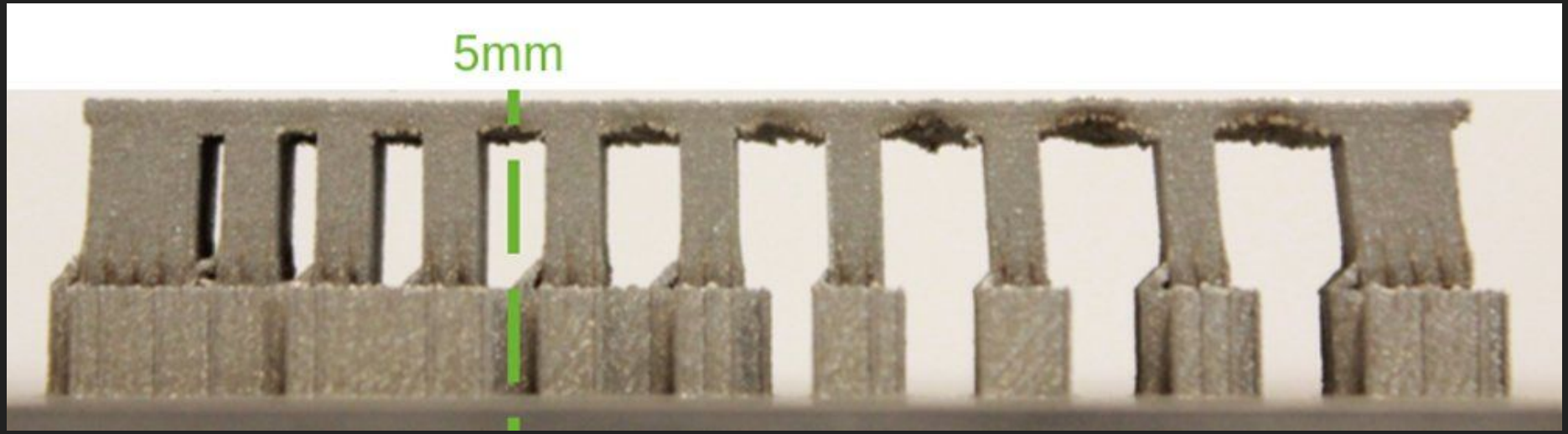
Supports

Supports




Overhangs
Overhangs
Bridge

Supports: bridges

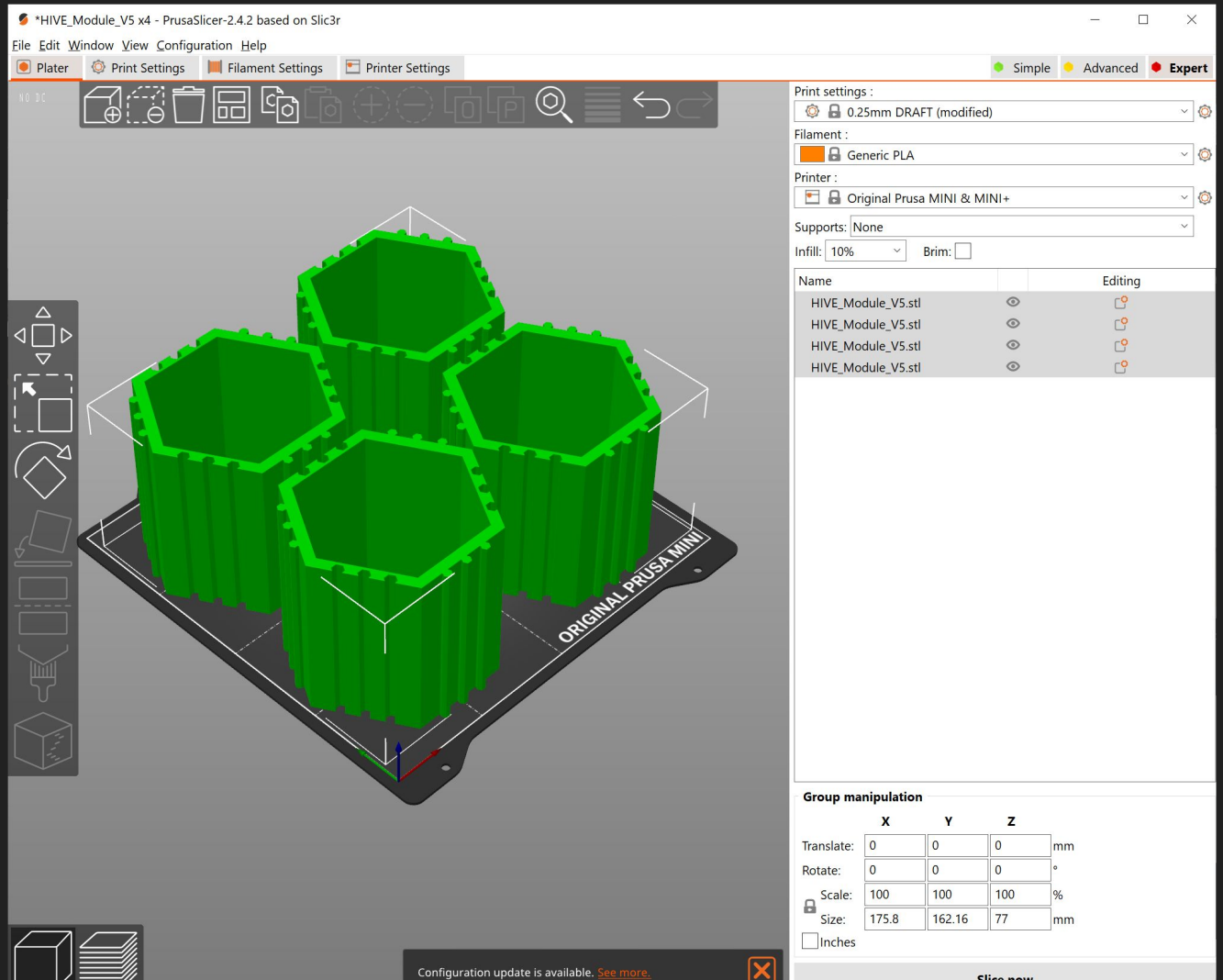


Bed adhesion

Most common reason why prints fail: print gets loose from the bed

Bed adhesion

Expectation:



Bed adhesion: spaghetti

Bed adhesion

- Fat and fingerprints are your enemy
  - Always clean your build plate with alcohol and a clean microfiber cloth before printing
  - Use dishwashing soap once in a while too
- No air drafts
- 15° C or higher, and/or increase bed heat
- “Brims” and “Rafts” can increase print surface area
- Nuclear option: use hairspray or glue stick