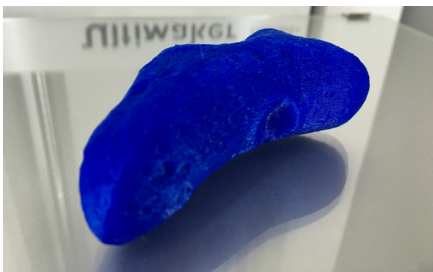


how to BUILD a GALAXY

PRINTING GUIDE

These notes are based on printing with an Ultimaker 2 Extended+ with a 0.4mm nozzle size, at 0.2mm layer height and a fill density of 20%. The print speed was set to 50 mm/s, and supports were used wherever possible according to the default support patterns supplied by the Cura slicing software. All prints were sized to 2.5 inches (63.5 mm) along the longest axis.

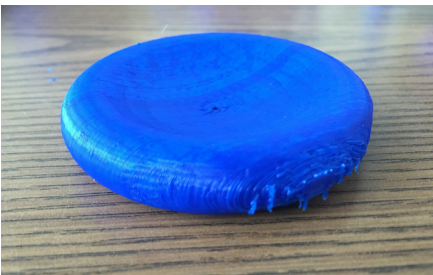
Tools for cleanup: small flathead screwdriver, or soldering cleanup tools.



ASTEROID EROS

Approx print time: 49 min

Difficulty Level: Easy minimal supports needed; simple cleanup

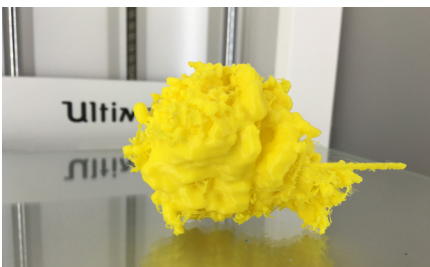


BLACK HOLE

Approx print time: 1 hour 9 min

Difficulty Level: Easy minimal supports needed; simple cleanup

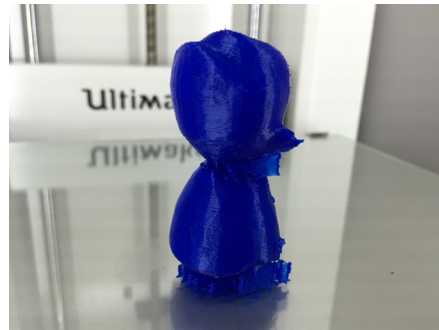
Alternate print setup: rotate model so that it stands upright along z-axis, print time is about the same, but the end result is much cleaner after some minimal structure removal. This setup may require a “raft” or “brim” to make sure the structural supports adhere to the print bed.



CASSIOPEIA A

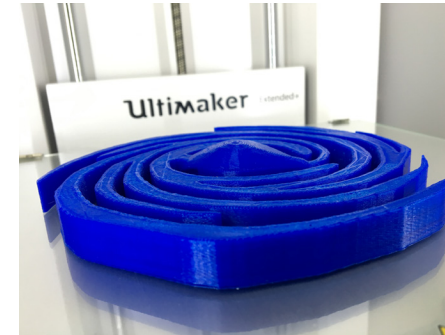
Approx print time: 1 hour 20 min

Difficulty Level: Hard/ Due to extensive support structures; cleanup requires a steady and gentle hand as the ejecta and jets of the remnant are very delicate.



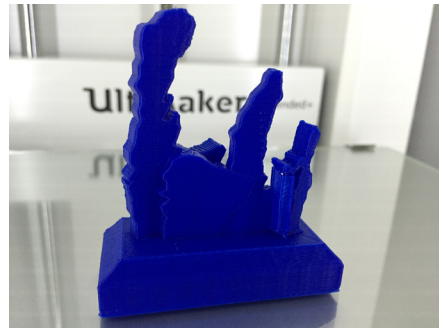
ETA CARINA HOMUNCULUS

Approx print time: 1 hour 11 min
Difficulty Level: Medium/Some supports are needed for the bottom and sides of the model; cleanup is straightforward but be careful of the protrusions as well as the more delicate center of the model.



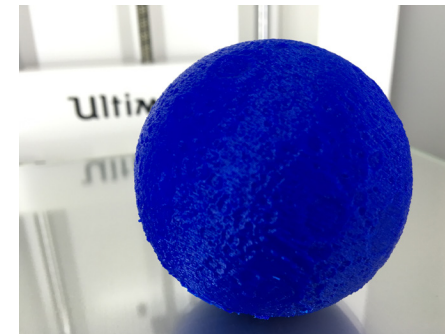
MILKY WAY GALAXY

Approx print time: 1 hour 14 min
Difficulty Level: Easy/No supports structures needed; simple cleanup



EAGLE NEBULA (PILLARS OF CREATION)

Approx print time: 1 hour 18 min
Difficulty Level: Easy/minimal supports needed; simple cleanup (be careful of the rightmost pillar)

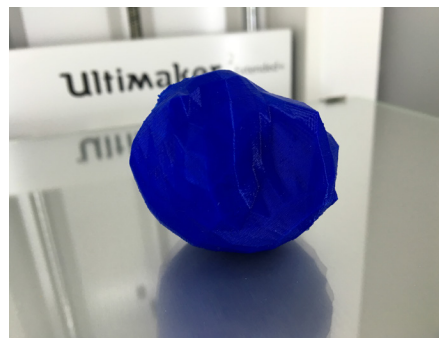


MOON

FULL MOON

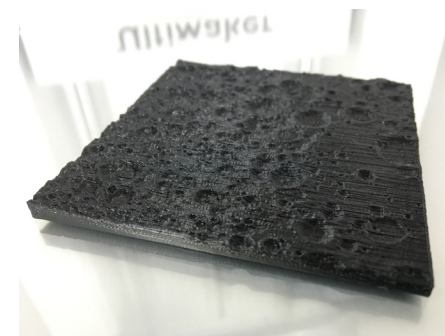
Approx print time: 4 hours 13 min
Difficulty Level: Medium/like Mars, the supports along the bottom must be carefully removed

Note, for both near and far side plates, it is recommended to print the models upright along the z-axis. This gives a much cleaner print (see figure).



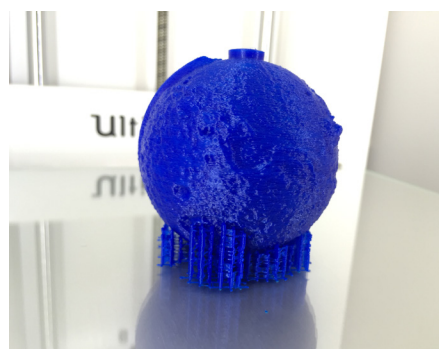
KEPLER'S SUPERNOVA REMNANT

Approx print time: 3 hours 16 min
Difficulty Level: Medium/some supports need cleaning from the bottom of the print.



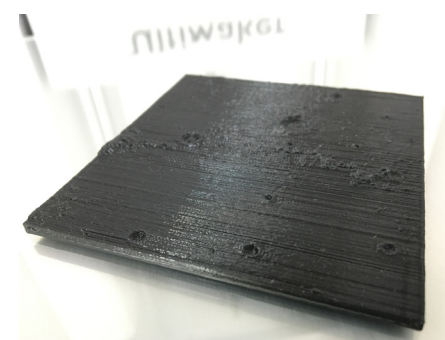
NEAR SIDE DETAIL

Approx print time: 56 min
Difficulty Level: Easy/no supports needed, very little cleanup needed



MARS

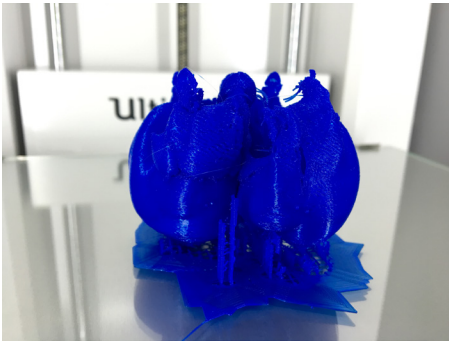
Approx print time: 4 hours 6 min
Difficulty Level: Medium/the challenge with this print is dealing with the underlying support structures during cleanup. The underside of the globe can become distorted due to supports.



FAR SIDE DETAIL

Approx print time: 1 hour 4 min
Difficulty Level: Easy/no supports needed, very little cleanup needed

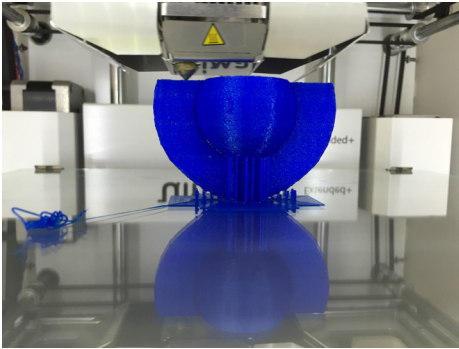
how to BUILD a GALAXY



NEBULA

Approx print time: 2 hours 52 min

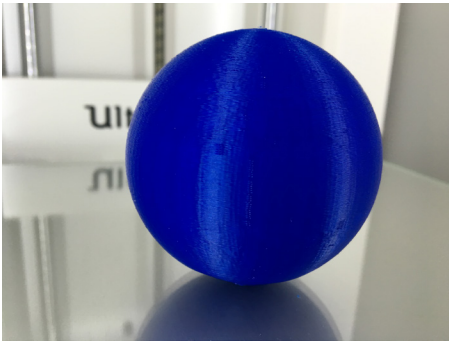
Difficulty Level: Hard/Supports on the bottom in addition to internal supports which need to be carefully removed.



SATURN

Approx print time: 1 hour 20 min

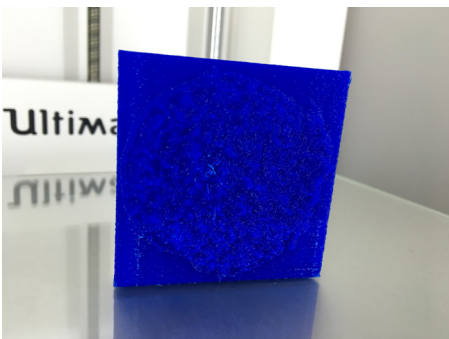
Difficulty Level: Medium/like Mars and the Moon, some supports are needed at the base. It is recommended to print with the rings upright along the z-axis



SUN

Approx print time: 3 hours 5 min

Difficulty Level: Medium/similar to Moon and Mars prints



TYCHO

Approx print time: 2 hours 5 min

Difficulty Level:

Medium/ Like the Moon near/far side detail prints, this model benefits from being printed upright along the z-axis. There will be some minimal cleanup of small support structures.