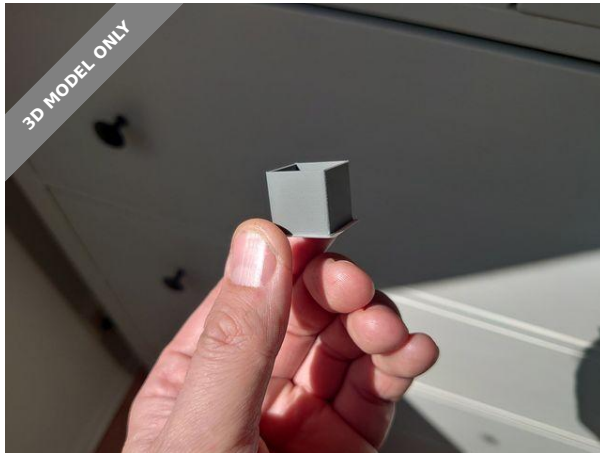




Flow Calibration Cube



humebeam

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Summary

One of the most important things for good quality prints is to get the flowrate / extrusion multiplier correct for your

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Update January 11, 2022

Thanks for the feedback so far, great to see so many makes! I've optimized the bottom thickness to save some material and it will also print faster.

I've also uploaded new versions that are only half as tall for an even quicker print (these are named "quickprint"), the same how-to below applies.

Support

All my designs and mods on Printables are free to use and remix. They have a non-commercial license. If you enjoy this or any of my other designs you can send me a small donation using the link below. Thanks :)

<https://www.paypal.me/humebeamengineering>

About

One of the most important things for good quality prints is to get the flowrate / extrusion multiplier correct for your filament. Good news is that it's easy to dial in.

How-To, 0.40 mm nozzle

For example, using a 0.40 mm nozzle, set the line width to exactly 0.40 mm in your slicer and print this calibration cube which has 0.80 mm walls. After you have printed it, measure the thickness of all four walls with a caliper and take a note of the widths. For example, let's say these are the widths of the walls measured:

0.81, 0.82, 0.83, 0.83

Then the formula to calculate the flow rate is:

$$0.80 / ((0.81 + 0.82 + 0.83 + 0.83) / 4) \approx 0.97$$

So, the flowrate or extrusion multiplier is about 97% or 0.97 which you then set in your slicer. If you started with a different flow value than 100 % or 1.0 you multiply this with your new calculated flow multiplier.

Print the cube again to confirm. The measured walls should now be very close to 0.80 mm thick.

What about other nozzle size?

The formula is the same for the other nozzle sizes. Set the line width to be exactly the same as your nozzle size then print that specific flow calibration cube. Then measure all walls with a caliper. Here's the formula to calculate the flow rate:

$$(\text{Nozzle size} * 2) / ((\text{Wall 1 width} + \text{Wall 2 width} + \text{Wall 3 width} + \text{Wall 4 width}) / 4)$$

Notes:

The method is not completely accurate as each slicer deals with wall widths and flow a little differently. It's a good tool to get a quick indication though.

This remix is based on



Flow Calibration Cube

by humebeam

Model files



020mm-nozzle-040mm-walls.stl



025mm-nozzle-050mm-walls.stl



030mm-nozzle-060mm-walls.stl



040mm-nozzle-080mm-walls.stl



050mm-nozzle-100mm-walls.stl



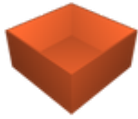
060mm-nozzle-120mm-walls.stl



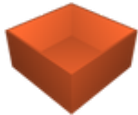
080mm-nozzle-160mm-walls.stl



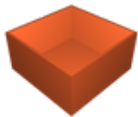
100mm-nozzle-200mm-walls.stl



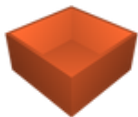
020mm-nozzle-040mm-walls-quickprint.stl



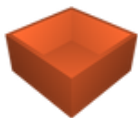
025mm-nozzle-050mm-walls-quickprint.stl



030mm-nozzle-060mm-walls-quickprint.stl



040mm-nozzle-080mm-walls-quickprint.stl



050mm-nozzle-100mm-walls-quickprint.stl



060mm-nozzle-120mm-walls-quickprint.stl



080mm-nozzle-160mm-walls-quickprint.stl



100mm-nozzle-200mm-walls-quickprint.stl

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