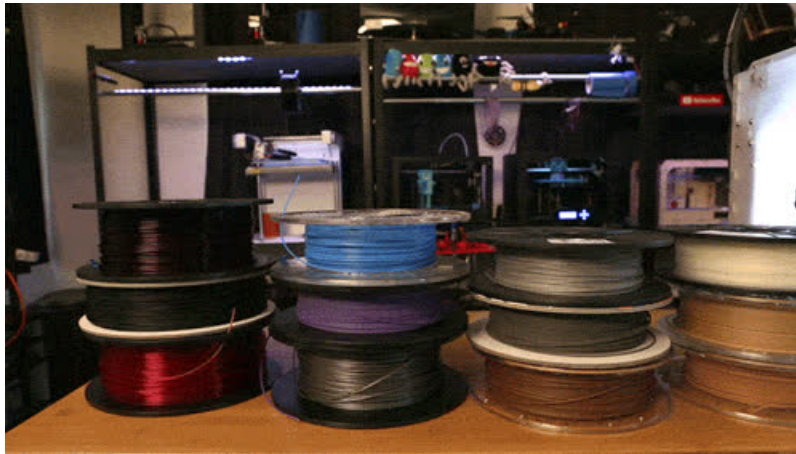


Using 1.75mm Filament on Ultimaker 2

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Overview

Why should I use 1.75mm filament?

In this guide, you'll learn how to properly use 1.75 filament on the Ultimaker 2! There's a few reasons why you'd want to use 1.75mm filament on the Ultimaker 2, but our main reason is because we have a lot of it. If you have invested into many spools of filament, this could save you some time and money.

There's also some advantages like it's a bit more common, there's less pressure in the nozzle, less stress on the motors and there seems to be a lot more exotic types in 1.75mm.

There's a [great article \(https://adafru.it/jcw\)](https://adafru.it/jcw) from Hackaday by [Brain Benchoff \(https://adafru.it/jcx\)](https://adafru.it/jcx), that discusses how printing manufacturers came to choose the two filament standards. It's totally worth a read.

What do I need?

You'll need an Ultimaker 2, and 1.75mm filament. *That's it!*

This requires no physical hardware add-ons or modifications. Just a few steps and software tweaks allows the Ultimaker 2 to print with 1.75mm filament.

TLDR

1. Set the tension tighter to grip 1.75mm filament.
2. Adjust the filament diameter in your slicer and in the on board settings.
3. Set retraction length down to 3mm in the slicer and in the on board settings.
4. When switching filaments, heat up the nozzle, remove the bowden tube from the extruder and cut off the blob so it doesn't get caught in the feeder when removing.

User Advisory

This tutorial is a "use at your own risk" type thing. Using 1.75mm on the Ultimaker isn't exactly recommended by them, the machine is designed for 2.85mm filament - The teflon tube and PTFE filament guide tube is designed for 2.85mm filament. There is a minor risk in using 1.75mm - The most damage that can happen is a jam/clog in the feeder. This can be fixed if something does go wrong but it won't totally break the machine.

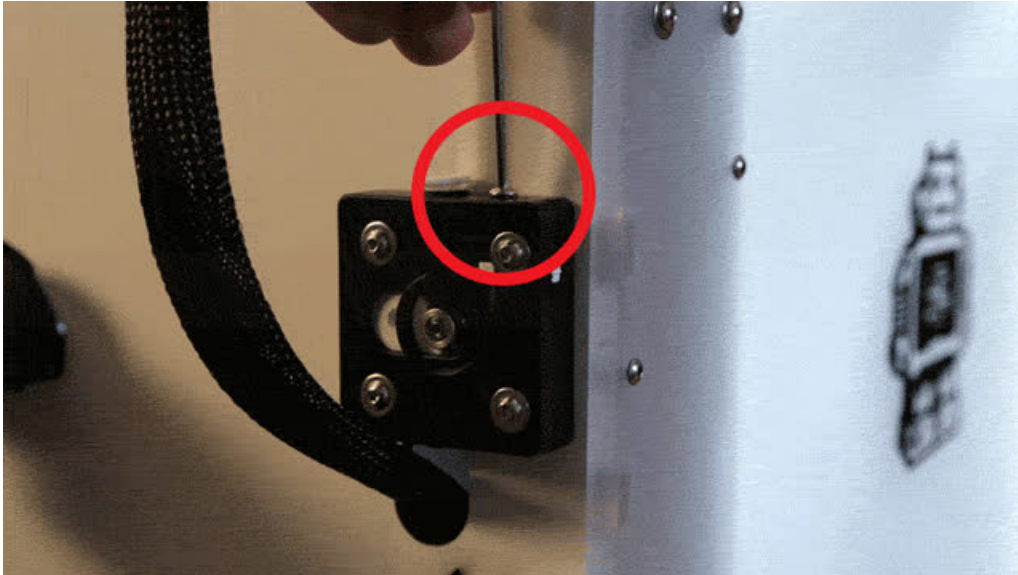
You are responsible for following these steps in order to prevent any clogging to the feeder. Missing a step, or following them out of order can result in a feeder clog.

Adjustments

Before We Begin

If you already have 2.85mm filament loaded, starts off by unloading it from the nozzle. To do this, go to the LCD menu and choose “Material” > “Change”.

Wait a minute while the nozzle is heated up. Once its ready, it'll automatically start turning the feeder wheel and retract the filament. When the filament has fully been retracted, go ahead and remove the spool from the spool holder.



Adjust Feeder Tension

In order properly guide 1.75mm filament into the feeder, you'll need to adjust the tension screw so that it's not too loose or too tight. To achieve this, insert a hex key into the hole on top of the feeder and turn it clockwise.

We found the sweet spot to be where the top of the hex screw is visible, as shown in the photo above.

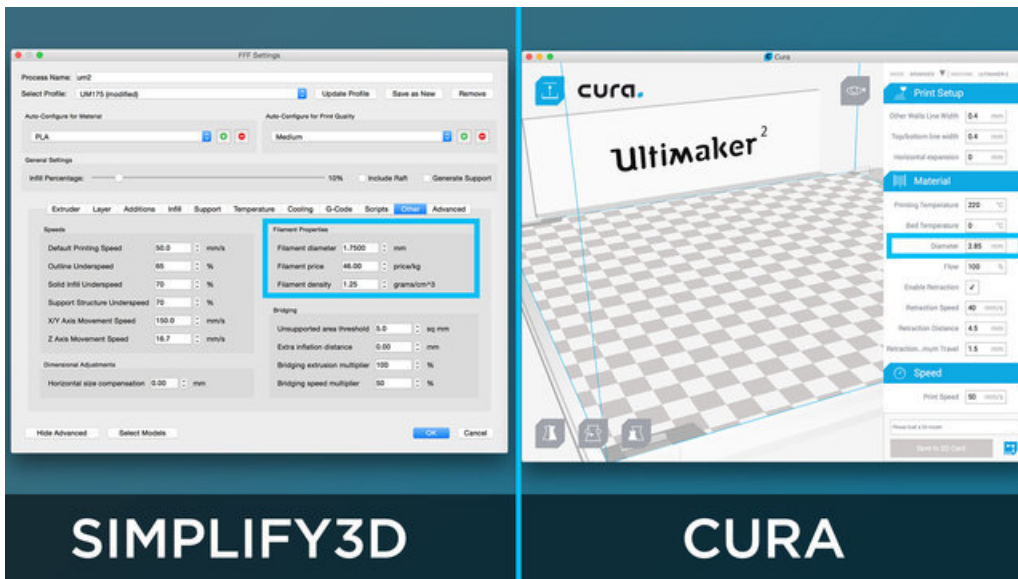
Avoid over tightening the screw - If large teeth marks are prevalent and dust/particals are noticable on the filament, the screw might be too tight.



Change Filament Diameter in Software

Let's set the filament diameter in the LCD menu. To do this, go under "Material" > "Settings" > "Customize" and select "Diameter".

Use the wheel dial to adjust the value down to 1.75mm, then push the dial to save the setting.



Adjust Settings in CURA and Simplify3D

Depending on which slicing software you're using, you may have to adjust your printing profile.

If you're using CURA (15.6.3 or higher) we found you do not have to change any of the settings.

If you're using Simplify 3D, change the filament diameter, under the "Other" tab, located in "Filament Properties". Set "Filament diameter" to 1.7500.



Retraction

The default retraction length of 4.5mm is too far and will quickly clog the nozzle. Set the retraction length to 3mm to compensate for the difference in e steps.

You will need to adjust this inside your slicer as well as on the Ultimaker's on board settings by going to Maintenance > Advanced > Retraction Settings > Retraction Length

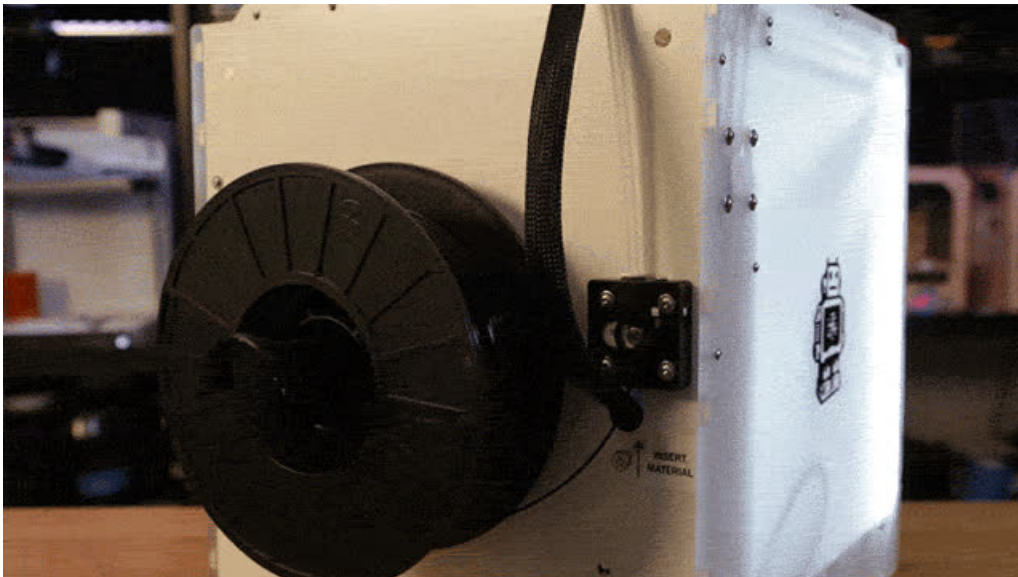
Loading Filament

Loading 1.75mm filament

When you unloaded the 2.85mm filament, the LCD should show "Remove Material" and two options, "Ready" and "Cancel".



Press the dial to select Ready. It'll then give you a message to insert the new material. "Insert new material from the backside of your machine above the arrow".



Press the dial to select "Ready". Now Insert the 1.75mm filament into the opening near the bottom of the feeder. The motor will slowly feed the filament through the guide tube.

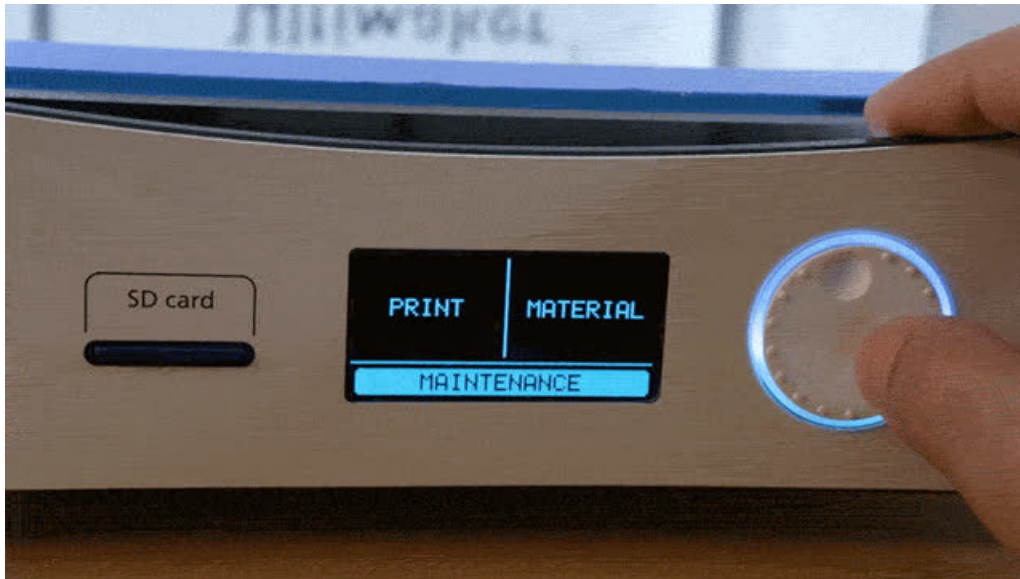
Once you see the filament pass through the feeder and inside the guide tube, press the dialer to select "Ready" - It'll then increase the speed of the feeder and push it through the extruder. The LCD will show "Forwarding material" - Give this a moment to purge some filament.

The LCD will show "Wait till material comes out the nozzle". Once purged, select "Ready" using the dialer. Now you can exit this section and return to the main menu.

You are now safe to print!

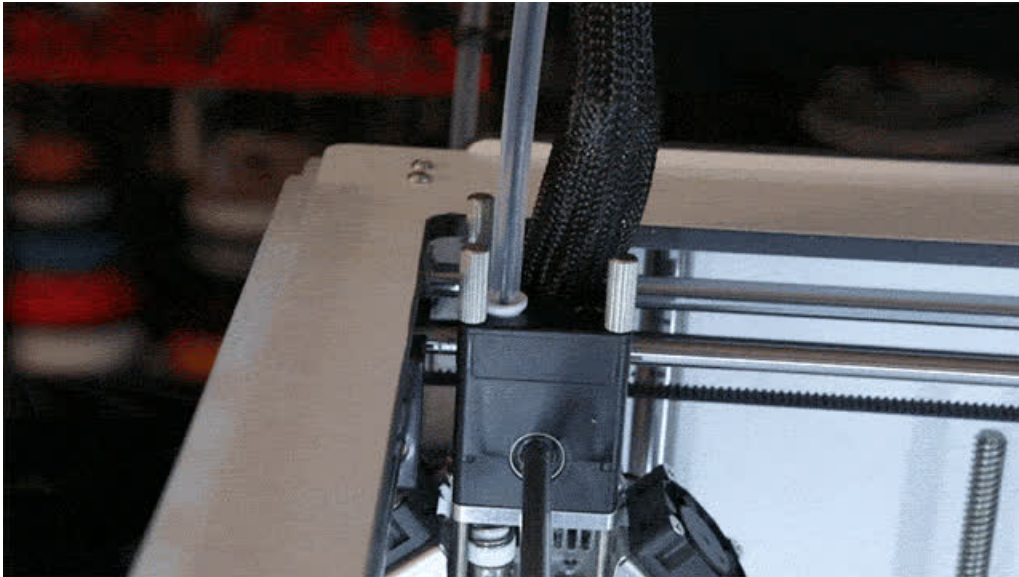
Unloading Filament

The order of steps when unloading filament is **really important** - changing 1.75mm must be done in a certain order or else you will get your filament jammed in the feeder.

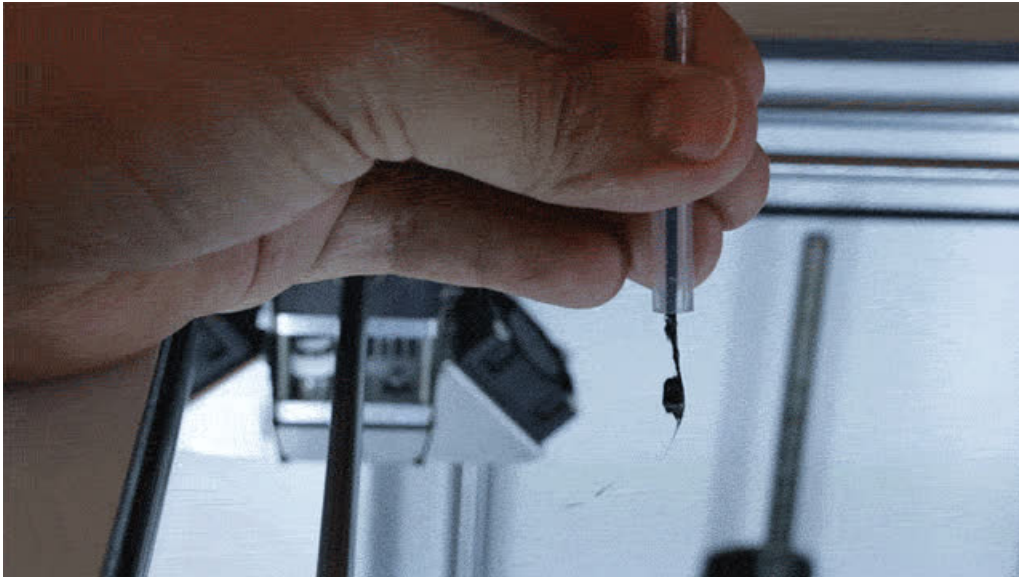


To begin the unloading process, go to menu "Maintenance" > "Advanced" and then select "Preheat Nozzle". Use the dial to set the temperature to 190c-220c and press the dial to enter.

Wait for the value to reach 220c and then go to the option, "Move Material".



Pull the filament guide tube out of the printerhead. The filament should go along with it and you'll notice a large blob at the end.

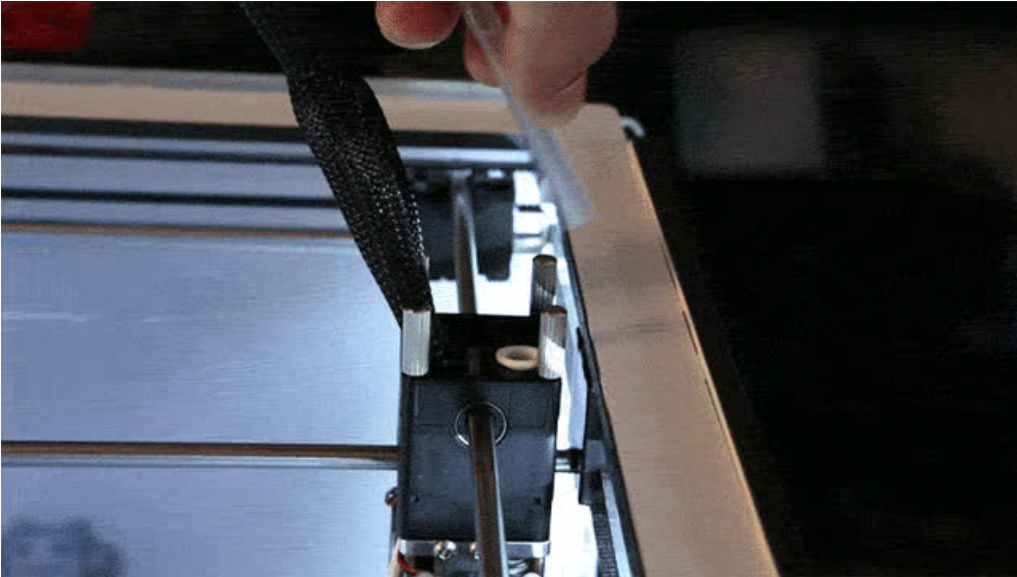


"Move Material" will allow you to use the dial to extrude/retract the material using the rotary dial - Turn clockwise to advance, counter-clock to reverse. We need to cut the blob away so that it doesn't get stuck in the feeder or filament guide tube. Use a pair scissors or wire cutters to chop that piece off, leaving a nice clean tip.

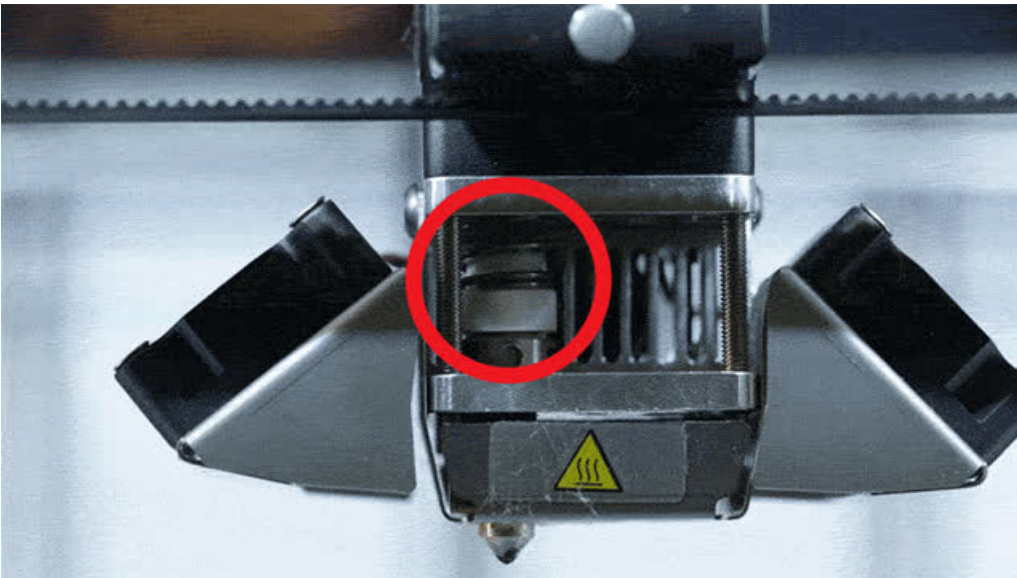
Caution, advisory warning!! If you select change filament before removing the blob, the nozzle will heat up and automatically retract the filament, along with that blob. If you do not remove it, that will get stuck in the feeder!!



Now we can reel in the filament until its back in filament guide tube - to fully remove it, select "Change Filament" its safe to do this now because the blob has been removed.

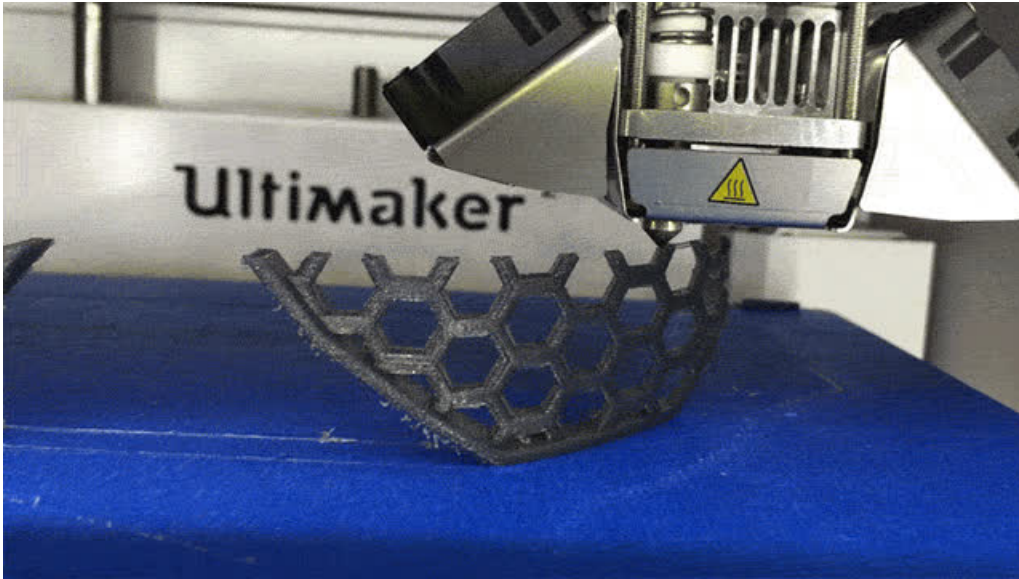


Once fast forward kicks in, make sure your spool doesn't get unwound. Remove the spool from the back and insert the filament guide tube back into the print head.



Ensure the filament guide tube is inserted all the way, passing through outer spring and teflon tube.

Now you can place a new spool on the back and follow the same process for inserting filament.



We been using 1.75mm filament on our Ultimaker 2 for hundreds of hours, kid you not!