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3D PRINTING

UNFINISHED LECTURE NOTES

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These notes are, by their very nature, unfinished, and they improve with every reader. If you spot an error, disagree with a framing, or want to add a source, a question, or a position, open a pull request at https://github.com/Quillstacks/LectureMaterial/tree/main/lecturenotes/notes_3dprinting. Every contribution is welcome.



TPU

2026-09-02 · *daring kiwi Kauz*

LOAD IT, PRINT IT, LOAD IT BACK.

TPU RUNS FROM THE EXTERNAL SPOOL HOLDER. TPU never goes through the AMS. The flexible filament coils inside the AMS hub instead of advancing down its Bowden path. You don't want to spend the time cleaning this. So this is a mishap to avoid and not to experience first-hand for a deeper learning experience. Because we can not use the AMS, we have to feed TPU directly into the extruder. This is a hands-on procedure that requires some care and attention.

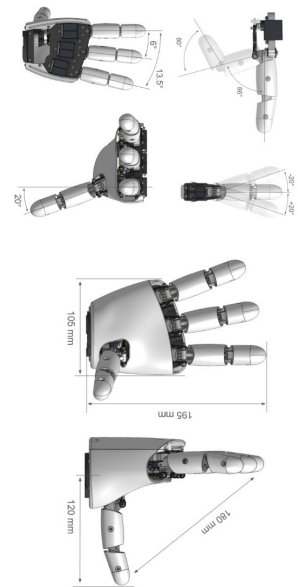
UNLOADING PLA

1. On the printer screen open the gear ⚙, then Filament, and unload whatever is currently sitting in the extruder.
2. Detach the tube on the back that runs from the AMS into the tool-head and park it clear of the feed path.

LOADING TPU

1. Hang the TPU spool on the external holder at the back of the printer (looks like a metal bar) and thread the loose end into the tube inlet the AMS tube used to occupy.
2. On the printer screen choose the nozzle 🖱 icon, then Feeding, choose Load. While the printer runs the load, push the filament slightly in by hand until the feed gears grab it and take over. Watch the nozzle purge until a clean strand of TPU comes out.
3. In Bambu Studio open the Device tab. Next to the four AMS slots sits an Ext slot for the external spool; select that one and set the filament type to TPU.

YOU ARE READY TO PRINT TPU.



WHY TPU? It is strong yet stays flexible after printing. We first used it for a robotic skin on the AmazingHand by Pollen Robotics, pictured above, making a gripper surface more adaptable and raising grip success rates.

ONE OBJECT PER PLATE FOR A NICER RESULT. TPU's elasticity stretches into a hair that drifts and tangles with movement between objects while printing. This messes up your surface and print quality.

UNLOADING TPU

1. On the printer screen choose the nozzle  icon, then Feeding, choose Unload. The printer heats the nozzle and retracts the filament.
2. Once the feed gears release it, pull the strand back out of the tube inlet by hand and wind it onto the spool. Stow away TPU in a sealed box immediately.

KEEP THE SPOOL DRY. TPU is hygroscopic. Off the holder, store the spool in a sealed box with desiccant. A spool left in open room air for a few days prints visibly worse.

LOADING PLA AGAIN

1. Reattach the AMS tube you parked earlier to the tube inlet on the toolhead and push it in until it seats.
2. On the printer screen open the gear , then Filament, select the AMS slot holding your PLA, and choose Load. The AMS feeds the filament down the Bowden path on its own; watch the nozzle purge until a clean strand of PLA comes out.
3. In Bambu Studio open the Device tab and select the AMS slot instead of the Ext slot, so the next job pulls from the AMS again.