Why are PETG supports so hard to remove?

Asked 3D Content Team
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Abstract. PETG bonds to itself, so its supports fuse across the default 0.2 mm gap. Raise Top Z distance 0.05 to 0.1 mm at a time, or print the interface in PLA at 0 mm.

Keywords: supports, petg

1 Why are PETG supports so hard to remove?

PETG bonds strongly to itself, so a PETG support roof can fuse to the part across the default 0.2 mm Top Z distance. Bambu Lab found PETG supports on a PETG part bond harder than PLA ones. Widen the gap 0.05 to 0.1 mm at a time, or print just the interface in PLA.

1.1 The number

Table 1. The number

Source and case	Setting	Value for PETG
Bambu Studio and OrcaSlicer, 0.20mm Standard process profiles	Top Z distance	0.2 mm, the same as for PLA: the gap is a process setting, not a filament one
PrusaSlicer, MK4S and CORE One 0.20mm profiles	Top contact Z distance	0.2 mm, the same as for PLA
UltiMaker Cura, UltiMaker Method X, UltiMaker PETG at 0.2 mm layers	Support Z Distance	0.2 mm, against 0.18 mm for UltiMaker PLA
UltiMaker Cura, UltiMaker S5 with an AA 0.4 print core, 0.2 mm layers	Support Z Distance	0.3 mm for UltiMaker PETG, 0.4 mm for generic PETG; the matching PLA profiles are the same
Polymaker, when supports are difficult to remove	Z distance	Raise it 0.05 to 0.1 mm per step
Polymaker, working range	Z distance	0.5 to 2 times the layer height
Bambu Studio and OrcaSlicer, PLA interface under a PETG part	Top Z distance, top interface spacing (suggested)	0 and 0
Bambu Lab Support for PLA/PETG as the interface	Top Z distance, top interface spacing	0 and 0

Slicer rows are read from the profile files and source code at release tags, with inheritance followed: Bambu Studio v02.09.01.70, OrcaSlicer v2.5.0, PrusaSlicer 2.9.7 (`PrusaResearch.ini`) and the quality profiles in UltiMaker Cura 5.14.0. The step and range are from Polymaker's support guide; the last row is from Bambu Lab's product page.

1.2 Why does PETG fuse to its own supports?

Because the support roof is the same plastic as the part, and PETG (glycol-modified polyethylene terephthalate) is made to bond to itself. Prusa's PETG guide lists "Good layer adhesion" as a strength and "Supports are hard to remove" as a drawback, and Polymaker calls PETG's layer adhesion excellent. Its support guide states the result: with too little Z distance, supports fuse to the model.

Two habits of PETG profiles make it worse. PETG prints hotter than PLA (polylactic acid), and Prusa says a higher temperature improves merging between layers. It also prints with far less part cooling, and OrcaSlicer's tooltip says a faster fan over support interfaces "reduces the layer binding strength between supports and the supported part."

1.3 Are PETG supports hard to remove?

Yes, when the support is PETG as well. Bambu Lab printed the same PETG model with PETG supports and with PLA supports. With PETG, "the bond between them is stronger," the supports were harder to remove and could leave marks. With PLA, they came off easily and left the surface clean.

1.4 What support Z distance should you use for PETG?

Start at your profile's value (0.2 mm on 0.2 mm layers) and raise Top Z distance 0.05 to 0.1 mm per test print. That is the step Polymaker gives when supports are difficult to remove. Its range tops out at 2 times the layer height, 0.4 mm on 0.2 mm layers. UltiMaker's Cura profiles for PETG sit inside that band: 0.2 mm on the Method X, 0.3 or 0.4 mm on the S5.

The cost is the supported face. Bambu Lab's support guide says a bigger top Z distance makes removal easier and the interface quality lower. If your slicer rounds the gap to whole layers, step one layer at a time (how each slicer rounds it).

The setting is "Top Z distance" in Bambu Studio and OrcaSlicer, "Top contact Z distance" in PrusaSlicer and "Support Top Distance" in UltiMaker Cura. With a PLA interface under PETG, it drops to 0 instead.

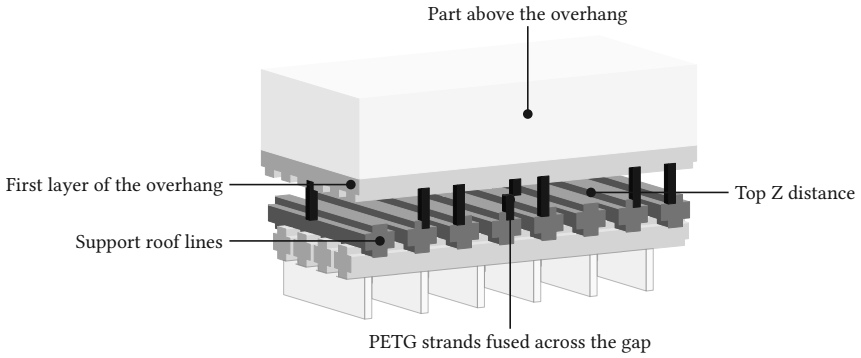


Figure 1. Across too small a gap, the PETG of the overhang's first layer fuses to the support roof below it.

1.5 What support settings make PETG supports easier to remove?

After the gap, three settings, each from the makers' own descriptions, plus a change of interface material (next section):

- **A sparser interface.** Polymaker says to lower interface density when removal is difficult, and suggests 50 to 75% for standard filaments. Cura's description says a higher Support Interface Density makes supports harder to remove. In Bambu Studio and OrcaSlicer the equivalent is "Top interface spacing", where 0 means solid; Bambu Studio ships 2 top interface layers at 0.5 mm spacing.
- **More fan on the interface.** OrcaSlicer has "Support interface fan speed" in the filament settings (Cooling, Part cooling fan). It ships at -1, which means off. In UltiMaker Cura, tick "Fan Speed Override" under Support and set "Supported Skin Fan Speed" (100% once on). Cura's description says a high speed there can make supports easier to remove. Bambu Studio and PrusaSlicer have no separate fan setting for support interfaces.
- **A wider XY gap.** Prusa says a bigger XY separation shrinks the contact area and makes supports easier to remove.

1.6 Can you use PLA as the support interface for PETG?

Yes, on a printer that can switch filaments mid-print. Bambu Lab says PLA and PETG "don't bond well to each other," and prints PLA only as the interface, on a PETG base. Pick PLA as the "Support/raft interface" in Bambu Studio or OrcaSlicer, and both offer to set Top Z distance and top interface spacing to 0. Bambu Lab's Support for PLA/PETG works the same way under either plastic, and UltiMaker lists Breakaway and PVA (polyvinyl alcohol) for its PETG. For which grades pair and Bambu Lab's temperatures, see support interface material.

1.7 How to check it on your own print

1. **See which filament prints the interface.** Bambu Studio: Process, Support, "Support/raft interface"; OrcaSlicer has it in the same tab under "Filament for Supports". "Default" means the part's own PETG. PrusaSlicer: Print Settings, Multiple Extruders, "Support material/raft interface extruder". UltiMaker Cura: "Support Interface Extruder".
2. **Read the gap.** Bambu Studio and OrcaSlicer: Process, Support, Advanced, "Top Z distance". PrusaSlicer: Print Settings, Support material, "Top contact Z distance". With a PETG interface, Bambu Lab says 0 leaves supports "really hard to remove".
3. **Scrub the sliced preview** to the top of a support. There should be an empty band before the overhang's first layer.
4. **Print a small overhang test three times.** Raise only the top gap, 0.05 to 0.1 mm each time, up to 2 times the layer height. Keep the smallest gap that snaps off cleanly.
5. **If it still welds,** add the interface fan (OrcaSlicer or Cura) or switch the interface to PLA or Support for PLA/PETG. For tools and safe technique, see how to remove 3D print supports for the general causes, why supports are hard to remove.

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