Which filament works best for a cold pull?

Asked 3D Content Team
Published October 15, 2026 · Last verified October 15, 2026

Abstract. Prusa's tests found PLA works best for a cold pull, at 85 to 100 °C. Bambu Lab adds PETG for high-flow nozzles; Creality favors nylon at 140 to 160 °C.

Keywords: pla, petg, nylon

1 Which filament works best for a cold pull?

PLA (polylactic acid), on most printers. Prusa's testing found PLA works best, pulled at 85 to 100 °C. Bambu Lab's tests named PLA and PETG (glycol-modified PET), with PETG preferred for high-flow nozzles. Creality calls nylon the gold standard, pulled at 140 to 160 °C, and UltiMaker recommends its polycarbonate cleaning filament.

1.1 The number

Rows come from the Prusa cold pull articles, the Bambu Lab H2D and X1C cold pull guides, UltiMaker's nozzle-cleaning and cleaning-filament articles, Creality's cold pull guide and E3D's Revo cleaning guidelines. TPU is thermoplastic polyurethane, a flexible filament; ABS and ASA are acrylonitrile butadiene styrene and acrylonitrile styrene acrylate. The makers disagree on nylon: Creality ranks it first, while Prusa and Bambu's H2D tests found materials other than PLA and PETG tear.

1.2 Can you cold pull with PLA?

Yes. It's the material in Prusa's procedure and in Bambu Lab's X1C example. Bambu gives PLA a 70 to 100 °C pull and suggests 70 °C the first time, to keep the filament from getting too soft and clogging the extruder.

PLA's weak point is snapping. Prusa says to pull "straight upwards, not sideways, or the filament can break inside." Bambu's H2D guide works by feel, in 5 °C steps. If the strand fights hard and breaks, raise the pull temperature. If it breaks with little resistance, drop the temperature instead.

1.3 Cold pull PLA vs PETG

On a standard-flow (SF) nozzle, Bambu Lab treats them as equal. On its high-flow nozzles, Bambu prefers PETG for its extensibility. On the dual-nozzle H2D, it also advises running an HF pull through the right extruder.

Table 1. The number

Material	Maker	Push or flush	Pull at	What the maker says
PLA	Prusa (MK3S, MK3.5, MK4, XL)	270 °C, keep pushing to about 170 °C	85 °C (MK3 family), 100 °C (MK4 manual), 80 °C (MK4 automatic)	"PLA works best for a cold pull"; other filaments "will either tear or melt too much"
PLA	Bambu Lab (X1C, H2D)	220 °C on the X1C	70 to 100 °C; 70 °C on a first try	One of two materials that "perform excellently" in Bambu's tests
PLA	UltiMaker (UltiMaker 2+)	200 to 220 °C	80 to 100 °C	"You can use PLA for this"
PLA	Creality	220 to 260 °C	70 to 100 °C	PLA "also works well for routine nozzle cleaning"
PETG	Bambu Lab (H2D)	250 °C	20 to 30 °C above glass transition	Preferred for high-flow (HF) nozzles "due to its better extensibility"
PETG	Creality	220 to 260 °C	120 °C	Pull "slightly higher" so it does not snap
Nylon	Creality	220 to 260 °C	140 to 160 °C	"Gold standard": it "forms a tough plug" and grips debris
Nylon	Bambu Lab (X1C)	not given	not given	Usable, alongside ABS and ASA
Nylon cleaning filament	E3D (Revo nozzles)	not given	not given	A recommended internal cleaning method
Cleaning filament (clear polycarbonate)	UltiMaker	240 to 260 °C	140 to 160 °C	"Most effective" for clearing print cores
Flexibles such as TPU	UltiMaker	none	none	The method calls for "non-flexible" materials

PETG needs a warmer pull. Bambu's rule is 20 to 30 °C above the glass transition. Its PETG Basic data sheet lists that transition at 69 °C, which puts the pull at 89 to 99 °C. Creality gives 120 °C. Start at Bambu's figure and step up 5 °C if the strand snaps.

1.4 Is nylon the best filament for atomic pulls?

Of these makers, only Creality says so. It calls nylon the gold standard because it "softens at higher temperatures, forms a tough plug," and E3D lists nylon cleaning filament first for its Revo nozzles. "Atomic method" is the procedure's old name; UltiMaker now calls it the hot and cold pull.

Bambu's X1C guide allows nylon, but its H2D tests found every material except PLA and PETG "prone to tearing, leaving residue inside the nozzle." Prusa reached the same verdict. If you use nylon, pull at Creality's 140 to 160 °C, not at PLA temperatures.

1.5 Cleaning filament or a cold pull?

Some makers decide for you: Prusa says Nozzle X must never get a cold pull, only cleaning filament. UltiMaker "strongly" recommends its cleaning filament on S series printers, where PLA "may not always give optimal results." Bambu asks you to follow the instructions on third-party cleaning filament. The trade-offs are on the cleaning filament vs cold pull page.

1.6 Why

A cold pull fills the nozzle with a plug that bonds to the residue as it cools, then tears the residue out with it. Bambu Lab sets the pull 20 to 30 °C above the material's glass transition and relies on the plastic's viscoelasticity to strip contaminants off the nozzle wall. For PLA Basic, with a 60 °C glass transition, that is 80 to 90 °C, which brackets Prusa's 85 °C.

The plug has to hold its molded tip as it comes out. Prusa found that other filaments "do not retain the tip as PLA does": they tear or melt too much. UltiMaker limits the method to non-flexible materials. Nylon and polycarbonate cleaning filament soften at higher temperatures, so Creality and UltiMaker pull them at 140 to 160 °C.

1.7 How to check it on your own print

- **Flush at the temperature of the hottest material the nozzle has seen.** Bambu Lab uses 250 °C after PLA, PETG, TPU or PVA (polyvinyl alcohol). It uses 290 °C after ABS, ASA, PA (polyamide, or nylon), PC (polycarbonate) or PET, and 320 °C after PPS (polyphenylene sulfide) or PPA (polyphthalamide). UltiMaker heats to 240 to 260 °C for ABS or cleaning filament.
- **Cut at least 30 cm of filament.** Both Prusa and Bambu Lab ask for that length.
- **Fill the nozzle as it cools.** Keep pushing PLA until it stops coming out, around 170 °C on Prusa's figures. Prusa notes the nozzle "has to be filled" for the pull to work.
- **Pull at your material's temperature, straight up.** PLA at 70 to 100 °C, PETG from 89 °C, nylon or cleaning filament at 140 to 160 °C. Exact settings per printer are on the cold pull temperature page.
- **Read the tip.** A clean pull shows a cone the shape of the nozzle. Black specks or burnt debris mean another pull. Bambu Lab says to repeat until the tip comes out clean.
- **Do one before loading TPU.** Bambu Lab recommends a cold pull before switching to TPU, which is sensitive to residue. See cold pull before printing TPU.

References

[1] Cold pull (MK3/S/+, MK2.5/S, MK3.5/S), Prusa Knowledge Base. https://help.prusa3d.com/article/cold-pull-mk3s-mk2-5s_2075. Accessed October 15, 2026.

[2] Cold pull (MK4/S, MK3.9/S, MK3.5/S, XL), Prusa Knowledge Base. https://help.prusa3d.com/article/cold-pull-mk4-s-mk3-9-s-xl-13702-17702_445071. Accessed October 15, 2026.

[3] H2D Nozzle Cold Pull Maintenance and Cleaning, Bambu Lab Wiki. https://wiki.bambulab.com/en/h2/maintenance/nozzl-cold-pull-maintenance-and-cleaning. Accessed October 15, 2026.

[4] H2S Nozzle Cold Pull Maintenance and Cleaning, Bambu Lab Wiki. https://wiki.bambulab.com/en/h2s/maintenance/nozzle-cold-pull-maintenance-and-cleaning. Accessed October 15, 2026.

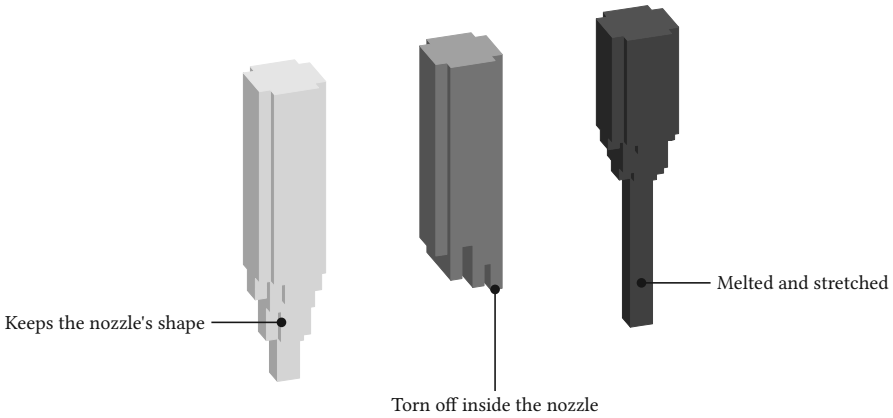


Figure 1. PLA keeps the tip it took from the nozzle, while Prusa found that other filaments tear or melt too much.

[5] What is Cold Pull and How to Perform It? (X1C), Bambu Lab Wiki. https://wiki.bambulab.com/en/x1/maintenance/what-is-cold-pull-and-how-to-perform-it. Accessed October 15, 2026.
[6] Bambu Filament Technical Data Sheet V3.0, PLA Basic. https://wiki.bambulab.com/filament-acc/abs-asa-pc/bambu_pla_basic_technical_data_sheet.pdf. Accessed October 15, 2026.
[7] Bambu Filament Technical Data Sheet V3.0, PETG Basic. https://store.bblcdn.com/s1/default/cb94589bf7994fdcbfa833badefae9cd/Bambu_PETG_Basic_Technical_Data_Sheet.pdf. Accessed October 15, 2026.
[8] UltiMaker 2+ - Clean the nozzle, UltiMaker Support. https://support.ultimaker.com/articles/Knowledge/1667337917259. Accessed October 15, 2026.
[9] UltiMaker cleaning filament, UltiMaker Support. https://support.ultimaker.com/articles/Knowledge/1667337959822. Accessed October 15, 2026.
[10] Clean the print core: How to perform a hot and cold pull, UltiMaker Support. https://support.ultimaker.com/articles/Knowledge/1667411136256. Accessed October 15, 2026.
[11] Cold Pull 3D Printing: The Fastest Way to Unclog Your Nozzle, Creality blog. https://www.creality.com/blog/cold-pull-3d-printing. Accessed October 15, 2026.
[12] Revo Nozzle Cleaning Guidelines, E3D (archived 4 December 2024). https://web.archive.org/web/20241204100946/https://e3d-online.com/pages/revo-nozzle-cleaning-guidelines. Accessed October 15, 2026.

Cite as: Asked 3D. “Which filament works best for a cold pull?.” October 15, 2026. https://asked3d.com/answers/cold-pull-filament. Last verified October 15, 2026.