# Why do my supports keep falling over?

Asked 3D Content Team
Published November 7, 2026 · Last verified November 7, 2026

**Abstract.** Tall, thin supports on a small foot get knocked loose. Widen the first layer (OrcaSlicer 2 mm, PrusaSlicer 3 mm by default), thicken branches, turn on Z hop.

**Keywords:** supports, slicer-settings, bed-adhesion

## 1 Why do my supports keep falling over?

Supports usually fall over because they are tall and thin on a small foot, so a nudge from the nozzle peels them off the bed or snaps a branch. Widen the support's first layer with First layer expansion (2 mm in OrcaSlicer and 3 mm in PrusaSlicer by default), thicken the branches and turn on Z hop.

### 1.1 The number

Every label and value is read at a release tag: Bambu Studio v02.09.01.70 with the "0.20mm Standard @BBL X1C" process profile for the Bambu Lab X1 Carbon and its `inherits` chain, OrcaSlicer v2.5.0's built-in defaults, PrusaSlicer version_2.9.7's built-in defaults with Prusa's "0.20mm SPEED" MK4S and CORE One profiles where noted, and UltiMaker Cura 5.14.0's base definition, which printer profiles can override.

Bambu Studio and OrcaSlicer hide most of these until Advanced mode is on. PrusaSlicer shows First layer expansion only in Expert mode.

### 1.2 Why do supports keep failing and tipping over?

A support is a column the nozzle builds upward from a small foot, and the taller and thinner it gets, the less sideways push it takes to lift that foot. Polymaker says tree supports are more prone to being knocked off the build plate, "especially if the base is narrow or the print is tall and wobbly."

Two slicers size the foot by that rule. OrcaSlicer's "Auto brim width" gives each tree branch a brim of half its height divided by its radius at the plate, at least 2 mm. Its wiki's example: a 40 mm tall branch with a 2 mm radius gets a 10 mm brim. Bambu Studio's auto expansion for Tree Slim, Strong and Hybrid grows with branch height and support speed, from 1 to 10 mm.

Tall normal supports fail the same way. Prusa calls its Grid style very stable. Snug, which keeps the overhang's shape, risks "lower stability of tall and thin support pillars". "With sheath around the support" adds a perimeter that makes them sturdier but harder to remove, and Prusa's MK4S and CORE One profiles ship Snug with the sheath off.

**Table 1.** The number

| What it does | Bambu Studio 2.9.1 | OrcaSlicer 2.5.0 | PrusaSlicer 2.9.7 | UltiMaker Cura 5.14.0 |
|---|---|---|---|---|
| Widens the support's first layer | "Initial layer expansion": Auto (-1) | "First layer expansion": 2 mm. Tree Slim, Strong and Hybrid: "Auto brim width" on | "First layer expansion": 3 mm | "Enable Inner Support Base": on, 1.2 mm. "Enable Outer Support Base": off. Tree "Initial Layer Diameter": 7.5 mm |
| Branch thickness | "Branch diameter": 2 mm (field default 5 mm) | "Tree support branch diameter": 2 mm for Organic, 5 mm for the other tree styles | "Branch Diameter": 2 mm | "Branch Diameter": 5 mm. "Trunk Diameter": 25 mm |
| Thickening toward the bed | "Branch diameter angle": 5° | "Branch Diameter Angle": 5° | "Branch Diameter Angle": 5° | "Branch Diameter Angle": 7° |
| Branch lean | "Branch angle": 45° (field default 40°) | "Tree support branch angle": 40°. "Preferred Branch Angle": 25° | "Maximum Branch Angle": 40°. "Preferred Branch Angle": 25° | "Maximum Branch Angle": 50°. "Preferred Branch Angle": two-thirds of that, 33.3° |
| Walls | "Support wall loops": Auto (-1), up to 2 | "Support wall loops": 0 (auto), up to 2 | "Branch Diameter with double walls": 3 mm (8 mm in the MK4S and CORE One profiles) | "Support Wall Line Count": 1 |
| Branch tip | "Tip diameter": 0.8 mm | "Tip Diameter": 0.8 mm | "Tip Diameter": 0.8 mm | "Tip Diameter": 0.8 mm |
| Support speed | "Support": 150 mm/s | "Support": 80 mm/s | "Support material": 60 mm/s (120 mm/s in the MK4S and CORE One profiles) | "Support Speed": follows Print Speed, 60 mm/s |

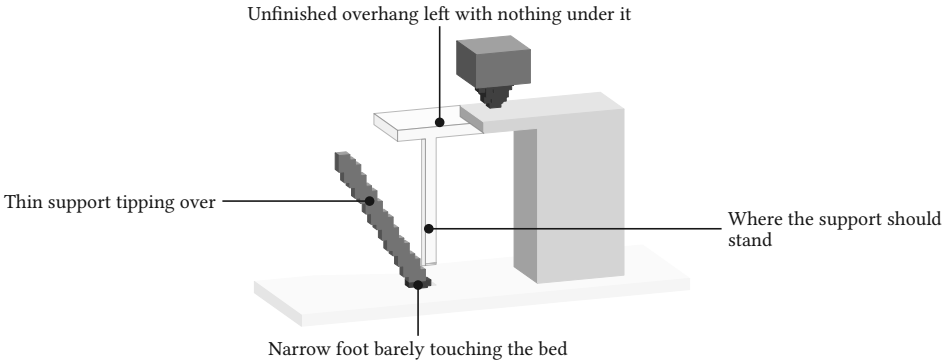



**Figure 1.** A tall, thin support standing on a narrow foot tips over before the overhang above it is finished, leaving that overhang with nothing underneath.

### 1.3 Why are my supports not sticking to the bed?

Their first layer is too small, or the plate is greasy. Raising the part's brim does not fix it: Bambu Studio keeps its brim off the support's first layer, and PrusaSlicer prints its brim around each object only. Use the support's own setting:

- **Bambu Studio:** "Initial layer expansion", in the Support tab under Advanced. Auto adds 2 mm around normal and organic supports. Type a value to set it yourself.
- **OrcaSlicer:** "First layer expansion" (2 mm) in the Support tab. For Tree Slim, Strong and Hybrid, keep "Auto brim width" on. To set the brim yourself, turn it off and use "Tree support brim width" (3 mm).
- **PrusaSlicer:** "First layer expansion" (3 mm) under Print Settings > Support material, in Expert mode.
- **UltiMaker Cura 5.14.0:** turn on "Enable Outer Support Base" to print a base around the support; its "Support Base Width" then follows Brim Width, 8 mm. "Enable Inner Support Base", on by default, fills only inside the support. Before 5.14.0 it was "Enable Support Brim", printed "underneath the support, not around it." Tree supports also aim for an "Initial Layer Diameter" of 7.5 mm at the plate, which Cura says improves bed adhesion.

Then wash the plate. Bambu Lab says sweat and oil from fingers cut its adhesion, and it cleans its textured PEI (polyetherimide) plate with detergent (when to wash a build plate).

### 1.4 Why do tree supports keep breaking mid print?

A branch snaps where it is thinnest or leans furthest. Each fix below costs material, time or easy removal:

- **Thicker branches.** Raise Branch diameter. Bambu Lab says a larger value makes stronger tree supports that are harder to remove. Prusa says thicker branches are sturdier.
- **A more upright lean.** Lower the branch angle and Preferred Branch Angle. PrusaSlicer, OrcaSlicer and Cura say a lower angle makes branches "more vertical and more stable", with less reach.
- **A wider bottom.** Keep Branch Diameter Angle above 0; at 0 a branch is one thickness from tip to bed. All four slicers say a bit of angle increases stability.
- **A thicker tip.** Bambu Studio says a thicker Tip diameter is stronger and sticks to the overhang better, but leaves heavier marks.
- **More walls.** Set Support wall loops to 2 in Bambu Studio or OrcaSlicer. Cura says adding a wall "can make support print more reliably". PrusaSlicer double-walls any branch wider than "Branch Diameter with double walls".
- **A filled base.** Bambu Lab's default tree base pattern is Hollow, with no infill, and Lightning has lower strength. For fragile filaments such as silk PLA (polylactic acid), Bambu Lab advises another Base pattern (Support > Advanced).
- **Slower support.** Cura says printing support infill slower improves stability. The X1 Carbon profile prints support at 150 mm/s.
- **Branch Smoothing Layers (Cura 5.14.0).** Off at 0. Cura's release notes say it makes branches harder to fall over. Its description warns that a high value can bend them too close to the model.

Stronger supports also come off harder; if they stick, see why supports are hard to remove.

### 1.5 Why does my 3D printer hit the supports?

Because the nozzle crosses them on travel moves, and a tall, wobbly branch tip sits in its path. Prusa says layer shifts usually happen when the extruder moves fast between objects and hits a curled-up piece of print.

- **Turn on Z hop.** The X1 Carbon profile ships "Z hop when retract" on at 0.4 mm, type Auto. Cura ships "Z Hop When Retracted" off, with a 1 mm height. Each slicer's version: what Z hop is.
- **Route travel around supports in Cura.** Tick "Avoid Supports When Traveling", which is off by default. It needs Combing Mode on and "Avoid Printed Parts When Traveling" ticked. Bambu Studio, OrcaSlicer and

PrusaSlicer have no such option: their Avoid crossing wall(s) and Avoid crossing perimeters settings detour around the part's walls.

- **Stiffen the branch** with the fixes above, so it stops swaying into the nozzle's path.

### 1.6 How to check it on your own print

1. **Look at the failed support.** A foot lifted off the plate is an adhesion problem. A branch snapped above the bed needs more thickness or less lean. Scuffed tips point to the nozzle.
2. **Preview the first layer in the slicer.** Each support's foot should be wider than the column above it. If not, raise the first-layer setting from the table.
3. **Find the branch settings.** Bambu Studio: Support > Tree Support, in Advanced mode. OrcaSlicer: Support > Tree supports. PrusaSlicer: Print Settings > Support material > Organic supports. Cura: Custom > Support.
4. **Change one setting per print,** in order: first-layer width, Branch diameter, then wall loops.
5. **Watch the travel moves over the tallest branches.** If the nozzle touches them, turn on Z hop before changing anything else.

## References


[1] Not all supports are created equal, Polymaker Wiki. https://wiki.polymaker.com/the-basics/fun-3d-printing-facts/not-all-supports-are-created-equal. Accessed November 7, 2026.

[2] Support, Bambu Lab Wiki. https://wiki.bambulab.com/en/software/bambu-studio/support. Accessed November 7, 2026.

[3] Bambu Lab Textured PEI Plate Cleaning Guide, Bambu Lab Wiki. https://wiki.bambulab.com/en/filament-acc/acc/pei-plate-clean-guide. Accessed November 7, 2026.

[4] src/libslic3r/PrintConfig.cpp at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/src/libslic3r/PrintConfig.cpp. Accessed November 7, 2026.

[5] src/slic3r/GUI/Tab.cpp at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/src/slic3r/GUI/Tab.cpp. Accessed November 7, 2026.

[6] resources/profiles/BBL/process/0.20mm Standard @BBL X1C.json at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/resources/profiles/BBL/process/0.20mm%20Standard%20%40BBL%20X1C.json. Accessed November 7, 2026.

[7] resources/profiles/BBL/process/fdm_process_single_common.json at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/resources/profiles/BBL/process/fdm_process_single_common.json. Accessed November 7, 2026.

[8] resources/profiles/BBL/process/fdm_process_common.json at v02.09.01.70 (the base every Bambu Lab process profile inherits), Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/resources/profiles/BBL/process/fdm_process_common.json. Accessed November 7, 2026.

[9] resources/profiles/BBL/machine/Bambu Lab X1 Carbon 0.4 nozzle.json at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/resources/profiles/BBL/machine/Bambu%20Lab%20X1%20Carbon%200.4%20nozzle.json. Accessed November 7, 2026.

[10] src/libslic3r/Support/SupportCommon.cpp at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/src/libslic3r/Support/SupportCommon.cpp. Accessed November 7, 2026.

[11] src/libslic3r/Support/TreeSupport.cpp at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/src/libslic3r/Support/TreeSupport.cpp. Accessed November 7, 2026.

[12] src/libslic3r/ExPolygon.cpp at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/src/libslic3r/ExPolygon.cpp. Accessed November 7, 2026.

[13] src/libslic3r/Brim.cpp at v02.09.01.70, Bambu Studio on GitHub. https://github.com/bambulab/BambuStudio/blob/v02.09.01.70/src/libslic3r/Brim.cpp. Accessed November 7, 2026.

[14] src/libslic3r/PrintConfig.cpp at v2.5.0, OrcaSlicer on GitHub. https://github.com/OrcaSlicer/OrcaSlicer/blob/v2.5.0/src/libslic3r/PrintConfig.cpp. Accessed November 7, 2026.

[15] src/slic3r/GUI/Tab.cpp at v2.5.0, OrcaSlicer on GitHub. https://github.com/OrcaSlicer/OrcaSlicer/blob/v2.5.0/src/slic3r/GUI/Tab.cpp. Accessed November 7, 2026.

[16] src/slic3r/GUI/ConfigManipulation.cpp at v2.5.0, OrcaSlicer on GitHub. https://github.com/OrcaSlicer/OrcaSlicer/blob/v2.5.0/src/slic3r/GUI/ConfigManipulation.cpp. Accessed November 7, 2026.

[17] src/libslic3r/Support/TreeSupport.cpp at v2.5.0, OrcaSlicer on GitHub. https://github.com/OrcaSlicer/OrcaSlicer/blob/v2.5.0/src/libslic3r/Support/TreeSupport.cpp. Accessed November 7, 2026.

[18] Tree supports (support settings), OrcaSlicer Wiki. https://www.orcaslicer.com/wiki/print_settings/support/support_settings_tree. Accessed November 7, 2026.

[19] src/libslic3r/PrintConfig.cpp at version_2.9.7, PrusaSlicer on GitHub. https://github.com/prusa3d/PrusaSlicer/blob/version_2.9.7/src/libslic3r/PrintConfig.cpp. Accessed November 7, 2026.

[20] src/slic3r/GUI/Tab.cpp at version_2.9.7, PrusaSlicer on GitHub. https://github.com/prusa3d/PrusaSlicer/blob/version_2.9.7/src/slic3r/GUI/Tab.cpp. Accessed November 7, 2026.

[21] src/libslic3r/Support/SupportCommon.cpp at version_2.9.7, PrusaSlicer on GitHub. https://github.com/prusa3d/PrusaSlicer/blob/version_2.9.7/src/libslic3r/Support/SupportCommon.cpp. Accessed November 7, 2026.

[22] resources/profiles/PrusaResearch.ini at version_2.9.7, PrusaSlicer on GitHub. https://github.com/prusa3d/PrusaSlicer/blob/version_2.9.7/resources/profiles/PrusaResearch.ini. Accessed November 7, 2026.

[23] Organic supports, Prusa Knowledge Base. https://help.prusa3d.com/article/organic-supports_480131. Accessed November 7, 2026.

[24] Support material, Prusa Knowledge Base. https://help.prusa3d.com/article/support-material_1698. Accessed November 7, 2026.

[25] Crash detection, Prusa Knowledge Base. https://help.prusa3d.com/article/crash-detection_2100. Accessed November 7, 2026.

[26] resources/definitions/fdmprinter.def.json at 5.14.0, UltiMaker Cura on GitHub. https://github.com/Ultimaker/Cura/blob/5.14.0/resources/definitions/fdmprinter.def.json. Accessed November 7, 2026.

[27] resources/definitions/fdmprinter.def.json at 5.13.0, UltiMaker Cura on GitHub. https://github.com/Ultimaker/Cura/blob/5.13.0/resources/definitions/fdmprinter.def.json. Accessed November 7, 2026.

[28] resources/texts/change_log.txt at 5.14.0, UltiMaker Cura on GitHub. https://github.com/Ultimaker/Cura/blob/5.14.0/resources/texts/change_log.txt. Accessed November 7, 2026.

**Cite as:** Asked 3D. “Why do my supports keep falling over?.” November 7, 2026. https://asked3d.com/answers/supports-keep-falling-over. Last verified November 7, 2026.