Printing Recommendations for Filament PM PPJet

PPJet is polypropylene — a material commonly used for food packaging, laboratory ware, and chemically resistant tanks. In 3D printing, it is valued for its combination of toughness, chemical resistance, and the lowest density among common printing materials. It is suitable for parts that need to flex without cracking, containers exposed to chemicals, and prototypes of parts intended for series injection molding from PP. It prints well with the correct adhesive — it does not adhere to standard PP sheets at all.

What to expect from this profile — and what not to expect

This is not a universal profile for all geometries. It is a starting point tuned for specific hardware (see below). For each part, assess whether PPJet is suitable and, if necessary, adjust the settings to suit the specific geometry.

Expect: toughness and resistance to repeated bending, chemical resistance to acids and bases, zero water absorption, and the lowest density among common materials (0.89 g/cm³) — PPJet parts are significantly lighter than identical parts made from PLA or PETG.

Do not expect dimensional accuracy. PP has shrinkage that is an order of magnitude higher than common materials, and the part continues cooling long after printing is complete. Warping of large flat parts is a material property, not a setting error. For dimensionally critical and large flat parts, choose PLA or PETG.

⚠ Golden Rules for Successful PPJet Printing ⚠

Before starting a print, go through these rules. They determine whether you get a functional part or one that comes off the build plate within the first minute.

1. Adhesion: PP will not stick without the correct preparation. Polypropylene has a non-polar surface and does not adhere to PEI, glass, or standard printing plates. Glue sticks and hairspray do not work. Magigoo PP applied to a cold, degreased build plate has proven reliable. Other options also work — PP adhesive tape or an Ultem sheet, i.e. a build plate made from the same or a related material. Always enable a brim for larger parts.

2. Enclosed chamber with no drafts. Cold air flowing around the object is the most common cause of lifted corners. Keep both the door and top cover closed throughout the entire print — with large parts, even a brief opening can be enough to cause detachment. Do not place the printer near a window or in a draft.

3. Warping is part of the material. PP shrinkage is orders of magnitude higher than that of other common materials and cannot be eliminated through slicer settings. Manage it through design and preparation: rounded corners instead of sharp ones, a larger brim, and splitting large surfaces into smaller parts.

4. Print thin and tall parts in pairs. This is a rule you may not know from other materials. If a layer has a small area, it prints in a few seconds and the nozzle returns before the material has had time to solidify — the detail starts to deform. Place two parts next to each other on the build plate, or add a thin sacrificial tower next to the part. The nozzle then moves away between layers and the material has time to set.

5. Feeding and flow. PPJet is flexible, but sufficiently stiff for normal feeding, including through a side feeder with a PTFE tube — usually no changes are necessary. If the filament starts tangling in the feeder or extrusion stops being smooth, reduce the feeder pressure. If the lines in the first layer do not join and gaps remain between them, increase the extrusion multiplier from 1.0 up to 1.1.

6. PPJet does not need drying. Unlike PA, TPU, or PETG, polypropylene practically does not absorb moisture from the air. A dryer is not needed. After transporting a spool from a cold environment, let it acclimatize in the room for several hours before opening the bag — this prevents condensation on the filament surface. If your print strings, moisture is not the cause.

Key Printing Parameters

The table summarizes the basic parameters common to both profiles — the settings are identical for Prusa CORE One and Bambu Lab P1S. Exact speeds, retraction, and flow can be found directly in the downloaded profile — we continuously fine-tune them based on practical experience, so the current values are always in the profile itself.

Parameter	Value
Nozzle temperature	225 °C
Build plate temperature	80 °C
Filament drying	Not required
Chamber	Enclosed, no drafts
Adhesive	Magigoo PP
Brim	5–10 mm, more for larger parts
Part cooling	50–100%
Max. volumetric speed	5 mm^3/s
Extrusion multiplier	1.0 (up to 1.1 if needed)

A build plate temperature of 80 °C is a verified and reliable value. With Magigoo PP, PPJet also adheres at lower temperatures, but we recommend sticking to established practice in the 80–100 °C range — lower values are the lower extreme without a safety margin.

Every Part Deserves a Small Adjustment

The profile is a reliable starting point, not dogma. Some parameters may need adjustment for a specific part:

- Large flat parts: increase the brim, round the corners in the model, and consider splitting the part for very large surfaces.
- Thin and tall features: chimneys, pins, and posts should be printed in pairs or with a sacrificial tower.
- Residual strings between parts: with PP this is a property of the melt, not moisture. A higher retraction speed and a random seam position can help; the remaining material can be wiped off. Orient the part so that travel moves do not cross visible surfaces.
- Supports: PP bonds to itself, so supports are harder to remove than with other materials — increase the gap above the supports.
- Dimensional accuracy: print a 20×20×20 mm calibration cube, measure it only after cooling, and adjust the shrinkage compensation.

For production batches, always print and verify one part first, and only then start the full print.

Summary

PPJet is a tough, chemically resistant, and very lightweight material for functional parts that need to flex without cracking — not for dimensionally accurate and large flat parts. If you follow the five principles, you can get reliable prints from it:

- Magigoo PP, PP tape, or Ultem — it does not adhere to a standard PP plate.
- An enclosed chamber with no drafts throughout the entire print.
- Brim as standard; rounded corners for larger parts.
- Thin and tall parts printed in pairs — give the material time to solidify.
- No drying — PPJet does not absorb moisture.

One final tip: every profile is a living document. If you find a better combination of parameters for your application, let us know — we are happy to improve the profiles.