

Printing recommendations Filament PM PC/ABS

PC/ABS is a top-notch technical material combining the temperature resistance and rigidity of polycarbonate with the toughness of ABS. It is used for mechanically and thermally stressed parts – electronics housings, automotive parts, bumpers, clamps, under-hood holders. Printing from PC/ABS is one of the more demanding disciplines, but with a tuned profile you will get extremely strong and thermally stable prints.

What to expect from this profile – and what not to

This is not a beginner filament, and our profile does not make PC/ABS an easy material. It is a starting point tuned for a specific hardware combination (see below) that gives reliable results on functional engineering parts. **It is not a universal profile for all geometries** - for each print, you need to consider whether a given model is suitable for PC/ABS, and adjust the settings accordingly for the specific part.

Expect from this profile: extreme mechanical strength, high impact resistance, temperature resistance.

Don't expect: that PC/ABS will print for you without preparation. It requires dry filament, a preheated chamber, the right glue and, most importantly, patience while cooling. Do not open the printer door immediately after printing is complete.

⚠ Golden rules for successful PC/ABS printing ⚠

Before you start printing, review these rules. They apply to all PC/ABS filaments and following them will determine whether you get a solid, functional part or a part with microcracks and cracked walls.

1. Drying is an absolute necessity, not an option

PC/ABS quickly absorbs moisture from the air. Moisture in the hotend causes chemical degradation of the material, bubbles in the walls, spattering, loss of gloss and a dramatic decrease in part strength.

Procedure: Always dry the filament at 80 °C for at least 8 hours before printing. For printing from a closed and dry box (e.g. AMS, dry box with silica gel) is recommended, especially for long prints.

2. The chamber must be preheated

PC/ABS needs a stable warm environment from the first layer. A cold start on large parts means warping in the corners and peeling off the substrate.

Procedure: For printers with an actively heated chamber, let it warm up for **at least 15 minutes before printing**. For printers with a passive chamber (P1S, Prusa Core One and others), it is necessary to allow for a longer time (30+ minutes) - let the bed preheat with the door closed.

3. Adhesion: glue as a separator

PC/ABS has such a strong adhesion to bare PEI that it can tear pieces of the surface finish off the sheet during shrinkage. The adhesive paradoxically serves as a separator here – protecting the sheet.

Procedure: Use Magigoo PC – a specially formulated separator for PC and PC blend materials on **a cold pad**. For large parts, turn the brim on at least 5-10 mm. If the part is peeling, degrease the IPA sheet before applying the adhesive.

4. After printing, let the part cool down slowly

This is a common mistake that kills the strength of the part. PC/ABS has a high glass transition temperature and rapid cooling causes internal stress, microcracks and cracking between the layers.

Procedure: Never open the printer door immediately after printing! Let the part cool slowly in a closed chamber until the bed temperature drops below 40°C. This takes longer for large parts. Patience pays off.

5. AUX fan must always be turned off

The side fan on printers creates an asymmetrical flow of cool air from one side. With PC/ABS this will cause some part warping and tearing. **AUX fan: always 0%.** No exceptions.

For which printers is the profile debugged?

We offer profiles for two platforms that we have tested in practice. Both give reliable results, each has its own strengths.

System 1: Bambu Lab H2S (0.6mm hardened nozzle)

The choice for maximum mechanical strength, production printing and large functional parts. The actively heated chamber gives PC/ABS ideal conditions.

- **Benefits:** Actively heated chamber creates a homogeneous hot environment in which PC/ABS loses its tendency to curl. You can print even large models with confidence.
- **0.6mm hardened nozzle:** Wider material extrusion carries more thermal energy, perfectly melts the previous layer and creates incredibly thick walls. Higher impact strength and Z-cohesion, faster printing of bulky parts.
- **Limitations:** Larger nozzle diameter casts small micro-details and sharp inner corners.
- **Pad:** we recommend Bambu Engineering Plate with Magigoo PC.

System 2: Prusa Core One (0.4mm brass nozzle)

The choice for precise technical parts with details and tolerances.

- **Advantages:** Passive chamber with high thermal stability gives predictable and repeatable results.
- **0.4mm Brass Nozzle:** Brass has excellent thermal conductivity. For non-abrasive PC/ABS, it is the right choice and provides more detailed prints than the 0.6mm nozzle.
- **Limitations:** Passive chamber requires longer preheating. For large parts (over 150 mm) the risk of warping is higher.
- **Pad:** recommended Prusa Satin plate with Magigoo PC.

Key printing parameters

The following table summarizes the basic parameters that apply to both profiles. The exact speeds, flow rates and other detailed settings can be found directly in the downloaded profile - we are continuously fine-tuning them based on experience, so you always have the current values in the profile itself.

Parameter	Value
Nozzle temperature	270–300°C
Pad temperature	100–110°C
Filament drying	80°C / 8+ hours

Parameter	Value
Adhesive	Magigoo PC
Brim	5–10mm
Chamber preheating	at least 15 minutes
Cooling after printing	in a closed chamber below 40 °C
AUX fan	0%

Every piece deserves a little tweaking

This profile is not and cannot be perfect for every geometry. It is a reliable starting point - some parameters may need to be adjusted for a specific part. The most common minor adjustments that you can make yourself:

- **Large flat parts:** increase brim, extend chamber preheat, consider reducing outer wall speed.
- **Small detailed parts:** reduce the speed of the outer walls for better surface finish and definition.
- **Parts with large overhangs:** you can temporarily increase the overhang fan slightly, but only for a specific print - we will leave the default value in the regular profile.
- **Parts requiring dimensional accuracy:** print a 20×20×20 mm calibration cube, measure with a caliper, or adjust the size % (shrinkage compensation).

If you are printing a production run of the same part, we recommend printing a single test piece, verifying dimensions and functionality, and only then starting a full print.

Summary

PC/ABS is a top-notch technical material for mechanically and thermally stressed parts. It is not a filament for beginners. However, if you follow five things, you will get very strong and temperature-resistant prints from it:

- **Filament dried at 80 °C for at least 8 hours**
- **Chamber preheated** before printing begins (15 min active, 30+ min passive).
- **Glue as a separator** onto a cold pad, never directly onto bare PEI.
- **After printing, let it cool slowly** in a closed chamber below 40 °C.
- **AUX fan off** at 0%. Always.

With our profiles and following these principles, you will get extremely strong, thermally stable prints from PC/ABS. Electronics housings, automotive parts, technical prototypes.

One last tip: each profile is a living document. If you have experience with specific part types or find a better combination of parameters for your application, let us know. We are happy to improve the profiles.