

Material: igumid P190-PF

1. General

The material igumid P190-PF, developed by igus®, was developed and tested solely for the “Fused-Deposition-Modeling” (FDM) manufacturing method.

igumid P190-PF is relatively easy to process and can be used on most 3D-Printers. Since it is an abrasive, carbon fibre reinforced material, the mechanical components which contact the material have to be protected against wear.

2) Processing parameters

The optimum processing parameters depend on the various print parameters and on the 3D printers that are used. Therefore, only ranges of values can be specified here (see the figure on page. 2):

- (1) Nozzle temperature: 260 - 280 °C
- (2) Nozzle diameter: 0.4 - 0.6 mm (the fibre content might lead to blockages in the nozzle when using 0.4 mm nozzles)
- (3) Bed temperature: 60 - 80 °C
- (4) Print speed: 20 - 60 mm/s
- (5) Bottom layer speed: 20 - 30 mm/s
- (6) Layer height: 0.2 - 0.3 mm
- (7) Shell-thickness (6.1) to nozzle-diameter (6.2) ratio: 1.1 - 1.2
- (8) Part cooling: 20 - 30 % for optimum mechanical properties, higher is possible
- (9) Bed surface:
 - glass
 - igus adhesive for tribofilament® (PF-ADHESIVE-01)

3) Further processing instructions:

When feeding the filament, the bends should not be too tight, i.e. the radius should not be less than 40 mm. Extruder gear and nozzle should be protected against wear, i.e. by using hardened metal or ruby/sapphire components.

Upon processing, ensure good ventilation of the surrounding room. Alternatively, a 3D printer with integrated exhaust air filtration can be used. In addition, appropriate protective equipment should be used when handling the hot molten mass.

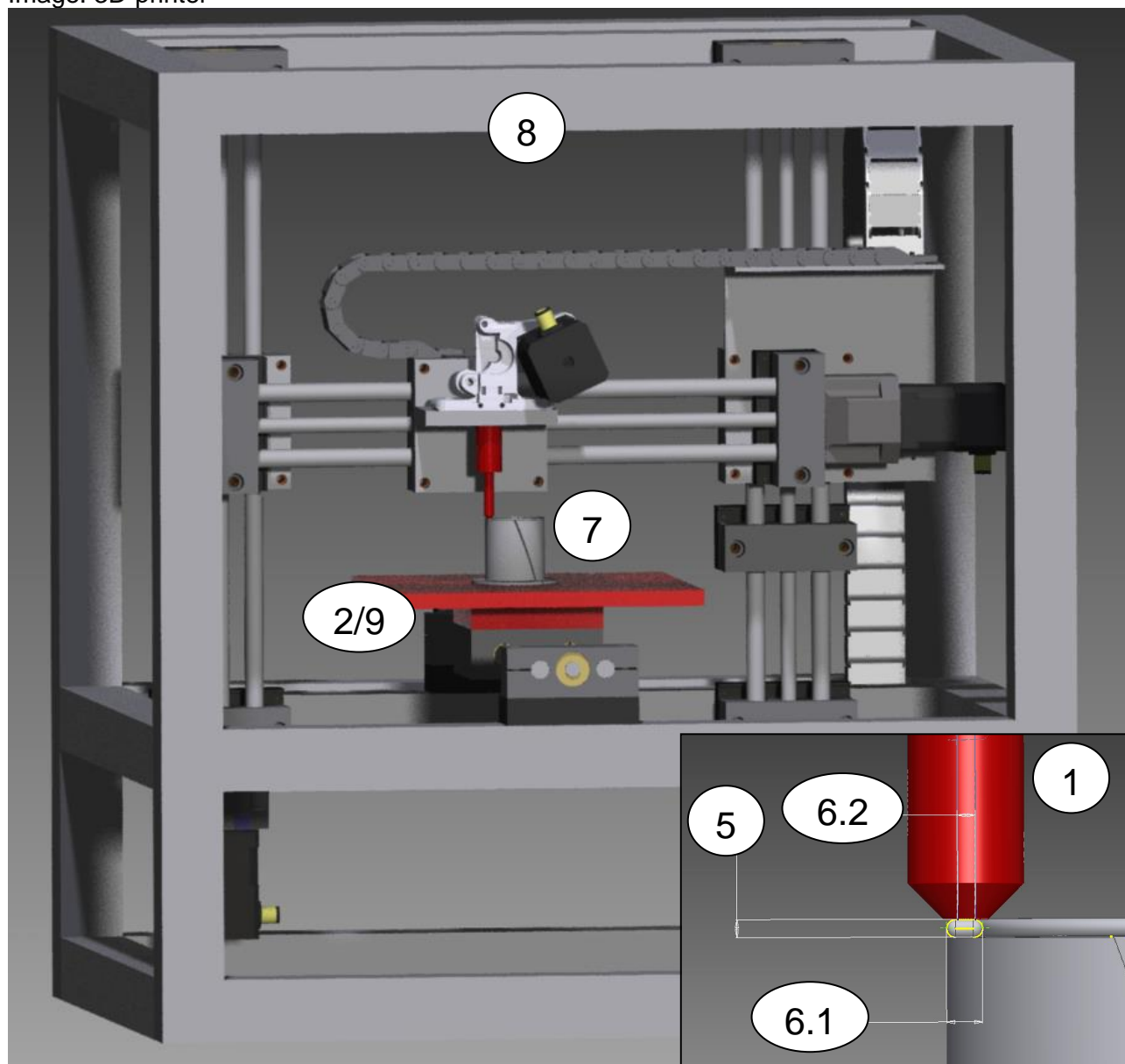
The material should not be heated beyond 300 °C. When burning the material, hazardous decomposition products are generated.

Protective gloves should be worn for handling. The formation of dust (e.g. by grinding) must be avoided urgently. Based on the supplier's experience and the information provided by the supplier, the product has no adverse health effects if properly handled and used in accordance with the intended purpose.

4) Storage:

The filament should be stored dryly and carefully protected from moisture. If needed, it can be dried at around 100 °C for at least 4 - 6 hours.

Image: 3D-printer



4) FAQ

Where do I find the processing instructions for igumid P190-PF?

Following the link on our website: <https://www.igus.eu/product/21034>

Do I need a heated bed (platform) on my printer?

Yes, for most of the tribofilament® materials a heated bed is necessary, only iglidur® i150 can be processed without heated buildplate (then igus® adhesive film is needed).

Does igus® offer a filament diameter size of 2,85 mm?

The 3 mm tribofilament® is designed to be suitable for printers requiring 2,85 mm.

Where can I get accessories for printing with igus® filaments?

Following the link on our website: <https://www.igus.eu/3d-print-material/3d-print-material-accessories>

Which tribofilament® is the easiest to process?

iglidur® I150 is by far the most easily to process tribofilament®. It can even be processed without heated buildplate (then igus adhesive foil is necessary).

iglidur® I180, I190, igumid P150, P190 are suited for more advanced users, because more conditions need to be considered (e.g. enclosed printer, switched off fan).

iglidur® J260 is suited for experts; since it is harder to process.

iglidur® RW370 and A350 require a special high temperature 3D printer for processing.

The printed part does not stick to the print bed, what can I do?

1. Check the distance between nozzle and print bed. Re-level the platform when necessary.
2. Did you use the correct print surface? Is the printer enclosed? Check page 1, point 2
3. Increase bed-temperature
4. Try using "Brim" as the adhesion type in your slicer software (normally used for large parts)

The adhesion between print bed and part is too high. How to reduce the adhesion?

Reduce the print-bed-temperature, check that the distance between nozzle and print bed isn't too close

Does a running fan (part-cooling) help with the print quality?

All iglidur® tribofilaments® are preferably printed with switched off fan, unless noted otherwise above.

The layer adhesion or strength at my part is very bad. How can this be improved?

Make sure the fan is off (part cooling) and the printer is enclosed, so that the hot air stays inside the printer.

How can I avoid/ cope with material accumulation on the nozzle?

With large volumetric print jobs, material can accumulate at the nozzle. One way to reduce the issue is to decrease the material infill density to ~ 80-90% and adjust material flow at the printer depending on the print layer appearance. Furthermore, the application of a prime tower as a wipe barrier during every layer can be preferable in some cases.