Are 3D printed parts safe for food-contact appliances?

Asked 3D Content Team
Published September 23, 2026 · Last verified September 23, 2026

Abstract. What Prusa Research, FDA 21 CFR 177.1630 and EU Regulation 10/2011 say about printed parts that touch food: layer grooves, nozzle lead, uncertified pigments and coatings.

Keywords: replacement-parts, food-safety, home-repair

1 Are 3D printed parts safe for food-contact appliances?

Not as printed, on the filament makers' own guidance. Prusa Research does not recommend 3D prints as food containers: the grooves between layers hold residue and bacteria, a brass nozzle wears and may carry lead, and the pigments are uncertified. A part that never touches food, such as a rack clip or a shelf bracket, sidesteps the question.

1.1 The three conditions

A printed part touches food safely only if the surface, the nozzle and the material all pass. Each fails for a different reason.

Table 1. The three conditions

Condition	What fails	What the source says
Surface	Layer grooves	Prusa Knowledge Base: the grooves between layers "are a seedbed for bacteria as they are almost impossible to clean properly, and will hold residue"
Nozzle	Brass, and hardened steel	Prusa blog: brass and even hardened steel nozzles "might cause a health risk due to lead present in the alloy"; use stainless steel
Material	Uncertified filament	Prusa blog: "we didn't acquire any certification"; a colorant maker confirmed 22 PLA and PETG colors should be safe, for personal use only

The material row is the least of the three. Prusa describes PLA and PETG as practically food-safe polymers and PETG as frequently used in the food industry. Its PETG page still says it does not recommend PETG or any other filament for anything in direct contact with food.

1.2 What the regulations cover

The regulations cover the polymer, not the print. In the United States, 21 CFR Part 177 lists polymers that may be used in contact with food. Section 177.1630 covers polyethylene phthalate polymers, the PET family PETG belongs to. Its conditions include holding alcoholic beverages of no more than 50 percent alcohol by volume, with an extraction test run at 120 °F (49 °C) for 24 hours. In the European Union, Regulation 10/2011 sets the rules for plastic materials and articles intended to come into contact with food. Article 15 requires a written declaration of compliance at every stage of marketing except retail.

A filament maker can hold that declaration for the raw polymer. The printed part is a new article made on a machine the regulation never saw, with a surface the polymer maker did not make. That is why Prusa's statement stops at the pigment and asks buyers to keep such prints for personal use.

1.3 What happens in the grooves

Prusa Research ran the test. Untreated prints exposed to milk grew visible colonies of bacteria and fungi after 14 days. Samples coated in epoxy showed no growth. The blog's conclusion is that fused filament fabrication "produces objects containing gaps between the layers" and that those gaps "can become the breeding ground for the growth of bacteria and fungi."

A cookie cutter survives a few uses because the residue is dry and the part is disposable. A blender coupling, a juicer screen or a yogurt-maker lid sees wet food daily and cannot be cleaned to the bottom of the grooves.

1.4 Coatings, and where they stop

A food-grade epoxy fills the grooves. Prusa's blog names a resin certified to EU Regulation 10/2011 for the job and its Knowledge Base lists food-safe certified epoxy coatings as the post-processing route.

The coating sets a new limit. Prusa states that coated prints are unsuitable for chopping boards because they scratch. It rules them out for anything exposed to heat: hot soups, microwave ovens or dishwashers. So a coated part cannot go through the dishwasher that a food-contact appliance part usually needs to survive. Which materials survive the rinse without a coating is on which filament survives a dishwasher.

1.5 Which appliance parts touch food

Most appliance repairs never raise the question. Sort the part by contact before choosing a material.

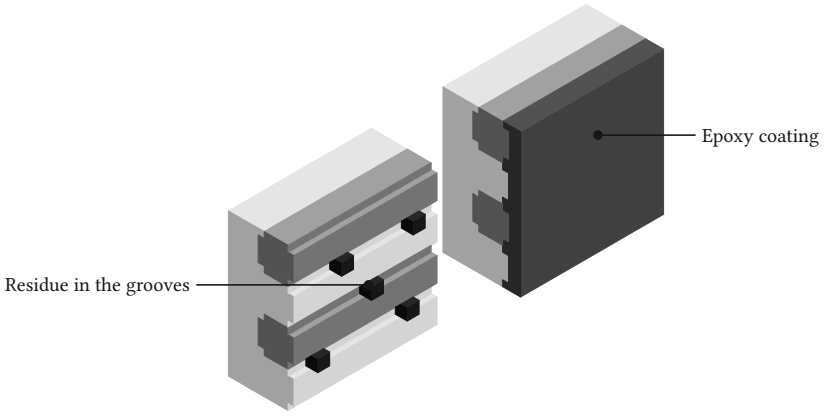


Figure 1. On the bare print, residue settles in the grooves between layers; a food-grade epoxy coating fills them and leaves a smooth face.

Table 2. Which appliance parts touch food

Part	Food contact	Route
Dishwasher rack clip, wheel or rail	Washed, not eaten from	Heat and water rating only
Fridge shelf bracket, door bin clip	Packaged food rests on it	Prusa's rule: not a container, so a normal print
Blender coupling, mixer gear	Below the jar seal, no contact	Wear and load rating
Juicer screen, ice-maker scoop, food-processor blade holder	Direct wet contact	Prusa: not recommended as a print
Kettle lid, coffee-maker basket	Direct, hot contact	Prusa: coatings fail with heat; not recommended

Whether copying the part is allowed is a separate question, answered on is it legal to 3D print replacement parts.

1.6 How to check it on your own print

1. Decide whether food touches the part at all. If not, choose the material by what the part faces.
2. If food does touch it, print with a stainless-steel nozzle in a filament whose maker publishes a food-contact statement, and keep it for personal use.
3. Coat the print with an epoxy the maker certifies to 21 CFR 177 or EU Regulation 10/2011, and keep the coated part away from the dishwasher and hot food.
4. Replace it on a schedule. Prusa's milk test shows growth within 14 days on an uncoated surface.

References

[1] Food safe FDM printing (Prusa Knowledge Base). https://help.prusa3d.com/article/food-safe-fdm-printing_112313. Accessed September 23, 2026.
[2] How to make food-grade 3D printed models (Prusa Research blog). https://blog.prusa3d.com/how-to-make-food-grade-3d-printed-models_40666/. Accessed September 23, 2026.
[3] PLA (Prusa Knowledge Base). https://help.prusa3d.com/article/pla_2062. Accessed September 23, 2026.
[4] PETG (Prusa Knowledge Base). https://help.prusa3d.com/article/petg_2059. Accessed September 23, 2026.
[5] 21 CFR 177.1630, Polyethylene phthalate polymers (Legal Information Institute). https://www.law.cornell.edu/cfr/text/21/177.1630. Accessed September 23, 2026.
[6] Commission Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food (EUR-Lex). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011R0010. Accessed September 23, 2026.

Cite as: Asked 3D. "Are 3D printed parts safe for food-contact appliances?." September 23, 2026. https://asked3d.com/answers/food-safe-3d-printed-appliance-parts. Last verified September 23, 2026.