Can you 3D print refrigerator parts?

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Abstract. Yes for bin clips, shelf supports and drawer rails at 40 °F (4 °C). PETG or ABS beats PLA on impact. Gaskets, sealed-system, electrical and water-line parts stay OEM.

Keywords: replacement-parts, home-repair, part-strength, petg

1 Can you 3D print refrigerator parts?

Yes, for small plastic parts that hold or guide: door-bin clips and end caps, shelf supports, crisper-drawer rails and slides, handles and hinge covers. A fridge should sit at or below 40 °F (4 °C), and cold costs plastic toughness, so print in PETG or ABS rather than PLA. Leave gaskets, sealed-system, electrical and water-line parts alone.

1.1 The numbers

Table 1. The numbers

What	Figure	Source
Refrigerator temperature	40 °F (4 °C) or below	FDA
Freezer temperature	0 °F (-18 °C)	FDA
Impact strength, printed, XY / Z (unnotched, at room temperature)	PLA Basic 26.6 / 13.8 kJ/m²; PETG Basic 34.2 / 10.5 kJ/m²; ABS 39.3 / 7.4 kJ/m²	Bambu Lab data sheets
Notched impact, printed, XY (at room temperature)	PLA Basic 7.9 kJ/m²; ABS 21.5 kJ/m²	Bambu Lab data sheets
Notched Charpy impact, molded ABS, 23 °C and -30 °C	22 and 8 kJ/m²	Bada AG, Badalac ABS 20
Load from one full 2-liter bottle in a door bin	About 2 kg (4.4 lb)	USGS: water is 1 g/cm³
Water supply pressure at the ice-maker inlet	30 to 120 psi (207 to 827 kPa)	Whirlpool dimension guide

Temperatures are from the U.S. Food and Drug Administration (FDA) and printed-part figures from Bambu Lab's PLA Basic, PETG Basic and ABS data sheets. The cold figure is from Bada AG's molded ABS sheet, and the water pressure from a Whirlpool top-mount refrigerator dimension guide.

1.2 What not to print

- **Door gasket.** Samsung calls it the rubber seal around the door, and its support page says to request service if it is damaged. Rigid filament cannot stay soft or close evenly around a whole door. Buy the original (OEM) gasket by part number.
- **Sealed-system parts.** The compressor, condenser, evaporator and tubing are metal and carry refrigerant under pressure. Under Section 608, the U.S. Environmental Protection Agency (EPA) requires certified technicians for equipment that could release ozone-depleting refrigerants.
- **Electrical and heater parts.** Ice-maker modules and defrost heaters draw on the 115-volt supply the refrigerator plugs into, and the heaters get hot. A printed bracket there can soften or crack next to live wiring.
- **Water-line fittings.** Whirlpool's guide calls for 30 to 120 psi at the water inlet. A printed fitting or valve body under that pressure can leak behind the fridge until the floor is wet.

1.3 Why cold and load decide it

None of the Bambu Lab sheets publishes a cold figure, so room-temperature impact values are the best comparison available. Along the layers (XY), ABS (acrylonitrile butadiene styrene) takes 39.3 kJ/m² and PETG Basic (glycol-modified PET) 34.2 kJ/m², against 26.6 kJ/m² for PLA Basic (polylactic acid). A notched bar mimics the sharp corner at a clip's root, and there ABS keeps 21.5 kJ/m² while PLA Basic drops to 7.9. Prusa describes PLA as breaking along layers or into shards on impact, and PETG as tough and durable.

Cold cuts impact strength further. Bada AG's molded ABS loses nearly two-thirds of its notched impact strength between 23 °C and -30 °C, from 22 to 8 kJ/m². That test runs colder than a home freezer, so read it as the direction of the loss, not its size at 0 °F.

Orientation matters as much as material. Across the layers (Z), the order flips: PLA Basic 13.8, PETG Basic 10.5, ABS 7.4 kJ/m². An ABS clip printed upright is the weakest of the three.

A door bin holding one 2-liter bottle carries about 2 kg and jolts every time the door swings. Lay the clip out so that load runs along the layers. The geometry is on which print orientation makes a replacement part strongest.

1.4 How to check it on your own part

1. Look up the OEM part first. The model number is on the rating label inside the fridge. Search it on the manufacturer's parts site: the bin or shelf part may still be sold.

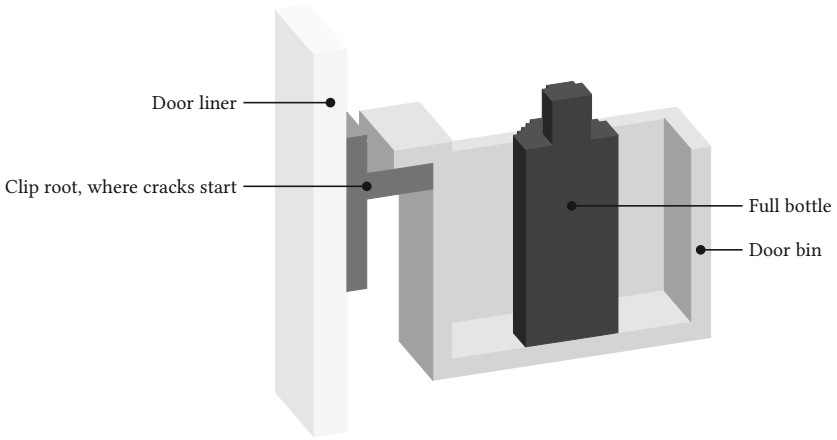


Figure 1. The loaded bin jolts on the clip every time the door swings, and the bending collects at the clip's root, where whitening or a crack shows first.

2. If the fridge is under warranty, call the maker before printing. The Federal Trade Commission says a company cannot void a warranty solely because you used another maker's part, but it can refuse to cover damage that part caused.
3. If no part is sold, measure the broken one with calipers. The method is on how to measure a broken part without a 3D scanner.
4. Pick PETG or ABS. The trade-offs between them are on which filament to use for a replacement part.
5. Print one. Install it with the real load, a full bin or the actual shelf, and leave it overnight. A freezer part goes in the freezer.
6. Next morning, check the clip root for whitening or a crack, then snap it out and back in while it is still cold. If it whitens, reprint it with a thicker root, or turned so the load runs along the layers.
7. If the part touches unwrapped food, as a crisper drawer or bin liner does, read whether printed parts are safe for food-contact appliances first.

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