



PTFE End Cap

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updated 31. 8. 2022 | published 31. 8. 2022

Summary

Nearly airtight end cap for typical 4mm OD PTFE tubing to seal spool boxes when not in use.

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I wanted a bit more certain air seal on the PTFE tubes for my spool boxes when storing filament in them for long periods of time. I use desiccant in my spool boxes, but less air leaking into the container means less frequent desiccant changes. At first I experimented with PTFE fittings threaded into spacer/coupling nuts. These provided a very good air seal, but left a lot to be desired.

- The fittings bite into the ptfе and stay attached a bit too secure
- The metal fittings and couplers are heavy and wasteful for the number of caps I needed
- Cutting the couplings in half was a pain, but using a whole coupling was extra heavy and wasteful

I designed a printed solution to address these issues while still being able to seal the tube end effectively. These caps sandwich cheap 3.8mm x 7.6mm x 1.9mm Buna-N nitrile o-rings between top and bottom sections that are glued together. These o-rings are common in assortment packs

and can be bought in quantity on [amazon](#). The original plan was have two o-rings per end cap, but a single o-ring provides plenty of friction and seal. I tested the caps by pressurizing a spool box container (Rubbermaid 21 cup) and seeing if it would hold pressure well enough to pop the lid and how long it would take to leak down. I found the PTFE fittings performed the best followed by this design with filament stuck in the tube falling far behind and an unobstructed PTFE doing little if anything. Pretty unscientific testing but we're talking slight improvements in marginal cases anyway so it's good enough for me.

No one asked, but these are indeed end caps referenced in my “PTFE connector sealed backplate” from a couple years ago. I just never took pictures for upload them with until now.

Model files



ptfe_cap_top.stl



ptfe_cap_bottom.stl

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