



# HEPA and Active Carbon Filter



Nathanael Scheffler

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## Summary

I use my printer a lot at school, and recently I have dived into the world of ABS plastic.

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Tags: [filter](#) [air](#) [safety](#) [carbon](#) [hepa](#) [particles](#)

I use my printer a lot at school, and recently I have dived into the world of ABS plastic. I really like the mechanical qualities of ABS, but it definitely has some drawbacks in terms of smell and potential health hazards. This enclosure and filter combination should help to not only improve build quality but also keep fumes from bothering me and my classmates!

To deal with this, I built an enclosure out of MDF. It isn't quite finished yet, but the most important component, the filter, is.

This filter uses a Washable Hoover HEPA filter as well as activated carbon to scrub the fumes from the printer. A small 12v fan is used to provide pressure. This will tie into the same 12v adapter used to power led strip lighting inside of the enclosure (WIRING DIAGRAM IN PHOTOS).

This design is meant to work with a solid enclosure, as it is screwed into the back wall and is also supported by a 90x90mm cutout in the top left/rear corner. The entire assembly, except for the fan and the fan mount, is pulled through this square access hole to service the filter and replace the

carbon. All of the parts are assembled with pressure fit slide connections, and I added some vaseline between the parts to make it more airtight and to allow them to more easily come apart for service.

I ended up cutting off the top tab on the

Here are the links to the carbon and filter that I used:

[https://www.amazon.ca/gp/product/B01DCO4IQC/  
ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o00\\_\\_o00\\_s00?ie=UTF8&psc=1](https://www.amazon.ca/gp/product/B01DCO4IQC/ref=ppx_yo_dt_b_asin_title_o00__o00_s00?ie=UTF8&psc=1)

[https://www.amazon.ca/gp/product/B008QVWOIQ/  
ref=ppx\\_yo\\_dt\\_b\\_asin\\_title\\_o01\\_\\_o00\\_s00?ie=UTF8&psc=1](https://www.amazon.ca/gp/product/B008QVWOIQ/ref=ppx_yo_dt_b_asin_title_o01__o00_s00?ie=UTF8&psc=1)

Thanks for taking the time to look at my design!

## **Print instructions Category: 3D Printer Accessories Summary**

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[https://www.amazon.ca/gp/product/B008QVWOIQ/ref=ppx\\\_yo\\\_dt\\\_b\\\_asin\\\_title\\\_o01\\\_o00\\\_s00?ie=UTF8&psc=1](https://www.amazon.ca/gp/product/B008QVWOIQ/ref=ppx\_yo\_dt\_b\_asin\_title\_o01\_o00\_s00?ie=UTF8&psc=1)

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## Print Settings

**Printer Brand:** Prusa

**Printer:** i3 MK3

**Rafts:** No

**Supports:** No

**Resolution:** .15mm

**Infill:** 10% on 'Fan Holder and Connector' 100% elsewhere

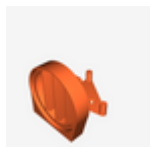
**Filament:** Prusament PLA Silver

### Notes:

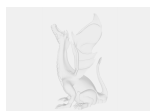
Everything should print ok without supports, I modeled some fins into the complex fan holder to keep it upright.

Before printing, make sure that your bridging is pretty well dialed in as this is especially important to the 'Carbon Cap'

## Model files



**fan\_holder\_and\_connector.stl**



**complete\_assembly.step**



**filter\_holder\_2.stl**



**carbon\_cap.stl**



**filter\_holder\_1.stl**

[Find source .stl files on Thingiverse.com](#)

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