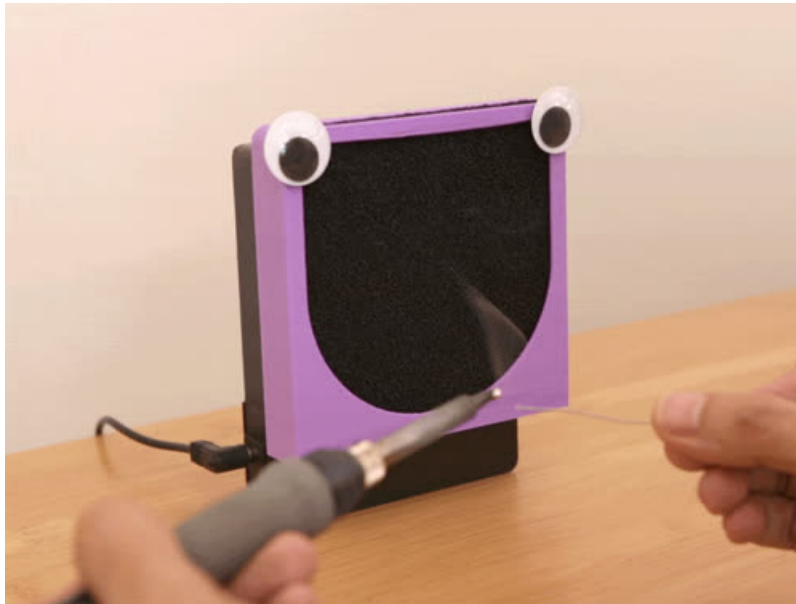


Desktop Fume Extractor

Created by Ruiz Brothers



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Guide Contents

Guide Contents	2
Overview	3
Fumey The Fume Extrator	3
Air Clean Friendly	3
3D Printing	5
What If I Don't Have A 3D Printer?	5
3D Printed Retainer	5
Ultimaker Print Cores	6
Slicing The Part	6
Slice Settings	6
Print Quality	7
Design Source Files	7
Assembly	9
Install Carbon Filter	9
Install Retainer	9
Power Fan	9
Remix & Share	9

Overview

Fumey The Fume Extrator

Here's how to turn a PC fan into a solder fume extractor using a 3D printed retainer. Use an activated carbon filter to catch that pesky solder smoke and eliminate the smell of fumes. This [12VDC desktop PC fan](https://adafruit.it/BBC) (<https://adafruit.it/BBC>) is already in a nice enclosure and it's doesn't take much space on your desk.

Air Clean Friendly

The air suction from the fan is pretty decent and allows you to work at a minimal distance. I find it catches most of the solder smoke which is great for working indoors with other people.



1 x [Miniature Desktop Fan](#)

12V Desktop Fan (145.0mm x 116.0mm x 43.0mm)

[ADD TO CART](#)

1 x [Activated Carbon Filter \(Amazon\)](#)

130 mm x 130 mm x 10 mm (5 1/8" x 5 1/8" x 3/8")

[BUY NOW](#)

1 x [Activated Carbon Filter \(Digi Key\)](#)

Apex Tool Group

[BUY NOW](#)

1 x [Power Supply](#)

9 VDC 1000mA regulated switching power adapter

[ADD TO CART](#)



3D Printing

What If I Don't Have A 3D Printer?

Not to worry! You can use a 3D printing service such as [3DHubs \(https://adafru.it/jNb\)](https://adafru.it/jNb) or [MakeXYZ \(https://adafru.it/veh\)](https://adafru.it/veh) to have a local 3D printer operator 3D print and ship you parts to you. This is a great way to get your parts 3D printed by local makers. You could also try checking out your local Library or search for a Maker Space.



<https://adafru.it/BOY>

<https://adafru.it/BOY>

<https://adafru.it/BOZ>

<https://adafru.it/BOZ>

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3D Printed Retainer

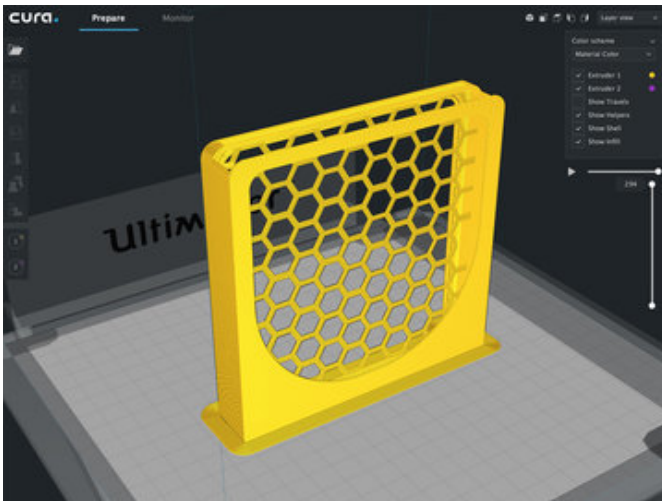
The carbon filter retainer is designed to be 3D printed with FDM type 3D printers. To 3D print the part, we used a 0.8mm nozzle which allows for printing a bigger layer height and extrusion width.

- 0.8mm uses more material but reduces total print time.
- 1hr 30min to 3D print (4 hours with 0.4mm nozzle)



Ultimaker Print Cores

The Ultimaker 3 features swappable **Print Cores** that are designed for fast nozzle changes. The all-in-one design contains the heater block, sensors and nozzle all in one package. This makes maintenance low and speeds up prototyping workflow. The **AA 0.8mm** print core is designed to push out more material allowing for thick layer heights and line widths.



Slicing The Part

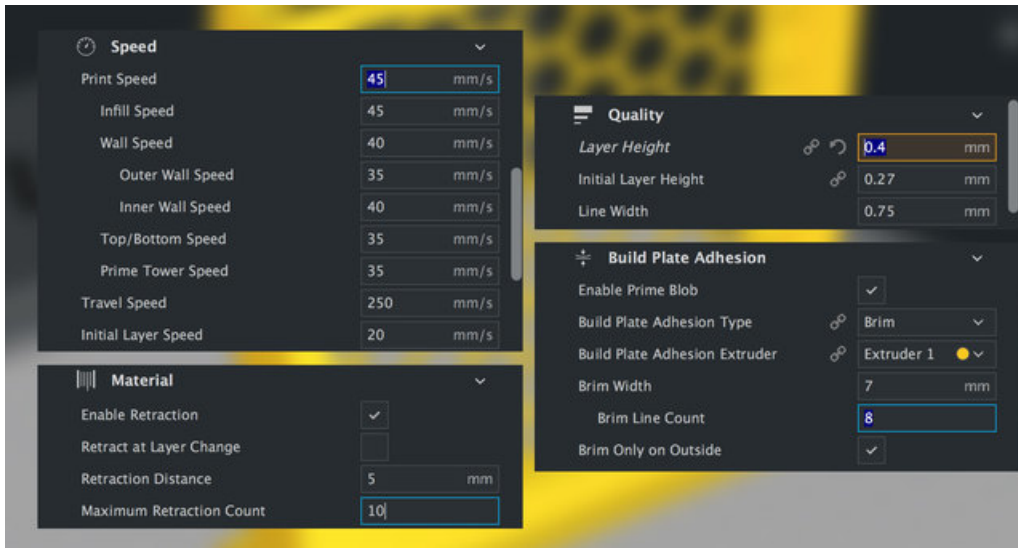
This part has lots of overhanging features and retraction movements. Reducing the print speed and increasing the active cooling fan makes it possible to print without any supports.

- Use wide brim on first layer for better bed adhesion.
- Fully cool down heated glass to remove part.

Slice Settings

These settings are for a 0.8mm nozzle profile using CURA 3.2. Optimized for the Ultimaker 2, 2+ and 3.

- Layer Height 0.4mm
- Line Width 0.75mm
- Print Speed 45mm/s
- Retraction
 - Maximum Retraction Count - 10
- Build plate adhesion type – Brim
 - Brim Line Count – 8



Print Quality

The bridging on the top features are impressive, there's a bit of sagging but it's really not bad. The grill mesh did not need any cleanup and it feels slightly springy. The print quality is quite impressive for an object with a large layer height and extrusion width.



<https://adafru.it/B10>

<https://adafru.it/B10>

Design Source Files

The enclosure assembly was designed in Fusion 360. This can be downloaded in different formats like STEP, SAT and more. Electronic components like the board, displays, connectors and more can be downloaded from our [Fusion 360](#)

CAD parts github repo (<https://adafru.it/AW8>).

<https://adafru.it/AW8>

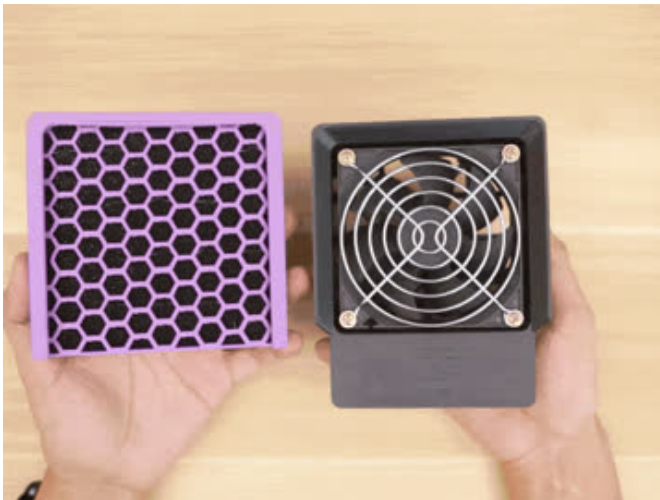
<https://adafru.it/AW8>

Assembly



Install Carbon Filter

To fit the carbon filter into the retainer, you'll need to cut it down to size with a pair of scissors. The filter slides into the holder and is pushed down all the way through. The filter should have a loose fit to allow replacing the filter.



Install Retainer

Place the retainer over the hood of the fan and insert the edges over the flange. Press down to slide the retainer over the hood. It should have a snug fit. The edges clip onto the fan and hold in place.



Power Fan

A power supply is *not* included - technically it is rated for 12VDC but we've used it at 9VDC just fine. You can pick up a [9V 1A power supply here \(https://adafru.it/dO6\)](https://adafru.it/dO6) or if you have USB outlets, try a [12V USB booster cable \(https://adafru.it/B11\)](https://adafru.it/B11).

Remix & Share

This is a simple design and there's a lot of room for expanding this project. Would you like to add a pocket to hold

various tools? How about some LEDs for extra lighting? There's so many things to do but this gives you a basis to get out there and start making.

Make something and put some images up on our [discord channel \(\)](#), show your prints and tell us your slice settings! Show em' to your friends so we all can see what your making!

We want to hear from ya so get on that [discord channel \(\)](#), follow us on the [instagram \(https://adafru.it/rtc\)](https://adafru.it/rtc) and keep on making, sharing and don't forget to *make* a great day!

