



BentoBox v2.0 Carbon filter for Bambu Lab X1C, enclosed P1P & Voron Trident & others?



thrutheframe

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updated 24. 6. 2025 | published 24. 6. 2025

Summary

BentoBox is an air scrubber for the X1C, P1S, P1P with ARC, Voron Trident 250/300/350 and other enclosed printers.

[3D Printers](#) > [Accessories](#)

Tags: [filter](#) [enclosure](#) [carbon](#) [hepa](#) [voron](#) [hepafilter](#)
[activatedcarbon](#) [bentobox](#) [snapmaker](#) [voc](#) [bambulab](#)
[x1c](#) [j1](#) [snapmakerj1](#) [trident300](#) [trident250](#) [p1s](#)
[trident350](#) [x1e](#)

IMPORTANT

- Please download the "BentoBoxV2 2023XXXX.3mf" project 3mf file and "BentoBox20 User Guide 2023XXXX.pdf" Descriptions, BOM and build instructions are in there. I try my level best to make it as comprehensive as possible.

- Use only ACID-FREE activated carbon pellets. Otherwise, you will mess up the printer in no time.
- Check out the vendors in your region if you want to buy ready-to-use BentoBox.

UPDATE 16 Feb 2024

The grills on the CMAG are slicer-generated. If you are using Bambu Slicer or Orca Slicer, click slice and the settings will generate the grill holes. If you are using Prusa Slicer, there is a version for Prusa Slicer in the download. If you are using Cura, please read the user manual for the slicer setting to produce the grill holes.

INTRODUCTION

The US vendor for BentoBoxV2 - A collaboration between ThrutheFrame and Voxelpla to offer a complete set (printed in PET-g) with HEPA filter and acid-free activated carbon included. For more information, please visit [Voxelpla Store](#).

The EU vendor for BentoBoxV2 is now available for sale. A partnership between ThrutheFrame and Veetec3D to offer a complete pre-assembled set with HEPA filter and acid-free activated carbon. For more information please visit [Veetec3D Store](#). Check out the multi-colour version that they are offering.

The AUS vendor for BentoBoxV2 is now available for sale. JC-3D offers a complete pre-assembled set with HEPA filter and acid-free activated carbon included. For more information please visit [JC-3D Store](#). NOTE: Please check with the seller regarding available stock and fulfilment time before ordering.

The Brazil vendor for BentoBoxV2 is now available for sale. 3D4U offers a complete pre-assembled set printed in ABS with HEPA filter and activated carbon. For more information, please visit [3D4U Store](#).

Where to Buy Your Consumables:

(links below are not affiliated unless stated)

Acid-free activated carbon:

US - Voxelpla offers acid-free activated carbon in a 1lb pack and HEPA filter replacement. You can support the BentoBox project by buying it from this affiliated link: <https://voxelpla.com/thrutheframe>

EU - Veetec3D offers acid-free activated carbon in 150gm & 450gm. You can support the BentoBox project by buying it from [Veetec3D Store](#) for [Activated Carbon](#) and [HEPA filter](#).

JPN

- KOTOBUKI
- This [seller](#) in Japan was recommended by a user it has a PH of 9.8.

The HEPA filters:

BentoBox uses the same HEPA filter as iLife vacuum robots. It is 80mmx40mmx15mm you can get it on [Amazon](#) or [Aliexpress](#)

Introduction

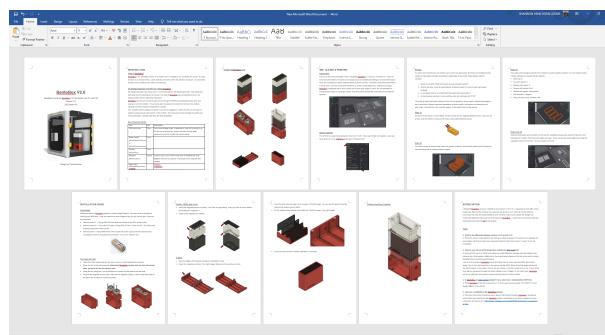
BentoBox is an air scrubber that sits inside the X1C or enclosed P1P. It removes VOCs and fumes in the air within the printer. Mainly used for printing ABS, ASA, Nylon, and other high VOCs filaments. If you are still unsure if you need an air scrubber, there are numerous write-ups and discussions online on which you can do due diligence.

BentoBox can also be used for other printers. Voron, Vzbot, Enclosed Prusa or Ender 3, your hamster cage, etc

BentoBox V2.0 can be run:

1. standalone with a separate 5V power source (5V fans),
2. connect to the printer's 24V PSU (24V fans)
3. or piggyback on the chamber fan with a cable splitter. (24V fan)

Please download the user guide for BOM and how to install BentoBox V2.0



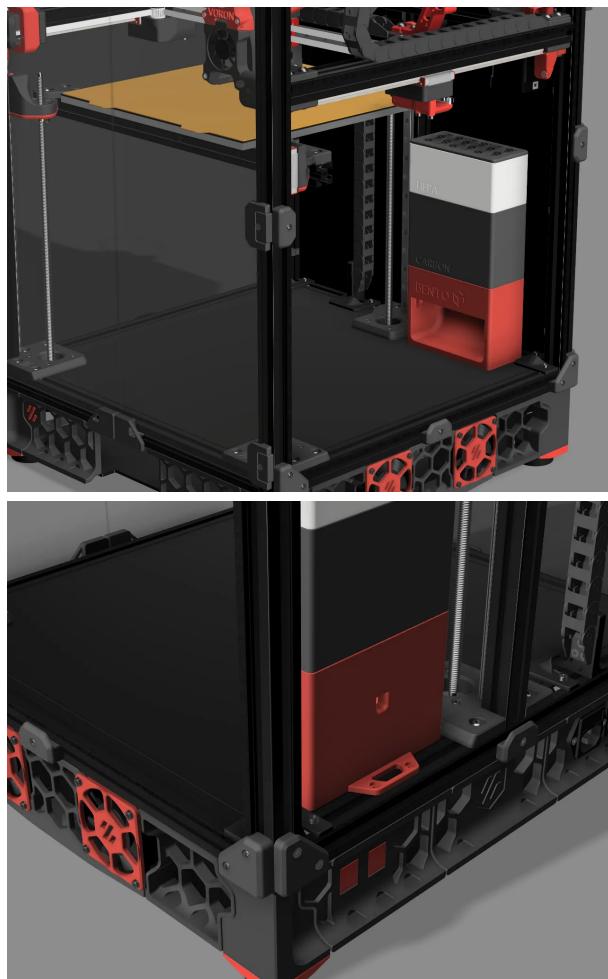
Some people may be disappointed that version 2.0 does not incorporate 5015 blower fans. Below is the reason why.

Using either 5015 (push) or 4020 (pull) makes very little difference because both are relatively low-pressure fans. What makes a difference in performance is the unobstructed distance of the fan to the carbon pellets.

I notice remixes of BentoBox where 5015 fans push air through the HEPA filter followed by the carbon pellets. If you imagine the blower fan is waves and the HEPA filter is the wave breaker on the beach. Once waves hit the breaker, a lot of initial force is lost. There will be very little air movement through the carbon pellets. On the other hand, BentoBox pulls air by creating a low-pressure system directly below the carbon pellets. In my opinion, it is a more efficient system.

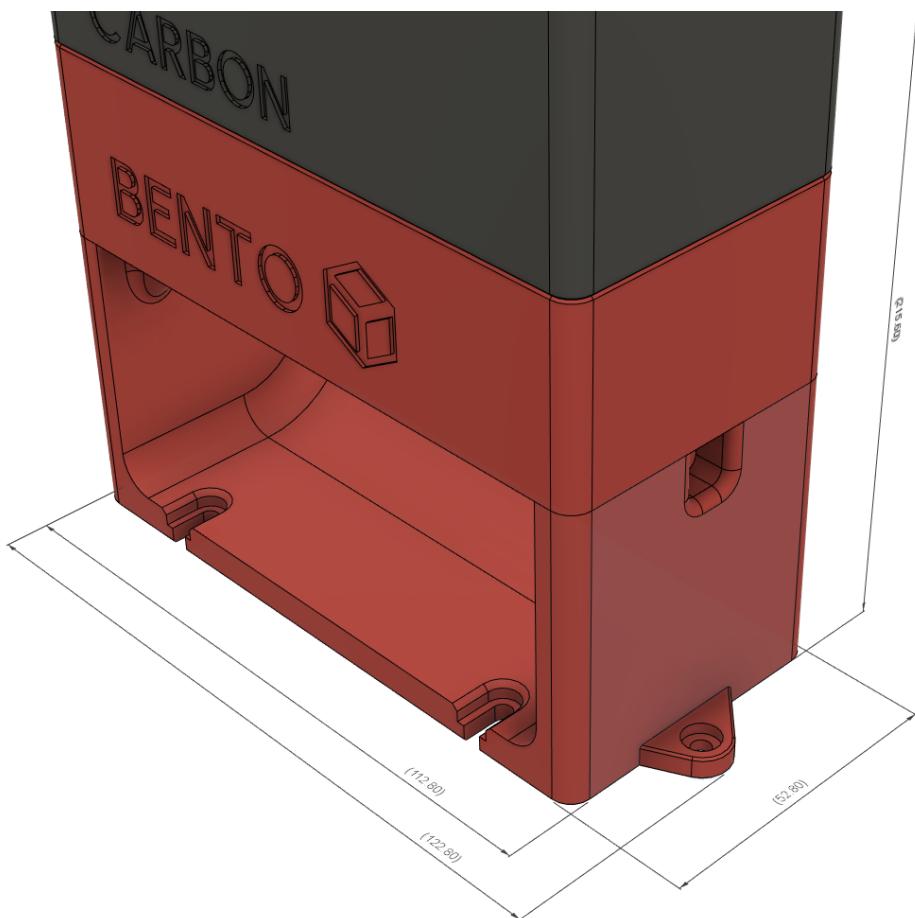
Do not use Noctua fans. It does not have enough static pressure to pull air through the carbon pellets. You can get the 4020 fans from Aliexpress here: [4020 24V GDSTime 9.0cfm 7000rpm](#)

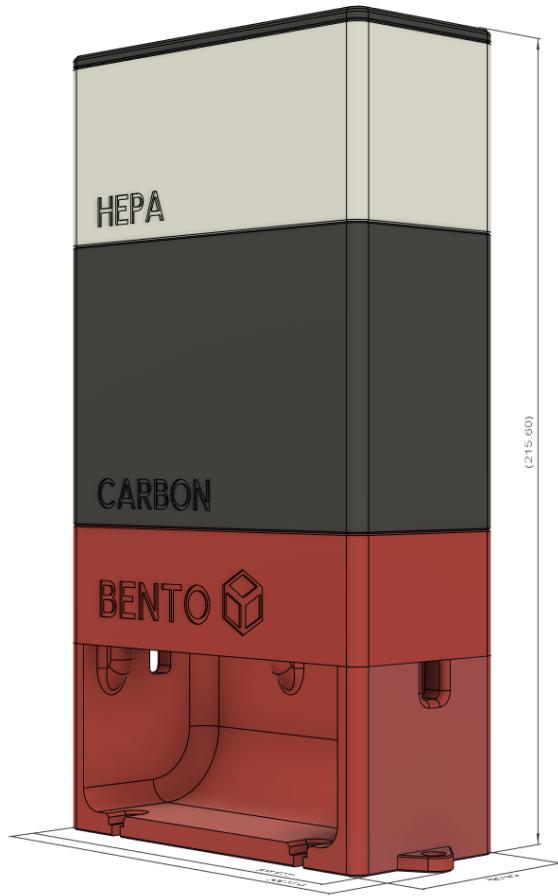
Redesigned the base (**fan duct Voron_Trident.stl**) to be used on my Voron Trident. It can fit both 250 and 300. Will require 2 sets of M3x8mm + M3 T-nut. Wire it to one of the pwm fan port and bam you have a HEPA and activated carbon filter. For Bambu Lab printers, please use "**fan duct Bambulan.stl**". Everything else is the same.



Dimension of BentoBox V2

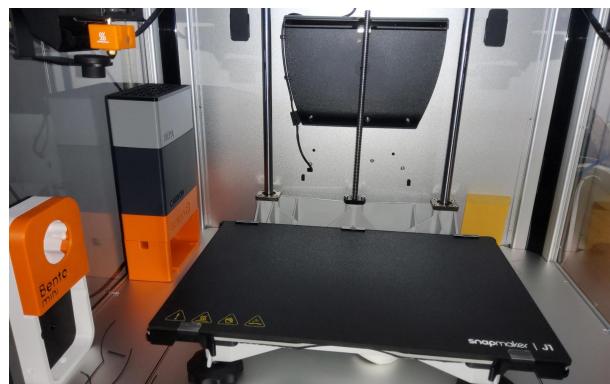
There are requests for me to show the dimensions of BentoBox V2 to be able to visualize in different enclosures. They are: H=215.6mm D=52.8mm L=112.8mm.





BentoBox V2 in other printer Enclosures

While the BentoBox was originally designed for Bambu Lab printers and subsequently Voron Trident, I hope to make it fit on most enclosed printers ie Creality K1 series, Qidi, Prusa Enclosure, etc. Hence, I will need the community's help as I will not be able to have access to all the different make and models. As always, BentoBox stl will be free for the community, with no club membership, no Patreons, no paid wall, etc.

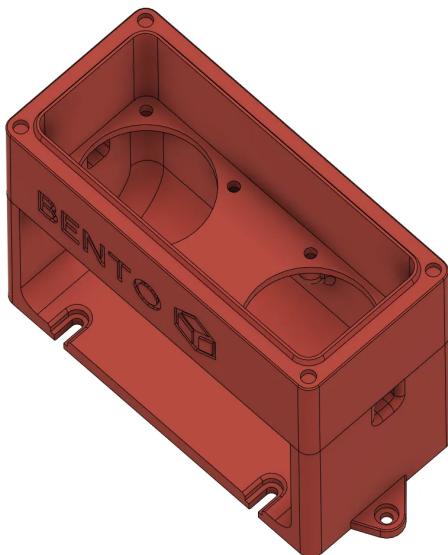


BentoBoxV2 in Snapmaker J1.

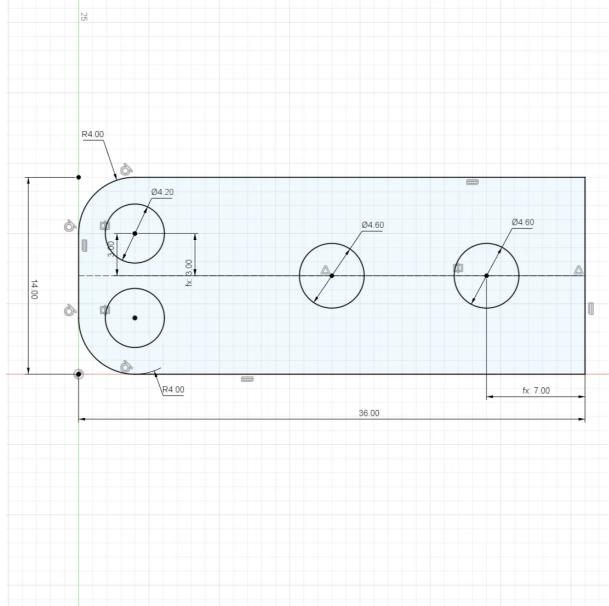


BentoBoxV2 in a tent with a resin printer

Some have requested I add a switch to the design. But there are so many different types and shapes of switches. Therefore, I have added the step file of the BentoBox fan_case_duct.step which you can edit to add a switch or mod it.



I printed the design in PLA for a fitting test and then PETG for the final prototype. If you are using ABS or ASA, please print the test piece to check for dimension accuracy and if there is a need to do X and Y compensation.
14mmx36mmx10mm (LxBxH)



To date, my designs are free to download and use. There is no Patreon or OnlyFan (hahaha). If you like what I designed and want to contribute to my coffee addiction, software subscription and filaments I need for prototyping, a donation of \$5-\$10 to [Ko-fi](#) or [paypal.me](#) will be greatly appreciated.

Caveat

As with all my designs, it may and may not work for you. So print and install at your own discretion.

Model files

 **BentoBoxV2_stl** 8 files

cover_voronoi.stl



cover_hemp.stl





hepa.stl



carbon.stl



fan-case-v1_28.stl



fan-duct-bambulab-20231017.stl



fan-duct-voron_trident.stl



36x14-test-4x2-magnet-od5-inserts.stl



CMag_stl

4 files



cmag-case-01-v5.stl



cmag-case-02-v5.stl

net_infill-x4.stl



net_infill-for-prusaslicer.3mf



bentoboxv2-20231017.3mf



bentoboxv2-fan-case-duct-v1_29.step



setting-for-petg-for-p1s.3mf



Other files

bentobox20-user-guide-20230722_1.pdf



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