

Single Filter Air Purifier

This is a single filter air purifier that can clean the air in a **240-378 sq foot room** depending on the speed that you're running the fan. The filter on it lasts **at least 45 days**, even if the air quality is poor. It lasts up to 6 months if the air quality is better.

Read on for guidelines on:

- How long the filter will last,
- What replacement filters to get and where to get them,
- How to replace the filter,
- What room size the purifier works most effectively in

How do I know how long the filter will last?

The filter will last 45 days to 6 months, but that's a long time frame affected by a lot of different things, especially air quality, run time, and fan speed.

We can't tell you for 100% sure how long it'll last. But this might help:

- Expect a maximum of 3 months in especially poor wildfire conditions
- Worse air quality + long run time + high fan speed = lasts less time
- The thicker the filters, the longer they last. These purifiers are made with 1", 2", or 4" thick filters.
- Even if a filter looks gross, it doesn't necessarily need changing.

What replacement filters should I get and where can I get them?

Short answer: 20 inch by 20 inch MERV-13 pleated filters in any thickness over 1 inch.

Any filters that are 20 inches long by 20 in wide will fit. For wildfires and airborne pathogens, use filters rated at least MERV-13, but even higher is better.

Note: HEPA filters don't work as well. They reduce airflow which means that your air purifier won't change out as much air in your room.

Where to get them

For free: Groups that are making DIY air purifiers in LA may give out filters on request. Try asking:

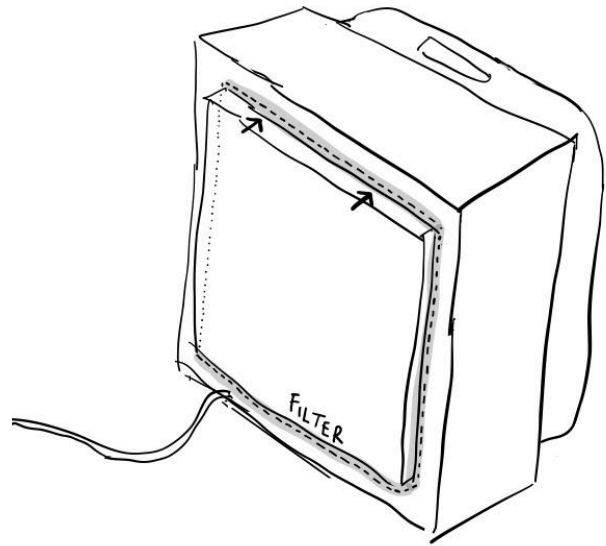
- Frontline Medics (Instagram [@frontlinemedics](#))
- Mutual Aid Disaster Relief (Instagram [@mutualaiddisasterrelief](#) or <https://mutualaiddisasterrelief.org/contact/>)

To buy: You can try local hardware stores (call first) or online. Here are some options:

- <https://www.grainger.com/product/GRAINGER-Pleated-Air-Filter-20x20x1-11C876>
- Set of 4: <https://www.texairfilters.com/4-filter-corsi-rosenthal-box-merv-13-filters/#5603>

How do I replace the filter?

- On the back of the air purifier, cut through the tape between the filter and the cardboard box (**dashed line in the picture**).
- Lay your new filter where the old used to be **with the arrows on the frame facing IN** (towards the fan, as shown by the arrows in the picture).
- Push it into the hole a little bit and tape all around the sides with duct tape so that it's relatively air tight.



What room size does this work for?

Numbers from this calculator:

<https://healthybuildings.hsph.harvard.edu/tools/air-cleaner-calculator>

Assuming you want 5 air changes per hour (recommended) and you have 9 foot ceilings:

Fan Speed	Performance (CADR CFM*)	Room Size
3	255 CADR	378 sq feet
2	215 CADR	319 sq feet
1	162 CADR	240 sq feet

If you have a bigger room, you may need multiple air purifiers.

* What is CADR?

"Portable air purifiers get described in terms of a number called the 'clean air delivery rate' (CADR), a combination of the efficiency of the filter in pulling gunk out of the air and the speed of air pushed through the system. CADR conveys that in cubic feet per minute, and clean-building researchers now recommend five complete change-outs of the air in a classroom every hour. So ideally, you'd use the cubic footage of the room and the CADR of the filter setup to figure out how big a purifier, or how many, you need. (CADR isn't the be-all/end-all, either. Its calculations assume that a room is what researchers call a "well-mixed box," which is to say, homogeneously mixed air and pollutants throughout. That's not how things work with pathogens in the real world.)"

Source: <https://www.wired.com/story/could-a-janky-jury-rigged-air-purifier-help-fight-covid-19/>