

# Corsi-Rosenthal Box Filter

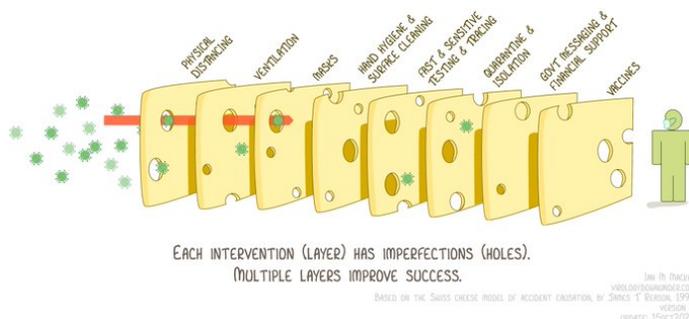
This filter-box is called a Corsi-Rosenthal Box Filter. It improved on another design called the Comparetto Cube which piggy backed on the filter slapped on the back of a box fan design. It is one layer for safety. Many layers are better. This set up is tested, including UL tested for safety & researched for actual aerosol reduction. Citations follow.

Conditions to receiving a filter box: You agree to lead by example; to get vaccinated; to engage conversations with those who are not yet vaccinated, listening to their concerns and then addressing them. We have influence in our communities, one person at a time. Feel free to share the citations on the back of this page with others, especially with teachers or those in residence centers, offices or other shared spaces to encourage others to make filter boxes for their rooms. You agree to get yourself good N95 masks and commit to wearing them at in the community. Make protection the norm. Delta is harming children & reinfecting a small number of those already vaccinated. Everyone in masks protects our most vulnerable. Add layers of protection to protect our most vulnerable. If this is a war, show up by siding on Team Human to beat this deadly pathogen.

- Every protective layer is most effective when everyone is vaccinated & masked, and with Delta, both are necessary. Step one: Get vaccinated. Step two: Get N95 masks & wear them correctly.
- Position the fan blowing up towards the ceiling, placed near the center of the room, a couple feet from a wall, opposite the door. Do the best you are able. Most classrooms won't allow the perfect placement. Get close.
- Place on a table or off the floor by at least a few inches. Elevate your filter at least 1/2 inch off a surface using folded cardboard, pads of post-its, or for better lift and air flow use sanitizer wipe containers or tomato sauce cans. Avoid blocking the filter. Air flow is the key.
- Use on medium speed. High speed moves much more air, but is louder and not necessary. On medium the decibels are about 52, as loud as a refrigerator running, or conversation. This unit will move 580 cubic feet per minute. Five exchanges an hour is recommended. This design will exceed that in most classroom-sized room settings.
- With five 2" filters, this design should last 6-9 months. A discussion of filters was done by the Clean Air Crew and is cited. The filters on your box came from [TexAirFilters.com](http://TexAirFilters.com) **UL tested fans with attached filters and found that the filters do not affect the temperature nor the load on the fan.** If you need it, they have a pdf of their results, which shows that **this design is just like plugging in the window fan without filters attached. If a fan is normally allowed, this filter box should be.**
- **When replacing the filters, let the filter box sit unused over a weekend or longer**, double mask, use gloves and place into a plastic garbage bag, tying it off. **Please walk it to the dumpster yourself** and don't place it into inside garbage cans which will decompress the bag and make fine particles airborne indoors. Protecting everyone is everyone's responsibility.
- Filter boxes without masking is inadequate, so don't kid yourself. Mask up with good fitting N95 masks. Check the citations for Aaron Collins's mask research & look for his YouTube Channel.

## THE SWISS CHEESE RESPIRATORY VIRUS PANDEMIC DEFENCE

RECOGNISING THAT NO SINGLE INTERVENTION IS PERFECT AT PREVENTING SPREAD



*This filter box was provided by Read to Feed the Mind. We usually use funds to buy new books for children in poverty. Keeping children healthy and learning at pace with their peers supports the mission of literacy. During this unparalleled moment, the mission focus has shifted slightly to make these contributions directly to classrooms. We will return to our focus on getting books into the hands of children in the future, but for now, protecting everyone is not only everyone's responsibility, but at this all hands on deck moment, it also needs to be everyone's priority.*

# Filter Boxes and Understanding Air Filtration Resources



Another discussion about the Corsi-Rosenthal Box with the four filter (vs 5 filter) design. This contains a discussion about various filter brands.

Clean Air Crew. DIY Box Fan Air Filters - Corsi - Rosenthal Box, August 2021. <https://cleanaircrew.org/box-fan-filters/>



Aaron Collins @masknerd has a background in aerosol science and has been reviewing masks. His YouTube Channel has videos on mask testing for adults and children. Look him up to find good N95's for adults and kids.



Emanuel, Gabrielle. DIY Air Filters for Classrooms: Experts are Enthusiastic - A Citizen Scientist Makes it Easy 8/17/21

<https://www.wgbh.org/news/local-news/2021/08/17/diy-air-filters-for-classrooms-experts-are-enthusiastic-and-a-citizen-scientist-makes-it-easy>



This site has an easy to copy stand to elevate your filter made out of a cardboard box. Elevating the filter higher off the floor is better to help prevent stirring up virus laden heavier particles that have fallen to the floor. This is an early design that has been improved upon.

Ford DIY Air Filtration Kit That Reduces Covid-19 in the Air Validated by Peer-Reviewed Scientific Research Journal, May 12, 2021

<https://media.ford.com/content/fordmedia/fna/us/en/news/2021/05/12/ford-diy-air-filtration-kit-covid-19-validated.html>



This NIH review is from an early study that has since been improved on, but it helped establish the efficacy of using a box fan fitted with a filter as a mitigation strategy for reducing airborne virus.

He, R., Liu, Wanjiao, L., Elson, J., et al. Airborne Transmission of COVID-19 and Mitigation Using Box Fan Air Cleaners in a Poorly Ventilated Classroom. Phys Fluids. May 11, 2021, 22K(4):057107

<https://pubmed.ncbi.nlm.nih.gov/34040337/>



Richard Corsi, Dean of Engineering, University of California, Davis, worked with Jim Rosenthal, owner of TexAirFilters to improve on the Comparetto Cube, which is a four filter design, and on the filter taped to the back of a fan (works for the second filter in a classroom!) designed several years ago to reduce smoke from wildfires. They call their design the Corsi-Rosenthal Box. Rosenthal has a knowledge base of articles on his company website including discussions about making with and without face shields.

<https://www.texairfilters.com/category/articles/>



A deep in the weeds dive (with additional links!) into the cubic feet of air moved per minute & the CADR by various filters, settling on a five filter design moving 580 CFM as having the greatest airflow and longest life for classroom use.

Rosenthal, Jim, A Variation of the "Box Fan with MERV 13 Filter" Air Cleaner. August 22, 2020

<https://www.texairfilters.com/a-variation-on-the-box-fan-with-merv-13-filter-air-cleaner/>



Do you want to put a second filter in your room to improve airflow and filtration? Take a look at using a 4" MERV 13 air filter fitted to the intake (back) side of the fan. Place this fan near the front center of the classroom. Instructions and some data, unreviewed, can be found here.

<https://www.texairfilters.com/how-a-merv-13-air-filter-and-a-box-fan-can-help-fight-covid-19/>



This Old House discusses and demonstrates the construction of a filter box with good discussion about MERV ratings and how to assemble the filter. The context is home use, but the application is identical to classroom use.

<https://www.youtube.com/watch?v=aw7fUMhNov8>

Underwriters Laboratories tested fans with filters attached to the inflow side to measure temperatures and draw. They found that a higher resistance filter of 1" vs the 2" used on this design had no appreciable change over box fans with no filter attached.

"Overall, all measured temperatures of the fans under the conditions described in this study were lower than the maximum allowable temperatures in UL 507, the safety standard for electric fans."



[https://chemicalinsights.org/wp-content/uploads/DIY-Box-Fan-Report-2021.pdf?](https://chemicalinsights.org/wp-content/uploads/DIY-Box-Fan-Report-2021.pdf?utm_source=Chemical+Insights&utm_campaign=d52ba63ea8-July_2021_Newsletter7_13_2021_13_4&utm_medium=email&utm_term=0_09fecf83d2-d52ba63ea8-119531236)

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[July\\_2021\\_Newsletter7\\_13\\_2021\\_13\\_4&utm\\_medium=email&utm\\_term=0\\_09fecf83d2-d52ba63ea8-119531236](https://chemicalinsights.org/wp-content/uploads/DIY-Box-Fan-Report-2021.pdf?utm_source=Chemical+Insights&utm_campaign=d52ba63ea8-July_2021_Newsletter7_13_2021_13_4&utm_medium=email&utm_term=0_09fecf83d2-d52ba63ea8-119531236)