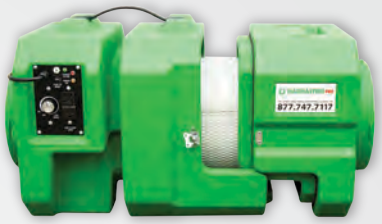
HAZMASTERS PRO
PROFESSIONAL GRADE EQUIPMENT FOR SAFER WORK ENVIRONMENTS

Frequently Asked Questions

EnforceAIR™ Negative Air Machine



Usage & Applications

Q1. What is negative air?

A1. It includes a ventilation system that generates negative pressure to allow air to flow into the isolation room but not escape from the room, as air will naturally flow from areas with higher pressure to areas with lower pressure, thereby preventing contaminated air from escaping the room.

Q2. How does a negative air machine work?

A2. A negative air machine uses ducting to remove contaminated air from a sealed containment area. The filtered air is exhausted outside of the containment area. This creates negative air pressure (a vacuum effect), which helps limit the spread of contaminants to other areas inside the structure. Applications include restricting airborne contaminants such as dirt, dust, drywall dust, sawdust, metal fumes, smoke, mould, fungi, asbestos and lead particulate. When carbon filtration is employed, it will also reduce odours and VOC's from paints, cleaners, etc.

Q3. What is the difference between negative and positive air scrubbing?

A3. Most often, contractors will use ducting and an air scrubber to create a negative pressure environment that will contain the hazardous particles within a workspace. Air will always flow from high pressure to low pressure. So, creating and maintaining a negative pressure environment will create a constant inward flow towards the air scrubber, preventing airborne contaminants and odours from escaping the workspace through any leaks or openings. Positive air scrubbing techniques are used less often, but do have their place. In some situations, it may be necessary to protect an area from contamination. This is achieved by placing the air scrubber outside the work area and using a duct to direct the "scrubbed" air inside the desired location. This positively pressurizes the area with "scrubbed" air and prevents contaminated air from entering.

Q4. What is a HEPA filter?

A4. A HEPA filter traps and blocks very small particles from getting back into the air. A certified HEPA filter is required and tested to trap particles as small as .3 microns with 99.97 % efficiency. One micron is 1/1,000,000 of a meter. A 0.3-micron particle is 300 times smaller than a human hair and 30 to 50 times smaller than the human eye can see. HEPA is an acronym for "high efficiency particulate absorbing" or "high efficiency particulate arrestance" or, as officially defined by the Department of Energy (DOE) "high efficiency particulate air."

Q5. Where is a HEPA filter used?

A5. In medical research centers, atomic research centers, nuclear power plants, hospitals, pharmaceutical manufacturing, by hazmat service contractors (lead paint, anthrax) or in other environments that involve any of the following situations:

- Water/fire/disaster remediation
- Asbestos and mould abatement
- Construction
- Renovation projects
- Drywall dust air cleaning
- Paint fume air cleaning
- Bio-hazard removal

Q6. How do I size a room for an air scrubber/negative air machine?

A6.
1. Figure out the total square footage of the area/room by multiplying length, width and height to get the total cubic footage
   Example: A 2,500 sq. ft home with 10 foot ceilings will have a total cubic foot measurement of 25,000 f^3.
2. Take the total cubic foot measurement of the home and divide it by the CFM ability of the negative air machine.
   Example: 25,000 cubic home divided by a 2,000 CFM negative air = 12.5. It will take one 2,000 CFM negative air machine 12.5 minutes to change the air in the area one time.
3. Divide 60 minutes (1 hour) by the 12.5 minutes it takes to change the air in a room 1 time.
   Example: 60/12.5 = 4.8. This is the number of times a 2000 CFM negative air machine will change the air in this size building in one hour. In this case, more CFM will be needed to meet the standard of 6 times per hour.

Q7. What does "daisy-chaining" refer to?

A7. Daisy-chaining is the act of connecting multiple units together in order to increase the area that can be scrubbed at the same time. The EnforceAIR™ has GFCI protected receptacles that allow the user to connect up to four units together on a 15 amp circuit.

Filtration

Q8. Why is the HEPA filter in the EnforceAIR™ cylindrical?

A8. The unique cylindrical design increases the available filter media surface area which increases the life of the filter. It allows for even particulate loading and performs to full capacity. It also features a protective mesh cage and metal end cap to protect the HEPA from potential damage during use and transport.

Q9. What are the advantages of a carbon canister filter over a carbon pleated filter?

A9. The carbon canister contains significantly more carbon than a pleated filter, meaning you won't need to replace it as often. When employing multi-stage filtration in the EnforceAIR™, the life of an interior carbon filter is significantly extended as particulate will have been filtered out by that point, enabling the carbon to only trap odours.

DOP/PAO Testing

Q10. What is a DOP/PAO Test?

A10. A process that challenges HEPA filtered equipment to ensure it is safe to use in hazardous environments. An aerosol generator is used to convert DOP or PAO oil to an aerosol with particle sizes down to .3 micron. A photometer then measures the amount of particulates in the exhaust air stream.

Q11. Why does equipment need to be DOP/PAO tested?

A11. Provincial regulations dictate that DOP/PAO testing must be conducted in order to verify that HEPA filtered equipment is functioning correctly and performing at the protection level it was intended for.

Q12. How often should equipment be DOP/PAO tested?

A12. Equipment should be tested and certified prior to operation in any facility, including after relocation within a facility. An internal testing schedule of facility-owned equipment should be established based upon application and frequency of use. All equipment must be tested following any maintenance or repair, including after a new HEPA filter is installed. Ensure you follow regional and provincial regulations, along with any facility-specific policies, regarding frequency of DOP/PAO testing.

Q13. Does the EnforceAIR™ pass DOP/PAO testing? Where can I have my unit DOP/PAO tested in the future?

A13. Yes, each HEPA filter is tested by the manufacturer and each EnforceAIR™ unit is tested after assembly to ensure seal integrity. For future tests, your local Hazmasters branch provides on-site DOP/PAO testing services.