

HDM Performance Parts 218 Husting Lane Benton, Kentucky 42025

Foam Air Filter Information

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Paper Filtration

Pleated paper elements are used by more vehicles and equipment than any other type for these reasons:

1. They are the least expensive for the manufacturer to install as original equipment from the factory.
2. For the largest percentage of operating conditions (street and highway driving) they perform well enough to satisfy the owner/driver at minimal acceptable levels.
3. The elements are dry, easy to handle, and convenient to replace.
4. Since they are "throw away" items (cannot be cleaned for reuse), they represent a large and profitable part of the replacement market, while occupying our landfills.

Paper filters are a stacked matting of fibers creating a random weave approximately 1/2mm thick, and rely on the "screening" effect to stop dirt particles. Airflow per square inch is so poor that the paper must be pleated using many feet of material to make a filter. All dirt or dust particles must be caught on the surface or not at all. Each time a particle is caught, it stops up a hole. From the moment you start your engine, you have a rapidly decreasing air flow rate. Paper also has two other big drawbacks for off-road use. Any moisture reaching the element causes the fibers to swell, reducing airflow even more. Another is the possibility of rupture. Paper is not a very strong material, especially where it is creased to form each pleat. Intake manifold backfires, or cleaning attempts with compressed air, usually rupture the paper leaving the filter ineffective.

Pleated Gauze or Fabric Filtration

This is another screen type that is only 1mm thick. If the dirt is not stopped on the surface, it is not stopped at all. These filters are sold on the pretense that they maintain an oil curtain for the air to pass through, thereby catching all dirt particles. It is impossible to maintain an oil curtain. The oil soaks the threads of the gauze or cloth, but does not span the openings; otherwise, the air could not get through. The dirt particles that do hit the threads have a good chance of being caught; the others simply go through. The reason the filter does not look dirty on the inside is because the dirt went into the engine. You can easily demonstrate this fact yourself by coating the inside of your housing or carb throat with a thin layer of grease to trap some of the dirt not caught by the filter or you can place a foam filter inside the gauze element to prove the same thing.

The one advantage that this type of element has over paper is greatly reduced airflow restriction; however, poor filtration efficiency is the price you pay. When dirt builds up, filtering action improves, but now the airflow is poor like paper elements.

Open Cell Filter Foam

The development of this special foam represented a major advancement in air filtration technology. Foam air filters now combine great airflow capability, huge dust holding capacity, and very high filtration efficiency for extremely small particles.

Fully reticulated (open pore) foam is a honeycomb of tiny, interlocking cells of uniform size, which create an impossible journey for dirt particles since there are no straight-through passageways. Each passageway (16 to 25mm long) is like hundreds of very small centrifugal/oil bath filters connected one to another. In this way, foam traps and holds the particles throughout the entire volume of foam. This is why they are referred to as "full depth" filters in contrast to the paper or gauze elements, which are screens, or "surface type" filters. The cell strands stop the dirt, while the oil film holds the dirt like fly paper until removed for cleaning.