**Effect analysis of air filter materials on performance of filtering capacity-A State of the art review**

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**ABSTRACT**

Air filter is a crucial element in an automotive air condition system. The primary function of air filter is to block the foreign particles from entering inside the automotive air-conditioned space. Controlling air pollutants in automobile cabin has become increasingly important owing to the health risks of exposure to high concentrations of harmful pollutants. The quality of air coming inside the air-conditioned space depends on the ability of the filter to trap the foreign particles. More the finer particles are blocked at air filter more pressure drop takes place. This pressure drop then decreases the air volume coming inside the conditioned space. Various materials are used to manufacture the air filters so that the optimum performance of it can be achieved so as to improve the filtration , enhance economic benefits and gas adsorption efficiencies of cabin filter. This paper shows extensive review of research done on the effect of filter materials on air purification technologies, air filtration theory etc., materials and standards. Further, the research of air filtration advances by considering aspects such as air quality improvement, filtering performance, thermal comfort and acoustic impact are also reviewed from materials point of view. Current advancement in air filtration materials technologies along with their advantages, limitations and challenges are discussed. This paper aims to drive the future of material for air filtration technology research and development in achieving sustainable and healthy automotive air conditioning. A further study provides valuable baseline information of air filter material to study the characteristics of cabin air quality, understanding its effect and improving it for healthy indoor air environment.

*Key Words: Air filter, filter materials, filter performance*