

FULLY SYNTHETIC FILTER MEDIA FOR AUTOMOTIVE OIL FILTRATION

Xu (Marshall) Zhang¹, Brian Yates²

¹MANN+HUMMEL Purolator Filters LLC, ²MANN+HUMMEL

Oil filtration is one of the most important automotive filtration processes. When an internal combustion engine works, solid particles generated from both combustion process and engine component wear get into the lubricant oil, which can cause further engine wear and malfunction. With an oil filter in place, it removes the particles from circulating lubricant oil to maintain the health of the lubrication system and in long term extend engine lifetime. An oil filter contains a number of components while the filter media are the core part to capture the dirt. Nowadays cellulose based filter paper are dominantly used as the filtration media in oil filters especially light duty applications, e.g., passenger cars. With future trend demanding better quality as well as longer service lifetime of the lubricant oil, there is also a need to develop new filter media accordingly. Compared to conventional cellulose based filter media, synthetic media made of nonwoven polymer fibers show superior characteristics including higher physical strength, stronger chemical resistance, better fine filtration performance and pressure drop build-up behavior. In this study, MANN+HUMMEL MULTIGRADE O-S 16.1 fully synthetic filter media consist of polyester (PET) fibers are evaluated for physical strength, chemical resistance, and pressure drop, and then compared to cellulose-PET mixed filter media. Simulation of particle loading into the media is also introduced.