

**Protection Properties of Electret Materials
during Liquid Aerosol Filtration**

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ABSTRACT

Improving properties of fibrous filtering materials used in respiratory protection is closely connected with electrically activated filter materials technology. This method is mainly applied to melt-blown filtering materials where static electrification is achieved by corona discharge and as a result increasing effectiveness of capturing aerosol particles from air is obtained. Different ways of charging fibrous materials mainly improve filtration properties but with an observed lack of stability and durability of parameters achieved. Several research projects have been done regarding changes in time of effectiveness of liquid aerosol filtration by polypropylene and polycarbonate melt-blown materials with electrostatic charge. It has been found that during loading these electret materials with liquid aerosol (test aerosol according to European standard EN149:2002 - paraffin oil mist), significant loss of protection properties with time is observed. The decrease of filtering effectiveness depends on concentration of aerosol in air. Analysis of the obtained test results leads to the important proposal of changing the way of assessment of electret material filtration properties. Possible change is connected with necessity of estimation not only initial filtration but its change over time so that a proper estimation of filtration effectiveness can be done in some usage situations.