

SUB-MICRON LOADING OF AEROSOLS: EXPERIMENTAL AND REPORTING CONSIDERATIONS

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Sub-micron loading of aerosols has been an interest to media and filter manufacturers for a number of years in an effort to better simulate real-world conditions. Specifically, the creation and control of a consistent laboratory contaminant is sought to characterize premature plugging that conventional dust tests miss for cabin air, light duty, and industrial/heavy duty automotive applications. Recent work in industry has focused on capacity and total efficiency results with varying specificity of the contaminant. This presentation aims to discuss key contaminant considerations, potential reporting means, and differentiating results compared to standard dusts. For example, thick layers of ultra-fine fibers can show differentiation of two times the capacity of conventional media across a range of soots when controlling for soot type (distribution, etc). The absolute capacity, however, can vary by a factor of two depending on which contaminant is used within a median diameter range from 30 nm to 120 nm. The same comparison with salts, however, shows four times the capacity with minimal variation from distribution due to testing effects that will be discussed. This presentation will guide key reporting considerations and controls necessary to develop a sub-micron test procedure and communicate watch outs end-users must consider when given summarizing literature.