

Experimental Investigation of Powder Holding Capacities of H13 and H14 Class Activated Carbon Filters Based on En 779 Standard

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Abstract : The use of HEPA filters for air conditioning systems in clean rooms tends to increase progressively in pharmaceutical, food stuff industries and in hospitals. There are two standards widely used for HEPA filters; the EN 1822 standards published by the European Union, CEN (European Committee for Standardization) and the US based IEST standard (Institute of Environmental Sciences and Technology). Both standards exhibit some differences in the definitions of efficiency and its measurement methods. While IEST standard defines efficiency at the grit diameter of 0.3 μm , the EN 1822 standard takes MPPS (Most Penetrating Particle Size) as the basis of its definition. That is, the most difficult grit size to catch up. On the other hand, while IEST suggests that photometer and grit counters be used for filter testing, in EN 1822 standard, only the grit (grain) counters are recommended for that purpose. In this study, powder holding capacities of H13 and H14 grade materials under the EN 779 standard are investigated experimentally by using activated carbon. Measurements were taken on an experimental set up based on the TS 932 standard. Filter efficiency was measured by injecting test powder at amounts predetermined in the standards into the filters at certain intervals. The data obtained showed that the powder holding capacities of the activated carbon filter are high enough to yield efficiency of around 90% and that the H13 and H14 filters exhibit high efficiency suitable for the standard used.

Keywords : activated carbon filters, HEPA filters, powder holding capacities, air conditioning systems

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