

技术及应用

# 不锈钢过滤材料的过滤特性

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**摘要** 利用混合标准粒子和邻苯二甲酸二辛酯 (DOP) 多分散气溶胶, 采用扫描迁移粒径仪分析气溶胶全粒径谱, 作为测定各级粒径过滤效率的方法, 对几种不锈钢过滤材料进行过滤特性研究。研究表明, 对于多分散气溶胶, 不同孔径和性质的金属滤材的最大透过粒径 $D_{max}$ 是不同的,  $D_{max}$ 随滤材过滤孔径的增大而变大; 在1~3 cm/s滤速区间内, 滤材的效率随滤速的增加而降低, 且滤材的 $D_{max}$ 随滤速的增加向小粒径方向移动。不锈钢滤材串级过滤时表现出各级滤材的效率依次降低, 但串级过滤的总过滤效率仍随级数的增加而增大; 实验还证明, 滤速一定时, 相同滤材串级过滤并不会改变过滤器的 $D_{max}$ , 但观察到串级过滤各级单级效率的 $D_{max}$ 有随级数的增加向大粒径方向移动的现象。

关键词 [过滤效率](#) [不锈钢过滤材料](#) [气溶胶](#)

分类号

## Characteristics of Stainless Steel Filter Material

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**Abstract** The scanning mobility particle sizer was used to measure the size distribution of particles. It provided a method for analyzing filtration efficiency of sizing particles. The method was used to measure the penetration ratio and filtration efficiency of stainless steel filter material with the mixed particle size standards and the DOP polydisperse aerosols. The results show that the maximum penetration diameter ( $D_{max}$ ) varies from different fiber size of metal filter material, the  $D_{max}$  becomes greater as fiber size is increased. When filtration velocity is in the range of 1-3 cm/s, the filtration efficiency and the  $D_{max}$  of metal filter material decrease as increasing of filtration velocity. The efficiency of each layer of multilayer filter material decreases stage by stage for polydisperse aerosol, but total efficiency increases with increase of layers. The results also show that the maximum penetration ratio of each layer increases with increase of layers.

**Key words** [filtration](#) [efficiency](#) [stainless](#) [steel](#) [filter](#) [material](#) [aerosol](#)

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