

# CHARACTERIZATION OF FIVE DIFFERENT FIBROUS FILTERS MEDIA AND PERMEABILITY PERFORMANCE

L. Ana Elisa-1<sup>1,\*,#</sup>, L.Mônica Aguiar<sup>1</sup>

<sup>1</sup>Laboratory of Environmental Control, Department of Chemical Engineer, Federal University of São Carlos, Brazil

<sup>#</sup>Corresponding author: [anaelista@gmail.com](mailto:anaelista@gmail.com)

Nowadays, people spend considerable parts of their time indoors with air conditioners on. Even at work, in a car or at home, they expose themselves to what is known as indoor air pollution. An easy solution for this is using filters media. They are cheap, easy handling and renewable. Although the great convenience, the market offers a variety of filters with different efficiency performances, thus serving for different applications. There are many parameters that may influence its performance such as: structure of filters (porosity, fiber diameter, thickness and permeability); aerosol properties (concentration, chemical components) and also the operation conditions (temperature, velocity and filtration area). *Innocentini* brings an approach to describe permeability. There are two equations, Darcy and Forchheimer equation. The first takes account only the viscous effects ( $K_1$ ), while the second considers inertial effects as well ( $K_2$ ). The main objective of this study is the characterization of five different filters media: Glass and Micro Quartz (filters for nanoparticles) polyester, cellulose and activated carbon filter. Then, the methodology used is the comparison between permeability and structure of the filters. Permeability was estimated by Darcy and Forchheimer Equation, consequently were collected pressure drop and velocity variation. The structure of the filters were obtained by the Scanning Electron Microscopy SEM – Inspect S50. The results brought different values of permeability coefficients for each filter media. Polyester and Activated Carbon show greater values of coefficient permeability while Quartz and Glass have the smaller ones. These values are coherent with the pictures from SEM. Those filter medias with greater  $K$  own greater hollows.

## REFERENCES

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