

INVESTIGATION THE EFFECT OF THICKNESS ON THE PERFORMANCE OF THE COALESCED GLASS FIBER MEDIA

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Many of industries in multipurpose applications such as filtration, petroleum and high-performance polymers productions have gas-liquid applications that they require to have a good performance filters to capture the aerosols liquids involved in the gas stream. The filter media thickness has a direct effect on the performance of the filter as well as the cost of the whole filter. In this work, Glass filter media with different thickness measurements have been tested to compare the differences of the unsteady state behaviors. The thickness measurements of the filter media are: 2mm, 4mm, 6mm, 8mm, 10mm, 12mm. The oscillation behavior is expected to be different when we change at least one property of the media. Fiber size and wettability properties (contact angle to the oil) have been changed to have more investigation about the unsteady state behavior. The experiments have been conducted to observe the performance of the coalesced filter media for each thickness mentioned above by analyzing the downstream concentration of the liquid aerosols. Glass fiber media is tested for the following four cases: 1) Uncoated Glass fiber media with fiber size of approximately 6.5 microns 2) Uncoated Glass fiber media with fiber size of approximately 2 microns. 3) Glass fiber media of approximately 6.5 microns fiber size and coated by a solution of 15 wt% Poly(methyl methacrylate) (PMMA) in Toluene. 4) Glass fiber media of approximately 2 microns fiber size and coated by a solution of 15 wt% Poly(methyl methacrylate) (PMMA) in Toluene. The coating process has been made using a dip coating technique and a new contact angle was observed.