

CROSS-VALIDATION OF CAPILLARY FLOW POROMETERS

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Abstract

The project consisted of cross validating the PMI porometers at different DuPont locations. A range of track etch membranes (0.2 μ m - 20 μ m), a woven screen (105 μ m), and a woven belt (170 μ m) were run on the units for comparison. Track-etch membranes are a dense polymer film produced by a two-step technique that allows for the control of the pore density and the pore diameter. The results indicated significant problems in mechanical arrangement of the pressure transducers for the porometer unit. Recommendations were made to construct a new machine that addressed the problems that were occurring. An examination of the different type of wetting liquids that are currently being used was optimal for a particular type of media. A wide range of media from DuPont and other suppliers were tested using a goniometer. The goniometer results showed that in general Galwick tended to have a lower contact angle than Silwick. A standard operating procedure was produced using the information obtained from the wetting experiments and the Six Sigma Gage R&R.

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