Cathodic Paint Recovery
Synder UF Membranes

Background
As a leading supplier of ultrafiltration membranes, systems, and anode cells to the electrocoating industry, Synder provides complete UF systems for the filtration of cathodic paint to automobile companies all around world. We offer our popular V6 elements that typically allow low passage of the solids in the E-Coat paint for typical process. Synder's V4 and V5 membrane were also tested to see if the small pore sizes/MWCO would result in different solid level in the permeate without sacrificing too much permeate flux.

The experiment was conducted on a single cell cross-flow filtration unit with a 1 gpm micro-pump. The paint tested was supplied directly from the manufacturer.

Feed Solution, Membrane, Operation Conditions

Feed Solution	
Material	Cathodic Paint
Dry mass (wt/wt)	12.8%
pH	6.0
Membrane	
Type	V4, V5, V6
MWCO	70, 200, 500 kDa
Material	PVDF with Surface Treatment
Surface area (in^2)	3
Operating Parameters	
Inlet Pressure (PSI)	60
Temperature (°C)	19-27
Crossflow Rate (GPM)	0.9
Run Time (min)	40
Feed Volume (L")	1

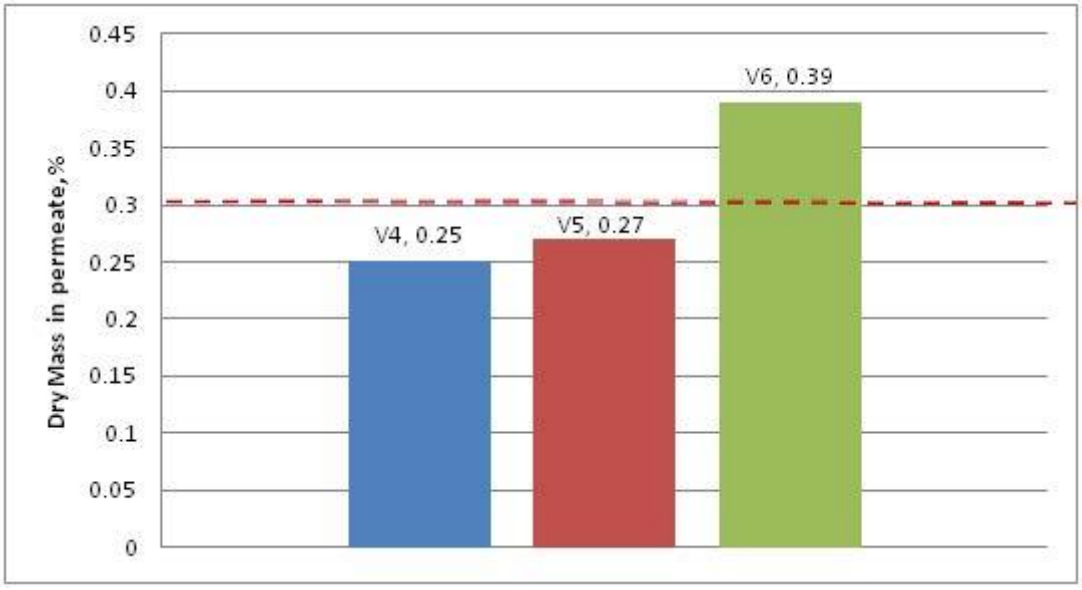

Figure 1: Percentage Dry Mass in Permeate

Permeate samples from the V4, V5, V6 membranes, and feed

Results

The dry mass in the permeate from the UF membranes is listed in Figure 1. The results show that both the V4 and V5 membranes passed less than 0.3% dry mass, which meets industry standards. The average flux of the V5 and V6 was approximately 18 GFD while the flux of the V4 was approximately 16 GFD. Based on the small amount of dry paint mass in the permeate, both the V4 and V5 membranes are suitable for cathodic paint recovery.