

- 1 **S1 Table.** Conductivity measurements of the separators and membranes studied using AC  
 2 impedance spectroscopy in 1M PBS.

<b>Membrane or separator</b>	<b>Thickness / <math>\mu\text{m}</math></b>	<b>Area resistance / <math>\Omega \text{ cm}^2</math></b>	<b>Conductivity / <math>10^{-3} \text{ S cm}^{-1}</math></b>	<b>Resistivity / <math>\Omega \text{ cm}</math></b>
<b>Nafion</b>	183	1.93	9.5	105.65
<b>ETFE-g-PSSA D.O.G. 23%</b>	164	1.05	15.7	63.84
<b>ETFE-g-PSSA D.O.G. 35%</b>	66	0.48	13.8	72.32
<b>HDPE-g-PSSA D.O.G. 11%</b>	39	6.77	0.6	1734.70
<b>CoPVDF-g-PSSA D.O.G. 10%</b>	115	3.53	3.3	307.25
<b>PVDF-g-PSSA D.O.G. 34%</b>	45	0.49	9.1	109.63
<b>Rhinohide</b>	668	1.69	39.4	25.35
<b>Scimat 700/70</b>	127	0.49	25.7	38.85
<b>Scimat 700/77</b>	117	0.51	23.0	43.53
<b>Scimat 700/30k</b>	130	0.27	48.3	20.72
<b>Scimat 700/40k</b>	103	0.78	13.2	75.86
<b>Scimat 850/61</b>	91	1.07	8.5	117.51
<b>Tyvek</b>	146	31.09	0.5	2129.13
<b>Carbon paper</b>	300	n/a	n/a	n/a

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