



SUMMARY OF TRISEP MEMBRANES

TriSep Corporation offers a full line of reverse osmosis, nanofiltration, ultrafiltration and microfiltration membranes for rolling spiral-wound membrane elements and for use in plate & frame devices. TriSep membranes are used in a wide variety of process separations in addition to water purification. A general description of these membranes is presented below. TriSep membrane sheet is shipped in 1,000 linear foot rolls that are 42" wide on 3" ID cores.

REVERSE OSMOSIS:

ACM2: ACM2 is a high rejection brackish water membrane. ACM2 is TriSep's highest volume membrane and thus our "standard" brackish water membrane. Variations include ACM1 and ACM3. ACM1 is an incrementally tighter membrane; ACM3 offers slightly lower pressure operation.

ACM4: ACM4 is TriSep's low energy brackish water membrane with nominal salt rejection in the 99.0% range in system operation.

ACM5: ACM5 is TriSep's highest flux / lowest pressure membrane, designed to nominally operate in the 100-150 psi range for commercial/industrial applications.

X-20: X-20™ membrane is a low-fouling polyamide-urea reverse osmosis membrane with a nominal salt rejection of 99.5%. Unlike most competitive "fouling resistant" membranes that involve a post-treatment coating that washes off after several cleanings, the low-fouling nature of X-20 membrane is built into its unique chemistry. The surface chemistry results in a near-neutral surface charge and smoother surface morphology.

SB50: SB50 membrane is a cellulose acetate / triacetate blend with nominal solute rejections of 95% for NaCl and greater than 99% for MgSO₄ and sucrose. SB membranes can tolerate continuous free chlorine at up to 1.0 ppm. SB50 membrane offers 20% higher flux rate than SB20 membrane.

SB20: SB20 membrane elements feature a cellulose acetate blend membrane and have a nominal salt rejection of 98%. SB20 is not available in membrane form as it is the result of "sizing" SB50 membrane after element rolling.



NANOFILTRATION:

- XN45:** XN45 membrane is a piperazine-based nanofiltration membrane with a molecular weight cut-off in the 500-700 Dalton range. Its nominal solute rejection is 10-30% NaCl and greater than 90% for MgSO₄ and sucrose. XN45 is a slightly more “open” membrane than GE/Desal DL and Dow NF270 membranes in process applications.
- TS40:** TS40 is a piperazine-based nanofiltration with a molecular weight cut-off in the 200 Dalton range. Its nominal solute passage is about 50% NaCl at 2,000 mg/l (with higher passage at higher concentration) and less than 1% for MgSO₄ and sucrose. TS40 offers similar performance to GE/Desal DK membrane in process applications.
- TS80:** TS80 membrane is a semi-aromatic polyamide nanofiltration membrane with nominal monovalent ion rejection of 80-90% and >99% divalent ion rejection. As a result TS80 is considered a “softening” membrane with typical feed pressure of about 100 psi.
- SB90:** SB90 membrane is a cellulose acetate blend nanofiltration membrane with nominal solute rejection of 85% NaCl and greater than 97% MgSO₄. SB90 can tolerate continuous free chlorine at up to 1.0 ppm and operates at about half the pressure (200 psi) of cellulose acetate RO membranes.

ULTRAFILTRATION / MICROFILTRATION:

- UA60:** While UA60 is considered a “tight” UF membrane with a molecular weight cut-off of about 3,500 Daltons, it is a piperazine-based thin-film composite membrane with limited salt rejection. It could also be considered a very “loose” nanofiltration membrane. As a thin-film composite, it has limited chlorine tolerance.
- UE10:** UE10 membrane is a 10,000 MWCO polyethersulfone ultrafiltration membrane. This membrane rejects about 95% of Cytochrome C, an amino acid with a 12,000 molecular weight. When tested on clean water at 20 psi, UE10 exhibits a flux rate of 40-60 gfd.
- UE50:** UE50 membrane is a 150,000 MWCO polyethersulfone ultrafiltration membrane. UE50 rejects about 90% of 150,000 molecular weight Dextran. When tested on clean water at 20 psi, UE50 membrane has a flux rate of 80-100 gfd.
- TM10** TM10 membrane is a 0.2 micron polyvinylidene fluoride (PVDF) microfiltration membrane. When tested on clean water at 10 psi, TM10 has a flux rate of 40-60 gfd.