



Liqui-Cel™
Membrane Contactors

Efficiency in Dissolved Gas Control

Oxygen can have a negative impact on shelf life and the taste of the end product. The addition of carbon dioxide to wine is what gives it its sparkle and a tangy taste. 3M™ Liqui-Cel™ Contactors are the ideal solution for precise dissolved gas control. The compact skid can be used in-line and produce consistent performance with efficiency.

EXF Series 8x20 Membrane Contactor



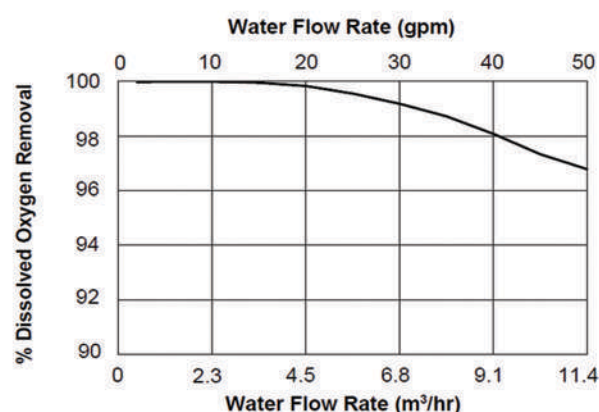
Principles of Membrane Degasification

- Gases in the atmosphere dissolve into wine until equilibrium is reached.
- Equilibrium between the wine and gas phase is offset when a vacuum and/or source of strip gas is applied. This creates a driving force to move gases from the liquid phase into the gas phase.

Deoxygenation & Carbonation

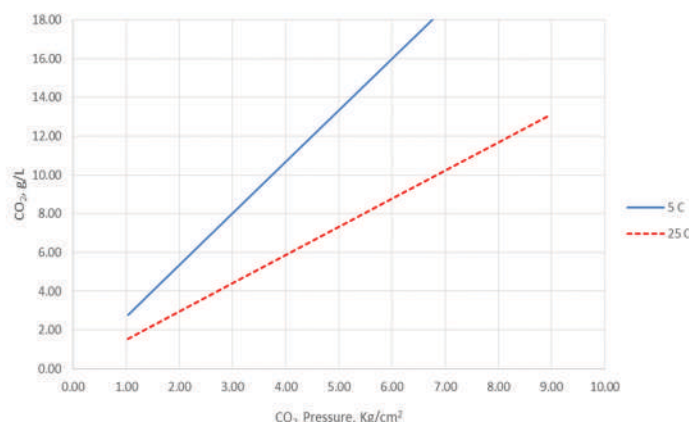
3M™ Liqui-Cel™ Membrane Contactors utilize a hydrophobic polypropylene membrane to remove dissolved gases from liquids. Water flows on one side of the membrane and a vacuum or strip gas is passed on the other side of the membrane. By controlling the pressures of gases in contact with the liquid, a highly efficient and precise method for gas control can be achieved.

Deoxygenation Performance Chart - EXF Series 8x20

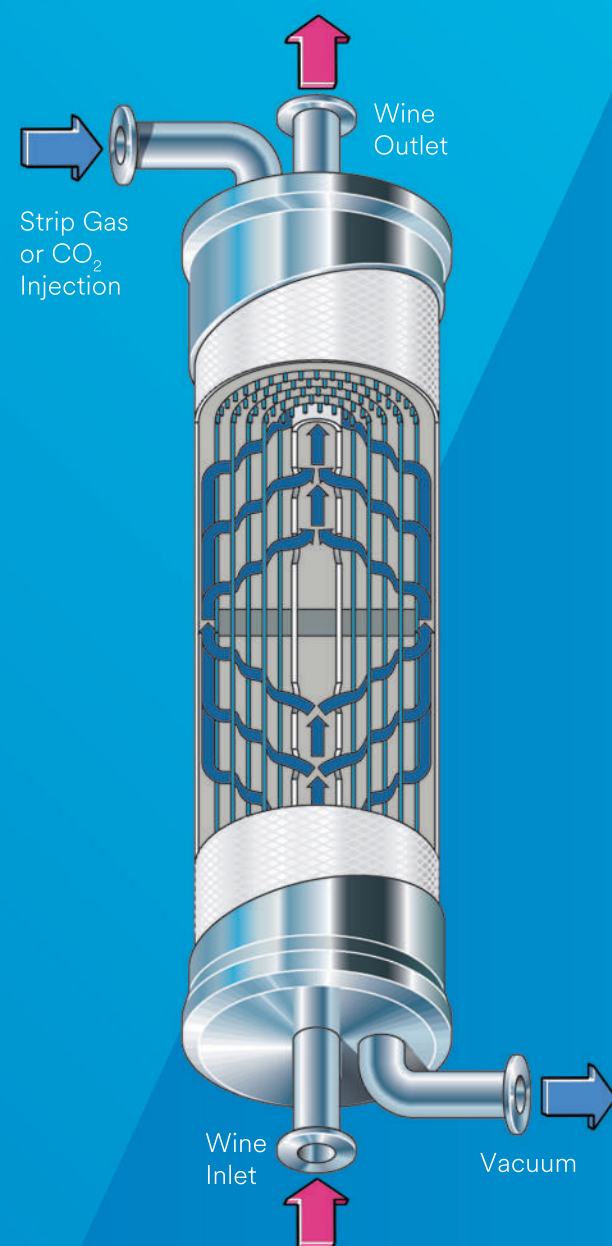


Test condition: N₂-vacuum combo mode with water at 20°C.
Vacuum: 50 mm Hg abs. N₂ sweep: 0.25 scfm.

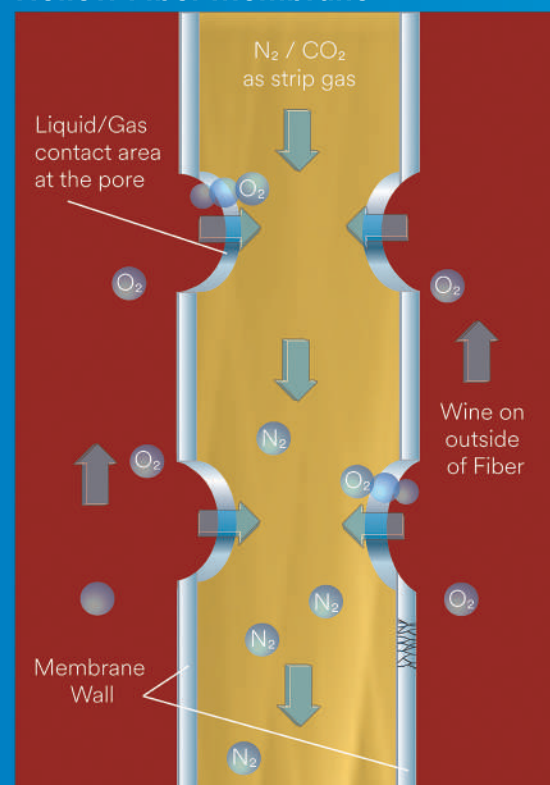
Carbonation Performance



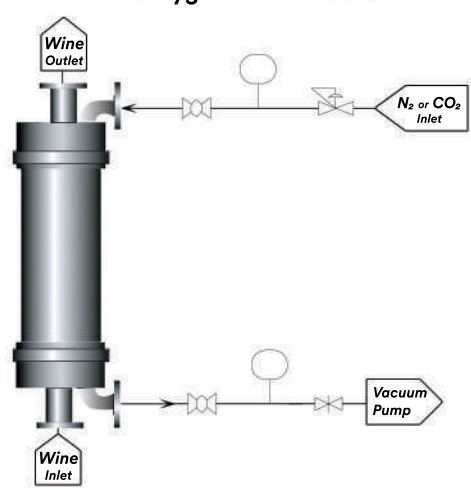
The graph is based on pressure estimates. The final gas pressures will be calculated when a preliminary sizing is requested. Actual allowed gas pressures are a function of the contactor selected.



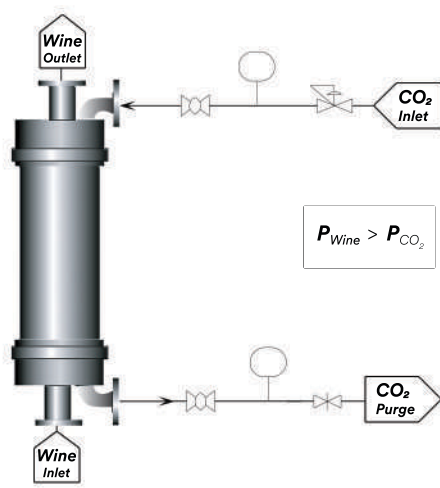
Hollow Fiber Membrane



Deoxygenation Process



Carbonation Process



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