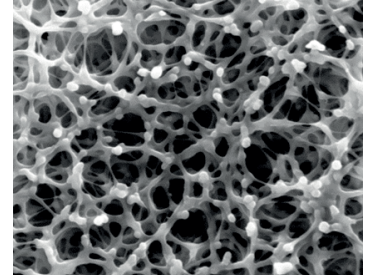


Membrane structure – Materials

The membranes use a non-woven nylon material as a substrate with a completely unordered structure. The minuscule pores of the membrane are created by fully saturating the fibers with an acrylic copolymer, which does not fill the gaps in the material.

The material and process parameters affect the size of the pores during manufacturing, which can be between 0.2 and 10 µm. Porometry can be used to determine the quality of the membrane. This is a rating procedure which assesses, among other things, the distribution of the sizes of the membrane pores and air permeability. A microscopic image of the cross-section of a membrane is shown here.



Membrane, microscopic images, 2000x magnification

For comparison: The minimum mesh width of a filter manufactured using economically viable methods is 50 µm.

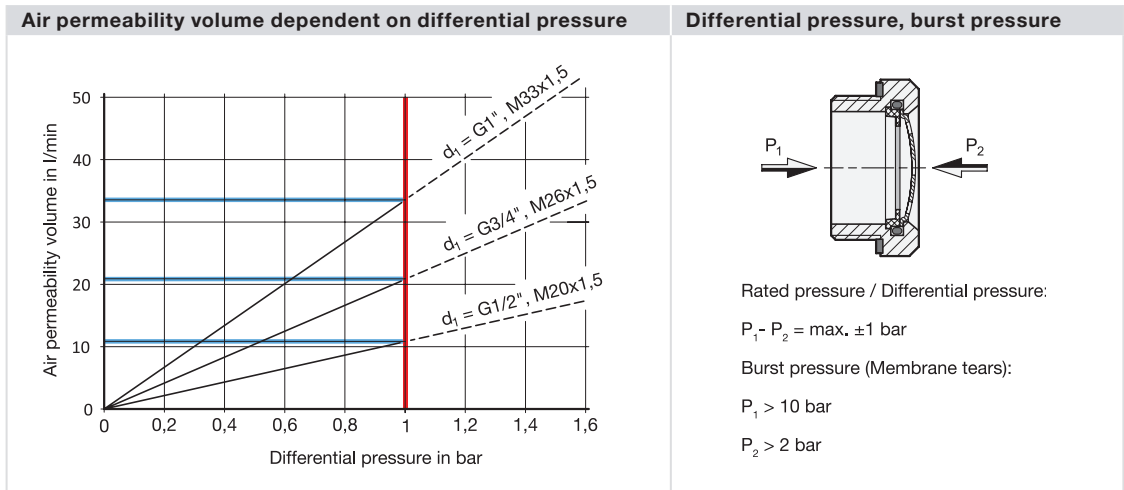
Functionality – Service conditions – Installation position

The membranes repel oil and water because of their materials and surface structure. This prevents water and oil droplets from completely suffusing the membrane surface. These properties are supported by installing the membrane on the side in a vertical position.

If the membrane is covered in exceptional circumstances, small quantities of oil or water can be pushed through the membrane due to the pressure differential. Once the situation has been rectified, the oil and water will drip off and the membrane will be fully functional.

Technical parameters

The maximum air permeability volume, the maximum pressure differential, and the maximum rated/burst pressure are all important when using membranes. There is a linear correlation between the air permeability volume which can be achieved and the differential pressure, which should not exceed 1 bar.



Resistances

Thermal - The membrane enclosure may not be used in temperatures exceeding 100 °C. The membrane itself can resist temperatures of up to 150 °C.

Chemical - The membranes are resistant to a wide range of chemical substances frequently used in mechanical and automotive engineering, e.g., oils, fuels, organic solvents, and alcohols. A tolerability test should be performed if you have any doubts.

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