

Tightness of enthalpy exchanger Vapobloc to viruses

The enthalpy exchangers from Polybloc are often used in hygienically sensitive environments due to humidity transfer and their tightness. Besides residential areas, the Vapobloc is used in homes for the elderly, hospitals, schools and kindergartens, to mention the most important.

The situation around the SARS-CoV-2 Virus, which provoked the global COVID-19 pandemic, caused uncertainties in the market. Important for all applications is that the virus is not spread by the ventilation system. Particular attention must be paid to the energy recovery where air streams cross.

This summary concentrates on the tightness of the Polybloc enthalpy exchanger. Therefore, we distinguish between exhaust air transfer (1) and the transfer through diffusion (2).



*School complex Looren, Maur
Enthalpy Exchanger CV-2-162*



*Retirement Home Sonnenhalde,
Kaltbrunn
Enthalpy Exchanger VB*



*Hospital Grabs
Enthalpy Exchanger VB*

1. Exhaust air transfer (EATR)

There is much debate about exhaust air transfer at unfavorable pressure ratios..

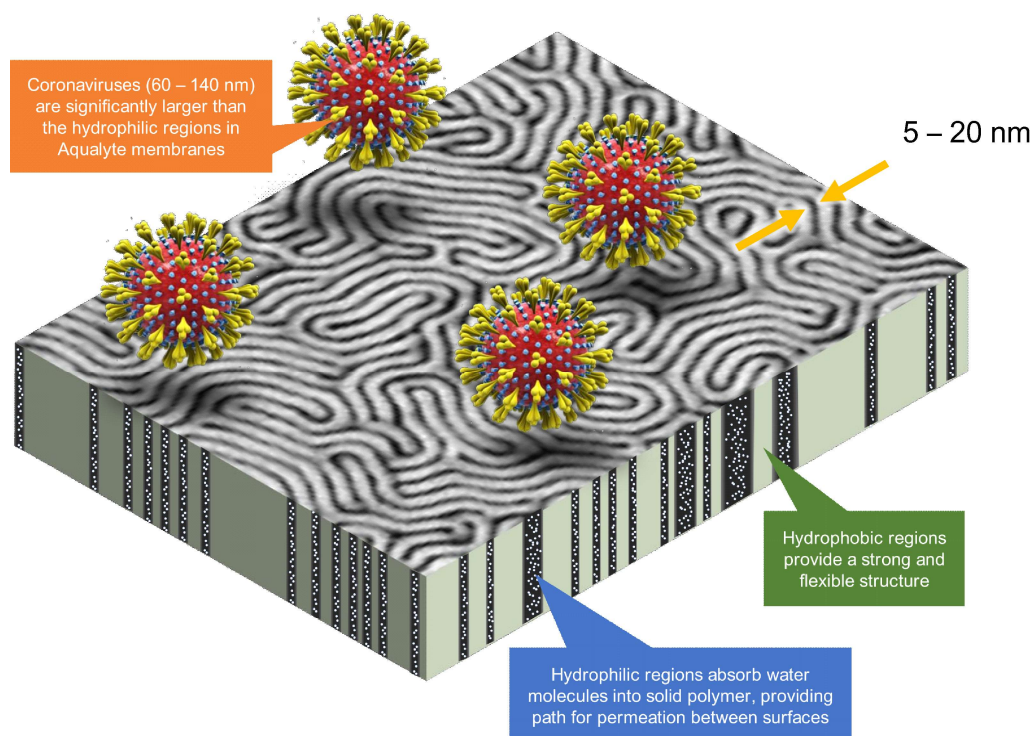
With enthalpy exchangers from Polybloc, transfer of exhaust air is only possible by leakage. Our Eurovent certified products have a leakage lower than 0.5% at nominal conditions. **In case of lower pressure in the exhaust air, 0% exhaust air transfer is guaranteed.** In practice, this is ensured by positioning both fans to draw air through the energy exchangers.



2. Diffusion through the membrane

Enthalpy exchangers are produced of widely varying materials. In Asia and North America, cellulose paper is often used. These enthalpy exchangers are usually very cheap, but as they are very sensitive to water, it is very hard to get a hygiene certification for these models. It is also challenging to get hygiene certifications for porous plastic foils.

The multilayer membrane developed by Polybloc and its partners allows water molecules to transfer without using porous foils.



The nanostructure with an alternating pattern of hydrophobic and hydrophilic regions allows the permeation of water molecules through the membrane. The layers are 5 to 20 nanometers thick and prevent the much larger viruses from entering. The hydrophobic layers provide the membrane its stability and prevent the permeation of bigger structures, such as viruses or bacteria.

Conclusion

The combined characteristics of the Vapobloc allows the unrestricted use in hygienically demanding applications. Viruses, explicitly also all Corona viruses, are not transferred through the Vapobloc membrane.

