

Agfa Zirfon™ Perl UTP 500

Technical Q & A

Version 1.3

■ ***Can Zirfon Perl membranes be stored over a longer time ?***

The separators can be stored in their original unopened package, for at least 12 months. Storage temperature should be between 0°C and 25°C. No further special environmental conditioning is needed. Alternatively, storage under KOH (working grade) is also possible, but offers no advantages.

■ ***Will Zirfon Perl membranes shrink, swell or expand ?***

No, under normal conditions no shrinking, swelling or expansion occurs. Even when dry (to be avoided) the thickness will remain the same.

■ ***When stored under KOH, what expansion of the membrane is to be expected as compared to the storage under de-ionized water ?***

No expansion should be observed in either case.

■ ***Are both sides of Zirfon Perl membranes functionally identical ?***

Yes, they are. Hence, there is no preferred orientation with respect to anode/cathode.

■ ***How to activate Zirfon Perl membranes ?***

Activation of Zirfon Perl is rather simple. Before installing the separator, be sure they are well soaked with de-ionized (or demineralized) water. After closing the electrolyzer cell, just fill up with electrolyte, start to pump around for a while and switch on power.

■ ***How long will it take, to replace the de-ionized water inside of the membrane by KOH ?***

The de-ionized water inside of the membrane will be replaced by KOH almost immediately after pumping around electrolyte.

■ ***When a cell is rinsed after installation of a new Zirfon Perl membrane, sometimes the cleaning water is slightly white colored – is this normal ?***

This is normal. The white colour is a small residue of Zirconia at the surface of the separator when new.

■ ***What if the temperature in the cell exceeds the specified maximum for Zirfon Perl ?***

Temperatures above the specified maximum for continuous operation (110°C) will weaken the support fabric and thus jeopardize the membrane structure and stability. A brief rise in temperature of no more than 10°C above the specified maximum will normally not harm the membrane.

■ ***What is the maximum allowed current density ?***

It is temperature that matters. With an electrolyser cell efficiency of around 70%, typically, roughly 30% of the input energy is converted into heat. The higher the current density, the more heat is generated. The current density can be as high as 1 A/cm² or even 2 A/cm² (10-20 kA/m²) as long as the cell (membrane) temperature does not exceed the specified maximum.

On the other hand, extreme conditions (poor cell or system design or malfunction) could cause the temperature to exceed the specified maximum even at a very low current density, and jeopardize the membrane structure and stability.

■ ***Is there a critical voltage for the membrane, when operated within an electrolyzer cell (2.5 V, 3V, 5V, none)?***

There is no critical voltage. The specified maximum temperature must be respected however.

■ ***What is the effect of higher operating voltage on the lifetime of the membrane ?***

There is no effect on lifetime as long as the specified maximum temperature is not exceeded.
