PureSure® System used in PURELAB® Chorus 1

Extending the life of the purification pack

In a conventional water purifier, when a purification pack, fed with RO permeate with a conductivity of about 35 µS/cm at 1.5 to 2 liters/minute has reached the stage when output water purity drops below 18.2 MΩ-cm, it is necessary to change the pack, in order to maintain water purity. At this point, only about 40 to 45% of the resin's total ion exchange capacity has been used up.

The capacity advantage of the PURELAB Chorus 1 system is illustrated in Figure 1 where in a conventional water purifier the pack would have to be changed after 880 liters when the product water resistivity had dropped to 17.5 MΩ-cm.

In the PURELAB Chorus 1, the first purification pack is used until its output purity has decreased to 1 MΩ-cm, using about 80% of the total pack capacity, 1590 liters in the example shown. Output purity from the system is maintained at 18.2 MΩ-cm by the second purification pack.

Over 80% greater utilization of resin capacity is achieved by this means. The relative gain depends on the purity of the feedwater and the flowrate. The poorer the feed purity and the faster the flow, the smaller the proportion of primary purification pack capacity that is used before the output purity drops below 18.2 MΩ-cm and the greater the capacity advantage with the PURELAB Chorus 1. The PURELAB Chorus 1 enables a high output flow rate of 2.0 liters/minute to be achieved with high resin enhanced capacity utilization.

When the purity of the output from the first purification pack has fallen to 1 MΩ-cm the first pack is still removing over 95% of the ions from the feed (with a conductivity of 20 µS/cm or greater). The second pack is only removing the remaining few % of ions. The overall effect is that less than 5% of the polishing pack's capacity is used in gaining 80% extra from the primary purification pack.

This is demonstrated in Figure 2 which shows the water purity in MΩ-cm against usage in thousands of liters for both a PURELAB Chorus purification pack, which was fitted new in the primary pack position, and a pack which was first used in the polishing position. If the capacity of the polishing pack had been significantly used, then one would have expected to find the capacity curve shown to be significantly to the left of that of the new pack. In practice they are virtually identical, confirming that use of the pack in the polishing position has a negligible effect on its capacity and that the extra capacity achieved from the primary purification pack is fully realised.

Figure 1:

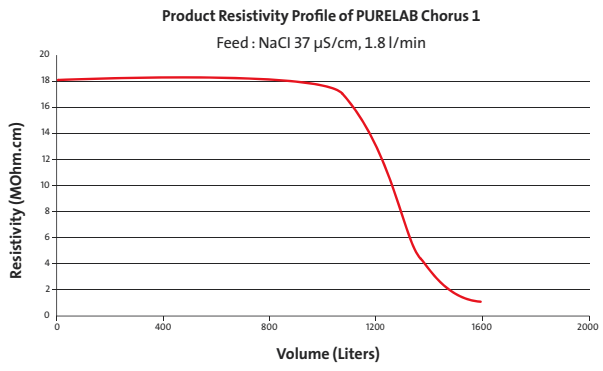
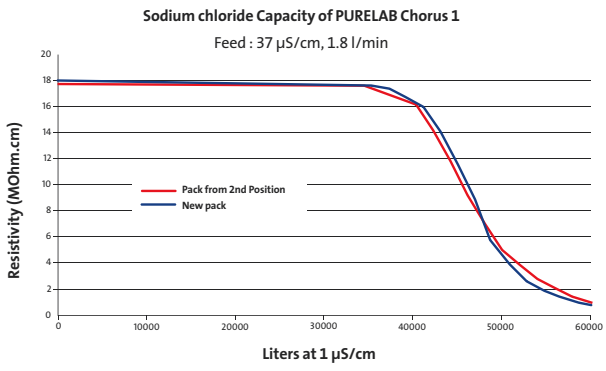


Figure 2:



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