

Care of Vycor® Porous Glass Frits

Vycor® is often used at the end of a reference electrode or a bridge tube to allow electrical, ionic conductivity between the bulk of the solution and the internal filling solution, while preventing large scale convective mixing of the solutions. Vycor, or "thirsty glass" is a porous glass with a fairly low leak rate.

The Vycor frits, however, are not immortal!

To preserve their useful lifetime, they should be kept wet. If they are allowed to dry out, solid crystals can clog the narrow pores and increase the electrical resistance. In extreme cases, the Vycor can crack upon drying out.

When not in use, the reference electrode or bridge tube can be stored with the Vycor frit immersed in distilled water. Diffusion through the Vycor is fairly slow, and the internal filling solution will not be diluted, even upon a few weeks of storage.

An alternative is to replace the small plastic cap that was in place when the reference electrode was shipped.

Replacing a Vycor frit

A Vycor frit should be replaced if it has been allowed to dry out, has been cracked or chipped, or if it has become discolored. The procedure is quite simple. A frit cannot be reused.

(1) Remove the old frit by cutting the heat-shrink Teflon® holding it in place. A sharp knife or razor blade is ideal.

(2) Place a single Vycor frit inside the piece of heat-shrink Teflon tubing supplied. Five 1/8" (3.2 mm) Vycor frits and five pieces of suitable heat-shrink Teflon are available as a kit from Gamry as part number 955-03. Contact the factory or your local representative for pricing.



(3) Slide the Teflon over the end of the reference electrode and be sure that the Vycor touches the end of the glass tube. Warm the Teflon with an electric "heat gun" until the Teflon shrinks tightly around the Vycor and the end of the reference electrode. Do not hold the heat gun too close or the Teflon will melt. Rotate the reference electrode to evenly heat all sides of the Teflon. A suitable heat gun can be purchased from your local laboratory supply house. A common "paint stripper" heat gun can also be obtained locally.

(4) Finally, trim the excess Teflon so that it is even with the end of the Vycor. If you do not, the excess Teflon tube can trap a gas bubble and isolate your reference electrode from the solution. That will make your Potentiostat very unhappy!



(5) Promise to take better care of your reference electrode frit in the future.