The Coiled Platinum Counter Electrode (Part #: RRPG249PT) is available as a kit (Part #: AFCTR5). It is intended for use in electrochemical systems and usually employed as one of three electrodes present within the electrochemical cell. Its design makes it flexible for many research applications. As shown below, the AFCTR5 Platinum Counter Electrode Kit consists of the Platinum Counter Electrode, PTFE Mount with Red Cap (Part #: RRPG036K3), Fritted Glass Tube (Part #: RRPG097), and a PTFE Mount for the Fritted Tube (Part #: ACEP1420R12).

The Platinum Counter Electrode features a coiled platinum wire at one end and a brass-colored contact pin at the other end of a chemically-resistant epoxy rod. The epoxy rod is resistant to many aqueous and non-aqueous solutions, though its long term exposure should be limited in acetone, concentrated nitric acid, concentrated hydrobromic acid, concentrated sodium hypochlorite, and 30% hydrogen peroxide. The platinum wire enters the electrode shroud through a PTFE port, to allow use with non-aqueous solvents for shorter periods of time without damage to the electrode.

Platinum, a fairly inert and noble metal, is a good sink for current passage across the solution to the working electrode. The surface area of the platinum coil is large enough for many electrochemical applications (see: Diagram on next page). In general, the counter electrode should have a surface area that is at least 10x larger than the surface area of the working electrode to ensure that the half reaction occurring at the working electrode is not rate limited by the half reaction occurring at the counter electrode.
Assembling the Kit

The Platinum Counter Electrode Kit can be used with or without the Fritted Glass Isolation Tube. To use the fritted glass tube ensemble, start by sliding the PTFE Mount with Red Cap over the brass-colored contact pin of the Platinum Counter Electrode. Loosely tighten the red cap near the top of the electrode. Before placing the PTFE mount and electrode into the fritted glass tube, make sure that there is solution inside the tube. Be careful not to bump the fragile platinum coil against the bottom or sides of the glass tube as you slide the 14/20 joints of the PTFE mount and fritted glass tube together. Tighten the red cap fully. Finally, slide the PTFE Mount for the Fritted Glass Tube into place to attain the desired solution immersion depth.

Maintenance

After every use, rinse the epoxy body and platinum coils with solvent to remove any dissolved chemicals. For aqueous systems, rinse thoroughly with deionized water. To minimize crystallization within the glass frit, be sure to thoroughly rinse both sides of the frit.

Storage

Store the platinum electrode in a dry location. Dependent upon use, it is good practice to soak and store the frit in solvent to prevent chemical contamination of future experiments.

Diagram

- Overall Length (L): 180 mm
- Shroud length (K): 150 mm
- Shroud OD (W): 6.9 mm
- Coil Surface Area (A): 4.9 cm²
- Coil OD (B): 0.5 mm
- Coil Total Length (C): 30.5 ± 1 cm
- Fritted Tube OD (F): 12 mm
- Fritted Tube Length (G): 150 mm