Platinum Electrode

KCE02TB

Platinum Coil Electrode (with Teflon Body)

This electrode contains a coiled platinum wire fused in a Teflon rod. This electrode is used as a counter electrode in most of the electrochemical measurements.

Product details

Platinum-coil is made with a platinum wire (O.D. 0.5 mm). Part of the platinum wire is connected with copper wire inside a Teflon rod to make an electrical contact. It is compatible with all KLyte electrochemical cell-tops.

The customized helix diameter, required for any specific application is also available.

Electrode dimensions

KCE02TB

Specifications

Electrode	KCE02TB
Material	Pt
Purity	99.95%
Shaft material	
Electrode Pin (2mm)	Compatible with KLyte Alligator clip
Rod diameter	6mm
Total Length (approx.)	70mm
Pt wire Length	100mm
O.D. of Pt wire used for	0.5mm
Height of Helix	10mm (customizable)

Cleaning and storing

Pure platinum metal is one of the most effective materials for counter/auxiliary electrodes due to its high electrical conductivity and resistance to corrosion. Generally, the coiled wire remains clean after the experiments, and the surface looks shiny. However, the appearance of the dull surface indicates the surface contamination. Further, surface contamination can also be detected by performing cyclic voltammetry in a pure electrolyte (e.g., 0.5mol/L aqueous H_2SO_4). The occurrence of additional peaks other than the traditional voltammogram of platinum metal indicates the presence of surface contamination. In any case, the surface must be cleaned before using it as a counter electrode. The cleaning of the Pt-electrode can be achieved by the following methods:

- **The chemical method for cleaning:** Organic impurities can be cleaned with a suitable organic solvent (*e.g.*, ethanol).

  Protein deposits can be hydrolyzed with a suitable commercial enzyme-based cleaner.

  Inorganic deposits can be cleaned using dilute acid and base (0.1 mol/L HCl, HNO_3, NaOH). Hot dilute acid/base solutions can be taken if the ambient temperature does not work. In general, hot 10% nitric acid removes most of the inorganic impurities.

  Persistent organic/inorganic impurities on platinum surface are removed by using stronger oxidizing agents, such as freshly prepared Piranha solution (3:1 mixture of concentrated sulphuric acid and 30% hydrogen peroxide) and Aqua regia (3:1 mixture of concentrated hydrochloric acid (37%) and concentrated nitric acid). Since these oxidizing agents are strong enough to dissolve the metal from the metal surfaces, the exposure of the electrode metal into these solutions should be minimized.

Note: One should be very careful in preparing, handling, and disposing of the Piranha solution. Mixing the solution is exothermic (hydrogen peroxide should be added slowly into concentrated sulphuric acid), and the temperature can reach above 100°C and can be explosive.

- **The electrochemical method for cleaning:** Platinum electrode can be cleaned by doing multiple cyclic voltammetry in a clean solvent (10 to 20 cycles). The persistent impurities can be removed by holding the electrode either at a high oxidizing or reducing potential in dilute acid solution (0.1 mol/L sulphuric acid) for few seconds to few minutes depending upon the nature and level of impurity.
- **Storing:** The platinum coil of the electrode should be kept immersed in clean DI water in an airtight container while not in use.

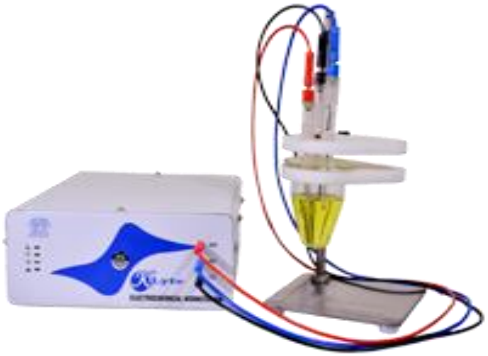
Optional Parts

KEC10A
Banana Cable Set

KEC10B
Banana Connector Pin

KA01 (Red), **KA02** (Black)
Alligator Clip

Our Valuable Clients



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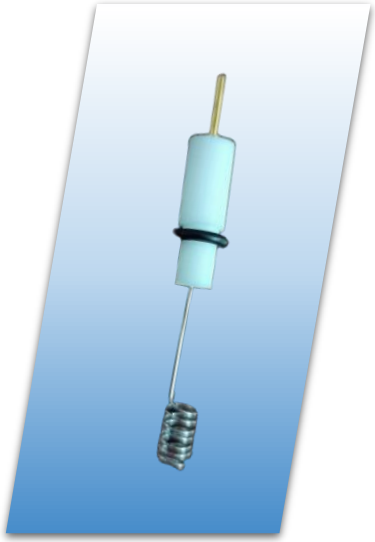
Product Information Leaflet



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A complete solution for your Electrochemistry research initiative…