

Platinum Electrode



KCE01

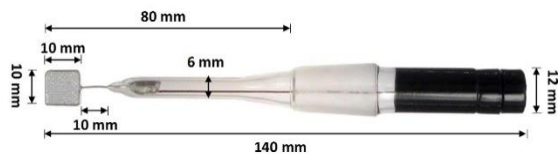
Platinum Mesh Electrode

This electrode contains a platinum-mesh attached with platinum wire mounted in a glass tube. This electrode is used as a counter electrode in most of the electrochemical measurements.

Product details

Platinum-mesh is framed with a platinum wire (O.D. 0.5mm). Part of the platinum wire is connected with copper wire inside a glass shaft to make an electrical contact. The standard ground-joint 14/23 enables easy assembly and compatible with all KLyte electrochemical cell set up. The mesh size is 10mmX10mm. The customized size required for any specific application is also available.

Electrode dimensions



KCE01, SGJ 14/23

Specification

Wire Material (Purity)	Pt (99.95% Pt)
Mesh Material (Purity)	Pt-Ir alloy (90.10% Pt)
Mesh Area	10mmX10mm (customizable)
Number of Mesh holes	~225/cm ²
Shaft material	Borosilicate glass
Electrode Plug-in-head (4mm)	Compatible with KLyte banana connector cable
Standard Ground Joint sleeve	14/23
Shaft diameter (Top)	12mm
Shaft diameter (Bottom)	6mm
Total Length	140mm
Pt wire Length	20mm
O.D. of Pt wire used for	0.5mm

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 Platinum mesh electrode remains clean after the experiments, and the surface looks shiny. However, the appearance of the dull surface indicates the surface contamination. The surface must be cleaned before using it as a counter electrode. The cleaning of a 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, HNO₃, 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 the 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 mesh of the electrode should be kept immersed in clean DI water in an airtight container while not in use.

Optional Parts



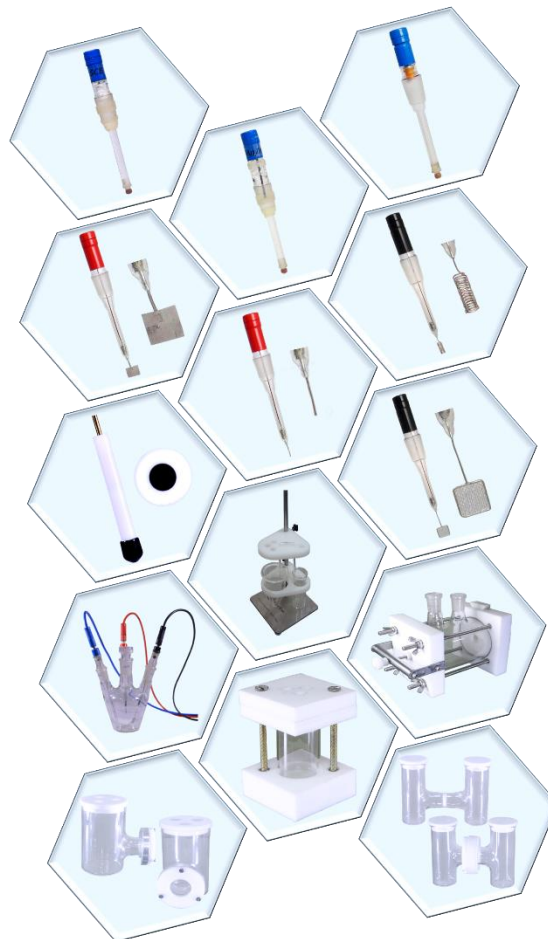
KEC10A
Banana Cable Set



KEC10B
Banana Connector Pin



KA01 (Red), KA02 (Black)
Alligator Clip



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Product Information Leaflet



Platinum Mesh Electrode
Product ID: KCE01

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