Platinum Electrode

KWE01, KWE02

Platinum Wire Electrode

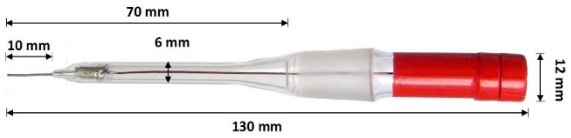
This electrode consists of a platinum wire, mounted at the end of the glass tube. This electrode is mostly used as a working or auxiliary/counter electrode depending upon the type of electrochemical measurements.

Product details

The platinum-wire electrode is made up of a 10mm platinum wire. 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 (KWE01) and 10/18 (KWE02) enable easy assembly and compatible with all KLyte electrochemical cell-tops.

The customized length and diameter, required for any specific application are also available.

Electrode dimensions



KWE01, SGJ 14/23

Specification

Electrode	KWE01	KWE02
Material	Pt	Pt
Purity	99.95%	99.95%
Shaft material	Borosilicate glass	Borosilicate glass
Electrode Plug-in-head	Compatible with KLyte banana connector cable (4mm)	Compatible with KLyte banana connector cable (2mm)
Standard Ground Joint sleeve	14/23	10/18
Shaft diameter (Top)	12mm	9mm
Shaft diameter (Bottom)	6mm	6mm
Total Length (approx.)	130mm	120mm
Pt wire Length	10mm	10mm
Pt wire OD	1mm	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 wire tip 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., 0.5 mol/L aqueous H_2SO_4). The occurrence of additional peaks other than the traditional voltammogram indicates the presence of surface contamination. In any case, the surface must be cleaned before using it as a working electrode. The following methods can be used for the cleaning of the Pt electrode:

- **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 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.

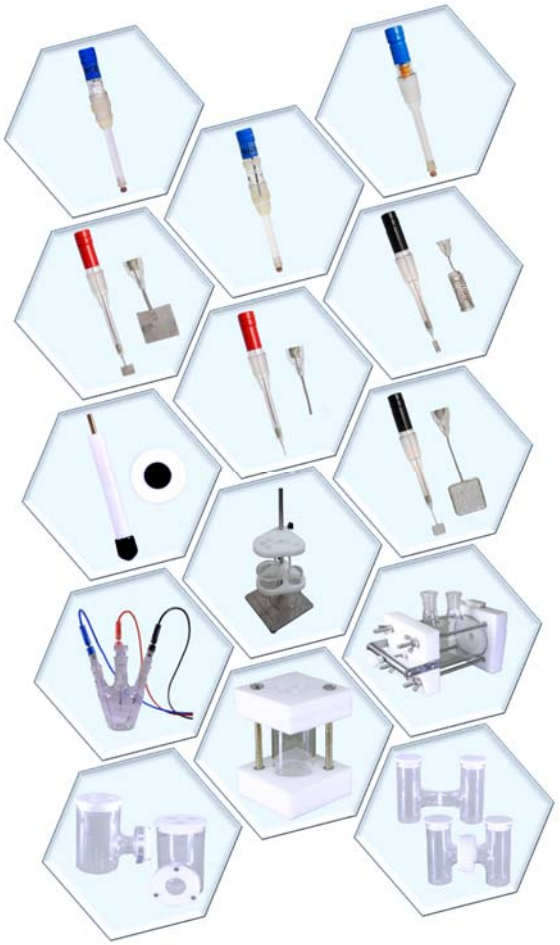
- **The electrochemical method for cleaning:** Platinum electrode can be cleaned by doing multiple cyclic voltammetry in a clean solvent (10 to 20 cycles). Persistent impurities can be removed by holding the electrode at either a high oxidizing or reducing potential in dilute acid solution (0.1 mol/L sulphuric acid) for few seconds to few minutes depending upon the impurity level.
- **Storing:** The exposed platinum wire of the platinum 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



Contact us

www.kanopytech.com

contact@kanopytech.com

+91-8604355668, +91-8004567307

Kanopy Techno Solutions

Crafting electrochemistry for lives…

Product Information Leaflet

Platinum Tip Electrode
Product ID: KWE01 and KWE02

A complete solution for your Electrochemistry research initiative…