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Karl Fischer electrodes

Leaflet
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Indicator electrode

- Double Pt ring electrode
- Double Pt wire electrode

Generator electrode

- with diaphragm
- without diaphragm

1 General

Immediately after receiving the electrode, check to make sure that it works properly. Defective electrodes must be sent back for warranty processing within 2 months (starting from the day of delivery). If the defect is proven to be due to a material or manufacturing defect, the electrode is replaced at no charge. Shipping costs are borne by the customer.

2 Cleaning and maintenance

CAUTION

Do not treat electrodes in ultrasonic baths. This may result in damage.

NOTICE

Metrohm does not recommend the use of any solvents containing ketone or aldehyde for cleaning Karl Fischer accessories.

2.1 Reagent replacement in coulometry

Catholyte: Replace the catholyte at least once per week. Longer use can cause blackening and yellow precipitates in the cathode chamber. Another sign of having used the catholyte for too long is an unpleasant smell.

Anolyte: The time at which the anolyte needs to be replaced depends on the water content and the type of sample. Usually, the electrolyte solution in the titration cell can be replaced without special cleaning. If, however, the titration cell should require cleaning despite this, it can be rinsed with water or a suitable solvent and subsequently dried in a drying oven at max. 50 °C.

CAUTION

Use a maximum temperature of 50 °C for drying. Higher temperatures may destroy the generator electrode.

2.2 Cleaning the indicator electrode

CAUTION

Use caution when cleaning the indicator electrode in order not to bend the Pt pins.

Contaminated indicator electrodes can be cleaned with an abrasive agent such as aluminum oxide powder (6.2802.000 polishing set) or toothpaste. Afterwards, rinse first with water and then with methanol.

2.3 Cleaning the generator electrode and titration cell

WARNING

Risk of explosion and fire hazard with nitric acid

Nitric acid has a violent reaction with many substances and forms flammable gases.

- Only use cleaning agents and materials that do not cause any unwanted side reactions with nitric acid. Observe the safety data sheet.
- Clean contaminated surfaces.
- Use exhaust equipment.

WARNING

Mortal danger from contact with nitric acid

Inhaling nitric acid vapors may cause pulmonary edema. Nitric acid causes severe burns to skin, eyes and respiratory tract.

- Use exhaust equipment.
- Wear protective equipment.

If discoloration or deposits appear on the anode or cathode, first rinse them twice with water, then clean them with 65% nitric acid. Metrohm recommends applying the same cleaning procedure to the titration cell. Afterwards, first rinse the electrode and the titration cell twice with water and then with methanol.

2.4 Cleaning the diaphragm of the generator electrode

WARNING

Risk of explosion and fire hazard

Nitric acid has a violent reaction with many substances and forms flammable gases.

- Only use cleaning agents and materials that do not cause any unwanted side reactions with nitric acid. Observe the safety data sheet.
- Clean contaminated surfaces.
- Use exhaust equipment.

WARNING

Mortal danger from contact with nitric acid

Inhaling nitric acid vapors may cause pulmonary edema. Nitric acid causes severe burns to skin, eyes and respiratory tract.

- Use exhaust equipment.
- Wear protective equipment.

CAUTION

Make sure not to damage the platinum grid!

Use a maximum temperature of 50 °C for drying. Higher temperatures may destroy the generator electrode.

Resinous residue on the diaphragm: First rinse the generator electrode twice with water, then put it in an upright position, fill with 65% nitric acid and leave to soak overnight. Afterwards, rinse twice with water, then with methanol.

Oily contamination: Clean with solvent (e.g. hexane) and then rinse with methanol.

Salt-like residue: First clean with water and then rinse with methanol.

To rinse the diaphragm, fill the cathode chamber of the generator electrode with methanol and let the content flow out. Repeat 2 or 3 times. Carry out this procedure after each cleaning. After the last rinsing cycle, dry the titration cell at max. 50 °C in a drying oven or use a hair dryer.

2.5 Storing the indicator electrode

Store dry and protected from dust.

2.6 Storing the generator electrode

If used frequently, it is advisable to keep the generator electrode directly in the titration cell, ready for use. Otherwise, the generator electrode can also be stored dry (after having been thoroughly cleaned).