Instruction Sheet

Platinizing Procedure for Conductivity Cells

Overview

The platinizing kit, Cat. No. 0105PK, and platinizing vessel and solution, Cat. No. 010010, are for use with platinized conductivity cells including the 011020, 011010, 011050, 011050MD and 018020MD. An adapter, Cat. No. 1010901, is required for platinizing the 011050MD and 018020MD conductivity cells.

Platinized cells are covered with platinum black to create a more effective surface area for conductivity measurements. The platinum deposit is quite durable and usually resistant to contamination and removal. However, platinization of the cell may be required when measurements become slow, erratic or inconsistent or when the cell constant shifts more than 10% from the nominal cell constant. Platinizing the cell deposits a complete, fresh layer of platinum black on the plate surface that restores performance and reliability.

The platinizing kit, Cat. No. 0105PK, includes a platinizing vessel, solution and fixture. The fixture has an 8 pin DIN (female) connection and three settings, 1, 3 or 10 mA. The fixture is powered by a 9 V battery.

Pretreatment of the Cell

Cells should be pretreated prior to platinization to remove any contamination and the platinum black layer. To prepare a glass conductivity cell, clean the platinum plates or strip the platinum black layer from the platinum plates. To prepare an epoxy conductivity cell, only clean the platinum plates. The pretreatment procedures are described below.

Cleaning of the Platinum Plates

For cells used in clean water samples, rinse the platinum plates with deionized water. For cells used in dirty or viscous samples, rinse the platinum plates with a mild acid, such as 1% HCl, or a detergent solution and then rinse the plates with deionized water. For additional information on cleaning procedures, refer to the conductivity cell user guide.

Stripping of the Platinum Black from the Platinum Plates

Do not perform on epoxy cells

Note safety precautions and review MSDS before handling all solutions. Perform solution preparation and the stripping procedure in a fume hood with the appropriate safety equipment.

Prepare a solution of 50% diluted aqua regia. The solution contains 3 parts concentrated HCl, 1 part concentrated HNO_3 and 4 parts deionized water. Heat the solution to about 75 °C.

Plates must be monitored during the stripping process. Once all the platinum black layer has been stripped, immediately remove the cell from the solution. Do not leave the cell in the warm aqua regia longer than necessary.

Immerse the cell beyond the platinum plates in the 50% diluted aqua regia for 30 seconds to 5 minutes or until the remaining platinum black layer is dissolved. Slightly agitate the cell to aid in the stripping process. Thoroughly rinse the plates with deionized water after stripping the platinum black.

Thermo SCIENTIFIC

Platinizing the Cell

Review MSDS before handling the platinizing solution.

Platinize the conductivity with the platinizing fixture included in Cat. No. 0105PK. The fixture automatically reverses polarity, so manually reversing the polarity is not required. Place the cell in the platinizing solution and vessel. Connect the cell to the platinizing fixture. Use the toggle switch on the fixture to set the current setting to the value indicated below. Turn on the fixture to start platinization. Slightly agitate the cell by hand or by using an ultrasonic bath. Agitation using an ultrasonic bath provides more uniform platinization. Turn off the fixture to end platinization.

If the cell was cleaned only, the platinizing time and current setting should be as follows:

011050 and 011050MD	3 to 5 minutes at 1 mA
011010	3 to 5 minutes at 3 mA
011020	3 to 5 minutes at 10 mA
018020MD	3 to 5 minutes at 3 mA

If the glass cell was stripped, the platinizing time and current setting should be as follows:

011010	7 to 15 minutes at 3 mA
011020	7 to 15 minutes at 10 mA
018020MD	7 to 15 minutes at 3 mA

The time required to platinize a cell will vary, depending on the condition of the platinum plates.

Determination of the Cell Constant

Platinization will shift the cell constant. After the cell has been platinized, thoroughly wash the cell with deionized water and then determine the cell constant before taking any measurements. Cells with a cell constant of K = 10.0 cm^{-1} should be within 10% of the stated K value. Cells with a cell constant of K = 1.0 cm^{-1} should be within 10% of the stated K value. Cells with a cell constant of K = 0.1 cm^{-1} should be within 20% of the stated K value.

If the cell constant is not within the stated tolerances, contact Technical Support. Within the United States call 1.800.225.1480 and outside the United States call 978.232.6000 or fax 978.232.6031. In Europe, the Middle East and Africa, contact your local authorized dealer.

Ordering Information

Cat. No.	Description
0105PK	Platinizing kit, includes vessel, solution (60 mL) and fixture
010010	Platinizing vessel and solution (60 mL)
1010901	Adapter, 8 pin MiniDIN conductivity cell to 8 pin DIN conductivity meter or platinizing fixture

Environmental Instruments
Water Analysis Instruments

166 Cummings Center
Beverly, MA 01915 USA

Toll Free: 1-800-225-1480
Tel: 1-978-232-6000
Dom. Fax: 1-978-232-6015
Int'l Fax: 978-232-6031
email: info.water@thermofisher.com
www.thermo.com/water

254784-001 Rev.A 0807

Thermo SCIENTIFIC