

PTC1™ Paint Test Cell *PortHoles™ Electrochemical Sample Masks*

PTC1 Paint Test Cell

The PTC1 Paint Test Cell is a low-cost sample cell for electrochemical testing of coated samples. The PTC1 can also be used to test bare metal samples using PortHoles Electrochemical Sample Masks.

The PTC1 is perfect for testing of painted metal specimens using Electrochemical Impedance Spectroscopy with Gamry's EIS300 EIS Software. The exposed area of almost 15 cm² is sufficiently large to incorporate a statistically significant number of defects in the coating. The large area is also a positive attribute from the data acquisition standpoint, since high impedance samples such as coatings are characterized by low current densities. Because of the low cost, laboratories can justify the multiple cells that are necessary for longterm exposure testing of coatings.

The design of the PTC1 is elegantly simple. A glass tube with an O-ring seal is clamped to the flat sample under test. The tube is filled with the test electrolyte and sealed with a rubber stopper. A Saturated Calomel Reference Electrode and a graphite rod counter electrode are mounted through the stopper.



PortHoles Electrochemical Sample Masks



PortHoles Electrochemical Sample Masks define a known area of the sample surface for electrochemical testing with the PTC1. PortHoles are available in 1, 3, or 10 cm² area to accommodate any specimen.

PortHoles Electrochemical Sample Masks are used with the Gamry PTC1 Paint Test Cell for a complete test cell for flat metal samples. After the PortHoles Mask is attached to the sample, the body of the PTC1 Paint Test Cell is placed on the Mask. The O-ring seal of the PTC1 body insures that no leakage takes place. Since the O-ring contacts the PortHole, not the metal surface, crevice corrosion is not an issue. The body of the PTC1 is filled with the appropriate electrolyte, which contacts only the area exposed by the PortHole. When the experiment is complete, the PortHole is removed and discarded. PortHoles Electrochemical Sample Masks are fabricated from 3M Model 470 Electroplater's Tape. Model 470 Tape incorporates a special adhesive to bond aggressively to the metal sample surface to discourage

Under-flow of the tape edge by the electrolyte, which would cause crevice corrosion. The hole in the tape is carefully cut for a smooth edge with minimum burring. Model 470 Tape is formulated to withstand lengthy exposure to chemicals commonly found in electroplating applications.

PTC1 Paint Test Cell Specifications

Volume: Approximately 40 ml. Reference Electrode: Saturated Calomel

Metal Specimen Size Counter Electrode: Graphite

Disk: Diameter > 50 mm

Square: >50 mm on each

side Test Area: 14.6 cm²

± 5% (typical)

Thickness: 110 mm

PTC1 Paint Test Cell Part No.: 990139 The PTC1 is also available without the reference electrode.

PortHoles Electrochemical Sample Masks Specifications

PortHoles Electrochemical Sample Masks are provided as individual 3 inch (7.6 cm) square masks with a precut hole and removeable backing. PortHoles are designed for a single use. PortHoles are fabricated from 3M Model 470 Electroplaters Tape. PortHoles are provided with 1, 3, or 10 cm² hole in lots of 60, or as an assortment with 20 of each size.

Part Number	Description
■ 93549	1 cm ² PortHoles, 60 each
■ 93550	3 cm ² PortHoles, 60 each
■ 93551	10 cm ² PortHoles, 60 each
■ 990161	1 cm ² , 3 cm ² , and 10 cm ² PortHoles, 20 each

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