

Electrochemical Coating Evaluation Test Cell And Flat Sample Corrosion Testing Vessel

Item Number: PL-DJ20



Introduction

Accurately evaluate coating integrity and corrosion resistance with this premium electrochemical test cell featuring a customizable exposure area, robust PTFE lid, and an optional jacketed water bath for precise temperature control during comprehensive scanning electron microscopy sample preparation.

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Application	Description	Key Benefit
Organic Coating Degradation Testing	Assessing the barrier properties of epoxies, polyurethanes, and anti-corrosion paints on steel and aluminum under controlled electrochemical stress.	Identifies coating breakdown points and water absorption rates before visual signs of rust appear.
SEM Pre-Characterization Prep	Subjecting flat metal specimens to localized corrosion or polarization before transferring them directly to a scanning electron microscope.	Enables direct correlation between electrochemical data and microscopic surface damage without sample alteration.
Anodized Layer Evaluation	Testing the chemical stability and sealing quality of anodic oxide films on aerospace-grade aluminum and titanium alloys.	Measures polarization resistance and pitting susceptibility to ensure compliance with strict aerospace standards.
Marine Environment Simulation	Evaluating the performance of marine anti-fouling and protective coatings exposed to high-salinity electrolyte solutions.	Reproduces realistic saltwater degradation mechanisms in a highly controlled laboratory environment.
Corrosion Inhibitor Screening	Quantifying the protective efficiency of chemical corrosion inhibitors added to highly acidic or basic process solutions.	Allows rapid screening of multiple inhibitor formulations using the same cell geometry under constant temperature.
Automotive Electroplating Quality Control	Verifying the thickness, density, and barrier consistency of chromium, zinc, or nickel electroplated layers on automotive panels.	Ensures high manufacturing standards by detecting micro-porosity and localized coating defects efficiently.

Parameter	PL-DJ20-S (Single-Layer Variant)	PL-DJ20-D (Double-Layer Variant)
Product Item Number	PL-DJ20-S	PL-DJ20-D
Cell Structure Type	Single-wall cell for ambient testing	Double-wall jacketed cell for thermal control
Main Reservoir Material	High-borosilicate glass	High-borosilicate glass with outer jacket
Lid Material	Polytetrafluoroethylene (PTFE)	Polytetrafluoroethylene (PTFE)
Lid Dimensions	Scaled to match reservoir capacity	Scaled to match reservoir capacity
Standard Exposure Area	1 cm^2 circular bottom aperture	2 cm^2 circular bottom aperture
Customization Options	Bottom aperture size customizable upon request	Bottom aperture size customizable upon request
Sealing System	High-durability elastomer O-ring	High-durability elastomer O-ring
Clamping Mechanism	4-screw top-to-bottom compression system	4-screw top-to-bottom compression system
Working Electrode Type	Flat, sheet-like sample	Flat, sheet-like sample
Conductive Interface	Adhesive copper tape (sold separately)	Adhesive copper tape (sold separately)
Compatible Counter Electrode	Graphite electrode (sold separately)	Graphite electrode (sold separately)

Parameter	PL-DJ20-S (Single-Layer Variant)	PL-DJ20-D (Double-Layer Variant)
Compatible Reference Electrode	Ag/AgCl electrode (sold separately)	Ag/AgCl electrode (sold separately)
Temperature Regulation	None (ambient laboratory conditions)	External water jacket circulation port