

Rechargeable Zinc Air Electrolytic Cell Zinc Air Cycling Test Device Metal Fuel Cell Reactor

Item Number: BE03



Introduction

Rechargeable zinc air electrolytic cell cycling test device with modular PP reactor, 1 to 4.5 cm² reaction areas, circulating electrolyte, forced oxygen supply, leak resistant sealing, and customizable gas connections for metal fuel cell research and advanced materials laboratories.

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Application	Description	Key Benefit
Rechargeable Zinc Air Cell Research	Evaluate rechargeable zinc air electrochemical cells using selected cathode reaction areas and controlled alkaline electrolyte circulation.	Supports repeatable comparison of electrode behavior across multiple reaction-area configurations.
Zinc Electrode Passivation Studies	Circulate electrolyte through the reactor to examine how fluid movement affects negative-electrode passivation during operation.	Helps researchers assess operating conditions intended to reduce passivation effects.
Metal Fuel Cell Reactor Development	Use the unit as a laboratory reactor for metal fuel cell experiments involving zinc or other compatible metal-electrode concepts.	Provides a compact test platform for early-stage reactor and electrode development.
Pure Oxygen Performance Testing	Connect an oxygen cylinder to investigate electrochemical behavior under a forced, oxygen-rich reaction environment.	Enables direct comparison of oxygen-supply conditions and their influence on reaction efficiency.
Electrolyte Circulation Comparison	Run tests with circulating electrolyte, non-circulating electrolyte, or natural-state operation by changing the detachable fluid connection arrangement.	Separates the influence of electrolyte movement from the intrinsic performance of the cell configuration.
Advanced Materials Research	Study alkaline-compatible electrode materials, gas diffusion structures, and related components in a controlled laboratory reactor.	Offers selectable reaction areas and configurable operating conditions for material screening.
Academic Electrochemistry Experiments	Demonstrate zinc air reaction principles, electrolyte management, oxygen supply, and electrode-area effects in university laboratories.	Combines compact dimensions with accessible configuration changes for teaching and research.

Specification Category	Parameter	BE03 Specification
Product identification	Item number	BE03
Product identification	Product type	Rechargeable zinc air electrolytic cell cycling test device; metal fuel cell reactor
Construction	Mold material	White polypropylene plate
Construction	Material appearance	Opaque
Dimensions	Width	7 cm
Dimensions	Height	6 cm
Cell geometry	Positive and negative electrode distance	1.4 cm
Connections	Gas-tube connector sizes	6 mm, 8 mm, and 10 mm
Sealing	Sealing performance	No liquid leakage
Electrolyte handling	Liquid reservoir capacity	500 ml reservoir bottle

Specification Category	Parameter	BE03 Specification
Operation	Electrolyte circulation	Electrolyte can flow and circulate through the system
Operation	Oxygen supply	Pure-oxygen operation is possible when connected to an oxygen cylinder
Configuration	Available reaction areas	1 cm ² , 2 cm ² , 3 cm ² , 4 cm ² , and 4.5 cm ²
Configuration	Custom reaction area	Other requirements can be customized

Site-Facing Identifier	Reaction Area	Reference Configuration Note
BE03 1 cm ²	1 cm ²	The 1 cm ² configuration uses a 1 cm ² cathode reaction area. The anode or zinc-electrode side is enlarged to approximately 5.3 cm ² to increase the liquid volume in the device. This adjustment does not affect cathode performance testing.
BE03 2 cm ²	2 cm ²	Standard configuration with a 2 cm ² reaction area.
BE03 3 cm ²	3 cm ²	Standard configuration with a 3 cm ² reaction area.
BE03 4 cm ²	4 cm ²	Standard configuration with a 4 cm ² reaction area.
BE03 4.5 cm ²	4.5 cm ²	Standard configuration with a 4.5 cm ² reaction area.