

NANOMYTE® AQB-31E

(α -MnO₂ electrode sheets for Aqueous Batteries)

Active Material Characteristics

Product IDs:	AQB-31E (single-sided) AQB-31E-DS (double-sided)
Active Material:	Alpha-Manganese (IV) Oxide
Chemical Formula:	α -MnO ₂
Material Class:	Cathode material
Crystal Structure:	Tetragonal (Hollandite-type, 2x2 Tunnel)
Average Particle Size (D₅₀):	~ 3.1 μ m
Specific Surface Area:	~ 54 m ² /g

Electrode Tape Characteristics

Current Collector:	Carbon Paper (205 μ m thick)
Standard Sheet Size:	5 inch x 10 inch (127 mm x 254 mm) coated edge-to-edge
Calendered:	Yes
Electrode Coating:	Single or Double-sided sheets (as specified)
Coating Thickness:	20 μ m \pm 5% (per side, excluding current collector)
Standard Areal Capacity:	0.9 mAh/cm ² \pm 5% (per side)
Active Material Loading:	4.2 mg/cm ² \pm 5% (per side)

Standard Composition:	Weight %	Material	Description
	70 %	Alpha-manganese (IV) oxide [α -MnO ₂]	(active material)
	20 %	Carbon Black ["Super C65"]	(conductive carbon)
	10 %	Poly(vinylidene fluoride) ["PVDF"]	(binder)

*Specifications can be modified upon request to accommodate different active material loadings, coating thickness, & capacity

Electrochemical Characteristics

Typical First Discharge Capacity:	215 mAh/g (@ 0.05C)	Nominal voltage vs. Zn/Zn²⁺:	1.4 V
Typical First Charge Capacity:	240 mAh/g (@ 0.05C)	Voltage Range vs. Zn/Zn²⁺:	1.1 – 1.85 V
Minimum First Discharge Capacity:	\geq 205 mAh/g (@ 0.05C)		

These reference values were obtained in aqueous cells with an electrolyte of 2 M ZnSO₄ and 0.1 M MnSO₄, and a Zn counter electrode.

Ordering Increments

NEI's electrode sheets are supplied in price-break tiers of 2, 5, 10, 25, 50, & 100 sheets, with a 2-sheet minimum per material. Bulk quantities are available upon request.

Precautions for Safe Storage & Handling

Handling: Appropriate personal protective equipment should be used at all times. Avoid contact with eyes and skin. Handle in a dry and well-ventilated area. Avoid actions that abrade, sand, or grind the coated surface, which can release respirable dust.

Storage: Store sheets flat and in a cool, dry place, away from heat and moisture.

Note: In its manufactured and shipped form, this article does not pose a physical hazard or health risk to humans or the environment. However, processing that generates dust or exposure to extreme temperatures may release hazardous particles.

Always refer to the Safety Data Sheet (SDS) for complete health and safety protocols.

Disclaimer: The information provided herein is believed to be accurate and represents typical characteristics of the product. However, NEI Corporation makes no warranties, express or implied, regarding the accuracy of this data or the suitability of the material for any specific purpose. It is the user's responsibility to independently verify the product's safety, performance, and compatibility within their specific process. NEI disclaims all liability for damages resulting from the handling, storage, or use of this material. Nothing herein shall be construed as a recommendation to infringe any patent or intellectual property. Users should consult the Safety Data Sheet (SDS) before use.