

# Mcmb Mesocarbon Microbeads Anode Material For High Energy Density Lithium Ion Batteries

Item Number: CL26



## Introduction

Engineered MCMB mesocarbon microbeads deliver high reversible capacity over 330 mAh/g, initial efficiency above 93%, and low surface area. Designed for advanced battery R&D, this material ensures optimal compaction, minimal electrolyte decomposition, and superior rate performance.

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| Application                                 | Description                                                                                                               | Key Benefit                                                                                                                               |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| High-Energy-Density Coin Cell Prototyping   | Standard half-cell and full-cell testing in CR2016, CR2025, and CR2032 formats for baseline active material benchmarking. | Delivers repeatable capacity ≥330 mAh/g and stable SEI formation for precise academic and R&D comparative analytics.                      |
| Fast-Charging Pouch Cell Development        | Multi-layer stacked pouch cell fabrication evaluating fast-rate capability and low-temperature kinetic performance.       | Edge-plane orientation allows accelerated radial lithium-ion transport, reducing polarization during rapid charging cycles.               |
| Precision Electrode Calendering Studies     | High-pressure roll pressing and heated calendering research targeting ultra-dense electrode coatings.                     | Spherical particles withstand multi-ton linear pressing loads without fracturing, achieving target volumetric density.                    |
| Electrolyte Additive & SEI Characterization | Evaluation of novel film-forming additives, ionic liquids, and solid-state electrolyte interfaces.                        | Low baseline surface area provides an exceptionally clean interface for tracking specific additive passivation mechanisms.                |
| Solid-State and Hybrid Cell Research        | Integration into composite solid electrolyte (CSE) matrices and dry electrode processing workflows.                       | Isotropic particle shape enables uniform point-to-point contact with solid electrolytes, lowering interfacial charge-transfer resistance. |
| Pilot-Scale Roll-to-Roll Slurry Coating     | Continuous continuous-feed coating onto copper foil substrates using pilot doctor-blade and slot-die systems.             | Consistent particle size distribution prevents nozzle clogging and agglomerate striping, delivering high mass-loading uniformity.         |

| Parameter / Test Item            | Sub-Parameter            | Unit  | Specification Standard | Test Instrument & Method                                       |
|----------------------------------|--------------------------|-------|------------------------|----------------------------------------------------------------|
| Product Identifier               | Model Code               | —     | CL26                   | Manufacturer Standard                                          |
| Particle Size Distribution (PSD) | D10                      | µm    | 6.0 – 9.0              | Malvern Mastersizer 2000 Laser Particle Size Analyzer          |
|                                  | D50                      | µm    | 10.0 – 14.0            | Malvern Mastersizer 2000 Laser Particle Size Analyzer          |
|                                  | D90                      | µm    | 17.0 – 24.0            | Malvern Mastersizer 2000 Laser Particle Size Analyzer          |
| Moisture Content                 | Water Content            | %     | ≤ 0.2                  | Precision Moisture Meter Analyzer                              |
| Carbon Purity (C)                | Total Carbon             | %     | ≥ 99.9                 | Sartorius KSW-Heat Oven / Gravimetric Analysis                 |
| Specific Surface Area (SSA)      | BET Surface Area         | m²/g  | 1.0 – 2.5              | BET Nitrogen Adsorption Testing Instrument                     |
| Tap Density (TAP)                | Volumetric Density       | g/ml  | 1.10 – 1.30            | Automated Mechanical Tap Density Instrument                    |
| Electrochemical Capacity         | 1st Discharge Capacity   | mAh/g | ≥ 330                  | CR2032 Half-Cell Coin Test (0.1C vs. Li/Li+)                   |
| Electrochemical Efficiency       | 1st Coulombic Efficiency | %     | ≥ 93                   | CR2032 Half-Cell Coin Test (0.1C vs. Li/Li+)                   |
| Trace Metal Contaminants         | Iron (Fe)                | ppm   | ≤ 50                   | Inductively Coupled Plasma (ICP) Optical Emission Spectrometry |