

GUIZHOU CHANHEN CHEMICAL CORPORATION

Longchang Town, Fuquan City, Guizhou Province, China 550599

WF05 Low Temperature LFP

Product Specification

1. Basic Information

Low temperature LFP product, type WF05, specification version 0.5.

2. Product Characteristics

WF05 low temperature LFP is specially designed for battery cells applied in low temperature (-20 °C) working conditions. The product has the property of excellent low temperature performance, and excellent high rate working performance under normal temperature conditions. The product can be applied in the area of national defense, used in the cell production for drones and other military devices operating in low temperature area.

3. Physicochemical Properties

Subjects		Unit	Specification	Typical Value	Testing Methods	
Physical Indicators	Particle-size distribution	D ₁₀	≥0.3	0.371	GB/T 19077.1 Malvern Laser Particle Size Analyzer	
		D ₅₀	1.0±0.3	0.908		
		D ₉₀	≤8.0	6.496		
		D ₉₉	≤16.0	11.787		
	SSA		m ² /g	14±2	13.72	GB/T 13390 SSA Analyzer
	Tap Density		g/cm ³	1.0±0.2	0.96	GB/T 5162 Autotap
	Powder Compaction Density		g/cm ³	≥2.05	2.118	Suntest-UTM7305 (3T test)
	Moisture		ppm	≤1000	808.4	Karl Fischer Titrators
	Resistivity		Ω·cm	≤35	24.92	Semiconductor Powder Resistivity Tester
	Chemical Indicators	Li	%	4.3±0.3	4.39	ICP
Fe		%	33.5-35.0	34.16	Potassium Dichromate Method	
P		%	19.0-21.0	19.68	Quinomolidone Precipitation Method	
C		%	1.9±0.3	2.03	Carbon and Sulfur Analyzer	
pH		/	9±1	9.08	pH Meter	
Magnetic Substance		ppb	≤1000	587	Magneton Adsorption Method ICP	
Magnetic Metal Particle Number		Pcs/kg	≤95	/	Cleanliness Tester	

4. Electrochemical Performance

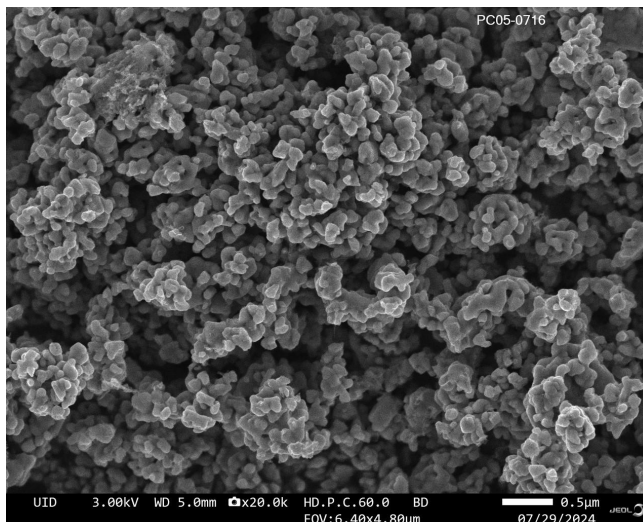
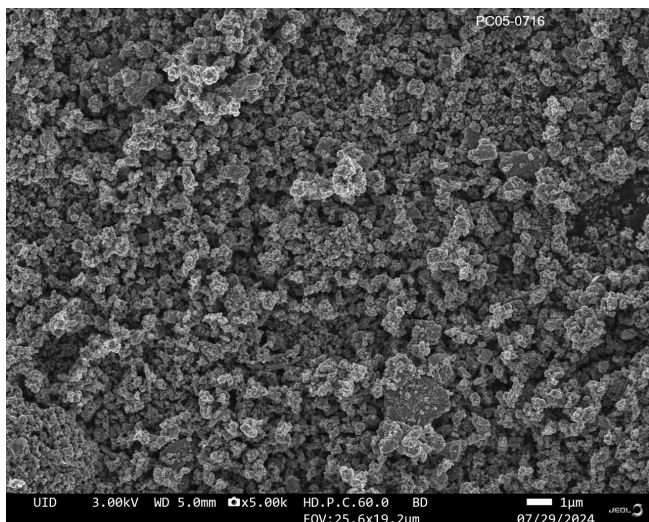
Subjects	Unit	Standard Value	Typical Value	Testing Methods
Initial Discharge Capacity	mAh/g	≥159	162.09	2025 Half Cell 2.0-3.75V/0.1C/0.1C
Initial Coulombic Efficiency	%	≥95	99.4	
0.5C Discharge Capacity	mAh/g	≥150	156.46	

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1C Discharge Capacity	mAh/g	≥ 145	152.44	
5C Discharge Capacity	mAh/g	≥ 115	133.41	

5. Material SEM



The particles of WF05 consists of large amount of small particles, which allows Li-ions to easily be in motion during charging and discharging, which enhances the materials property of excellent low temperature performance and high rate performance.

6. Material low-temp & High-rate performance:

Under low temperature condition (-20°C), discharge at 0.5C until the voltage reaches 1.5V from 2.5V, SOC>70%. Regular LFP products can only possess SOC>30% under the same condition.

Under the test parameter of 1CC/1CD, 100%DOD, $25 \pm 2^\circ\text{C}$, SOH>80% after 2000 cycles.

Under the test parameter of 3CC/3CD, $25 \pm 2^\circ\text{C}$, SOH=97.2%>93% after 100 cycles.