

Illustrative render generated from published specifications

21.3 × 70.5 mm
69 g

BAK 45D

BAK · released 2024

21700NMC

MOOCH-TESTED · 30 A



Live page & updates

4,500mAh CAPACITY	30A MOOCH CONTINUOUS	3.6V NOMINAL · 2.5 – 4.2 V	16.2Wh ENERGY · 234.78 WH/KG
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REFERENCE ONLY — NOT AN OFFICIAL DOCUMENT

This information is gathered from multiple sources, including manufacturer datasheets, independent third-party testing, and community contributions. Cell specifications vary between production batches and change over time, and no figure here is guaranteed to be correct or current. **Always consult the manufacturer's spec sheet directly.** Use this sheet for reference only — never as the sole basis for a safety-critical decision about charging, discharging, or assembling cells. The cell image is an illustrative render generated from published specifications, not a photograph.

CAPACITY AMONG 21700S #40 of 72 Lowest in databaseHighest A mid-range 21700 cell. Solid for builds that don't need extreme capacity or discharge.	VOLTAGE OPERATING WINDOW 1.7 V usable Cutoff 2.5 VNominal 3.6 VMax 4.2 V Below nominal the cell sags fast under load; above it, the last of the capacity fills slowly on the constant-voltage taper.
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APPLICATION SUITABILITY

Rule-of-thumb ratings from this cell's capacity and continuous discharge. Check your own load before committing.

Powerwalls	High capacity means more stored energy per cell. Fewer cells needed for a given kWh target.
Ebike packs	Good balance of capacity for range and discharge for hills. Works well in most ebike packs.
Car audio	Enough discharge to handle amplifier bursts without voltage sag.
High-drain vaping	Above the 25A Mooch CDR threshold. Suitable for regulated and mechanical mods.
Flashlights	High capacity means long runtime. Great for everyday carry and extended use.
Power tools	Sufficient discharge and capacity for most power tool packs.

IDENTITY		PHYSICAL	
Manufacturer	BAK	Diameter	21.3 mm
Model	45D	Length	70.5 mm
Format	21700	Weight	69 g
Chemistry	NMC	ELECTRICAL	
Year released	2024		
Terminal	Flat top		
Protection	Unprotected		
OPERATING TEMPERATURE		Rated capacity	4,500 mAh
		Nominal voltage	3.6 V
		Max charge voltage	4.2 V
Charging	0°C to 45°C	Discharge cutoff	2.5 V
Discharging	-20°C to 60°C	Energy	16.2 Wh
ENERGY & POWER DENSITY		Internal resistance	5 mΩ
		Max continuous discharge	30 A (mooch)
		Discharge C-rate	6.7C
		Standard charge current	2,200 mA
		Typical charge time	2 h
		Standard discharge	880mA
		Cycle life	600 cycles
Energy	16.2 Wh		
Specific energy	234.78 Wh/kg		
Volumetric density	644.88 Wh/L		
Power density (mass)	1,565 W/kg		
Power density (volume)	4,299 W/L		
Capacity ranking	#40 of 72 21700s		

C-RATE CONVERSION · 4,500 MAH

C-RATE	CURRENT	THEORETICAL RUNTIME
0.2C	0.9 A	5h 00m
0.5C	2.25 A	2h 00m
1C	4.5 A	1h 00m
2C	9 A	30m
3C	13.5 A	20m
5C	22.5 A	12m

Highlighted row is closest to the rated 30 A continuous discharge.

CHARGING

Rate	Current	Estimated Time to Full
0.5C	2,250 mA	~2h 00m
1C	4,500 mA	~1h 00m

Constant-current phase only. Real charge time runs longer because of the constant-voltage taper at the end.

SERIES PACK CONFIGURATIONS

Voltages calculated from this cell's own nominal and maximum charge voltage. The 3P columns show one common parallel count as a worked example — scale the parallel group to the capacity you need.

Series	Nominal	Fully Charged	Cells at 3P	Capacity	Energy
3S	10.8 V	12.6 V	9	13.5 Ah	146 Wh
7S	25.2 V	29.4 V	21	13.5 Ah	340 Wh
10S	36 V	42 V	30	13.5 Ah	486 Wh
13S	46.8 V	54.6 V	39	13.5 Ah	632 Wh
14S	50.4 V	58.8 V	42	13.5 Ah	680 Wh

EXAMPLE PACKS

7S2P 24V ebike / small pack 14 cells · 25.2 V 9,000 mAh · 227 Wh 60 A max · ≈0.97 kg cells	13S4P 48V ebike standard 52 cells · 46.8 V 18,000 mAh · 842 Wh 120 A max · ≈3.59 kg cells	16S4P DIY powerwall 64 cells · 57.6 V 18,000 mAh · 1,037 Wh 120 A max · ≈4.42 kg cells	4S6P Power tool replacement 24 cells · 14.4 V 27,000 mAh · 389 Wh 180 A max · ≈1.66 kg cells
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SIMILAR CELLS

Same format and chemistry, within ± 500 mAh.

CELL	MAH	CONTINUOUS	WH	WEIGHT	WH/KG
BAK 45D (this cell)	4,500	30 A	16.2	69 g	235
Ampace JP50P1	5,000	40 A	18	72 g	250
Amprius INR21700-50Q	5,000	50 A	18	70 g	257
BAK N21700CG	5,000	50 A	18	70 g	257
Efest 21700 5000mAh 10A	5,000	10 A	18	69 g	261
Epoch 21700 5000mAh	5,000	10 A	18	69 g	261

HANDLING & SAFETY

- Never charge above 4.2V or discharge below 2.5V.
- Store cells at around 3.6-3.8V (roughly 40-60% charge) for long-term storage.
- Don't mix cells with different capacities, chemistries, or states of charge in a pack.
- Inspect wraps before use. A torn wrap can cause a short circuit.
- Always use a BMS or balance charger appropriate for your pack configuration.
- Keep cells away from metal objects, keys, and coins. A short across the terminals can cause fire.

SOURCES & FURTHER READING

Cell Saviors page	cellsaviors.com/cell-database/bak-45d
Manufacturer datasheet	https://www.nkon.nl/es/amfile/file/download/file/253/product/5...
Independent test (Mooch)	https://www.e-cigarette-forum.com/threads/bench-test-results-b...
Full cell database	cellsaviors.com/cell-database