Illustrative render generated from published specifications

20.8 × 70 mm
62 g

Molicel M42A

Molicel · released 2019

20700 NMC

MOOCH-TESTED · 20 A

Live page & updates

4,000 mAh	20 A	3.6 V	14.4 Wh
CAPACITY	MOOCH CONTINUOUS	NOMINAL · 2.5 – 4.2 V	ENERGY · 232.26 WH/KG

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 20700S — #3 of 12

Lowest in database — Highest

More capacity than 83% of 20700 cells in our database, but lower discharge than average.

VOLTAGE OPERATING WINDOW — 1.7 V usable

Cutoff 2.5 V — Nominal 3.6 V — Max 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.

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	Usable in regulated mods at moderate wattage. Not recommended for 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

Manufacturer	**Molicel**
Model	**M42A**
Format	**20700**
Chemistry	**NMC**
Year released	**2019**
Terminal	**Flat top**
Protection	**Unprotected**

OPERATING TEMPERATURE

Charging	**0°C to 60°C**
Discharging	**-50°C to 60°C**

ENERGY & POWER DENSITY

Energy	**14.4 Wh**
Specific energy	**232.26 Wh/kg**
Volumetric density	**605.41 Wh/L**
Power density (mass)	**1,161 W/kg**
Power density (volume)	**3,027 W/L**
Capacity ranking	**#3 of 12 20700s**

PHYSICAL

Diameter	**20.8 mm**
Length	**70 mm**
Weight	**62 g**

ELECTRICAL

Rated capacity	**4,000 mAh**
Nominal voltage	**3.6 V**
Max charge voltage	**4.2 V**
Discharge cutoff	**2.5 V**
Energy	**14.4 Wh**
Internal resistance	**15 mΩ**
Max continuous discharge	**20 A (mooch)**
Discharge C-rate	**5C**
Standard charge current	**2,100 mA**
Typical charge time	**1.9 h**
Standard discharge	**2100mA**

C-RATE CONVERSION · 4,000 MAH

C-RATE	CURRENT	THEORETICAL RUNTIME
0.2C	0.8 A	5h 00m
0.5C	2 A	2h 00m
1C	4 A	1h 00m
2C	8 A	30m
3C	12 A	20m
5C	**20 A**	**12m**

Highlighted row is closest to the rated 20 A continuous discharge.

CHARGING

RATE	CURRENT	ESTIMATED TIME TO FULL
0.5C	2,000 mA	~2h 00m
Standard	2,100 mA	~1h 54m
1C	4,000 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	12 Ah	130 Wh
7S	25.2 V	29.4 V	21	12 Ah	302 Wh
10S	36 V	42 V	30	12 Ah	432 Wh
13S	46.8 V	54.6 V	39	12 Ah	562 Wh
14S	50.4 V	58.8 V	42	12 Ah	605 Wh

EXAMPLE PACKS

7S2P
24V ebike / small pack

14 cells · 25.2 V

8,000 mAh · 202 Wh

40 A max · ≈0.87 kg cells

13S4P
48V ebike standard

52 cells · 46.8 V

16,000 mAh · 749 Wh

80 A max · ≈3.22 kg cells

16S4P
DIY powerwall

64 cells · 57.6 V

16,000 mAh · 922 Wh

80 A max · ≈3.97 kg cells

4S6P
Power tool replacement

24 cells · 14.4 V

24,000 mAh · 346 Wh

120 A max · ≈1.49 kg cells

SIMILAR CELLS

Same format and chemistry, within ±500 mAh.

CELL	MAH	CONTINUOUS	WH	WEIGHT	WH/KG
Molicel M42A (this cell)	**4,000**	**20 A**	**14.4**	**62 g**	**232**
AWT AWT 40A 4200mAh	4,200	40 A	15.1	50 g	302

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/molicel-m42a
Independent test (Mooch)	https://www.e-cigarette-forum.com/threads/bench-test-results-e...
Full cell database	cellsaviors.com/cell-database