

Illustrative render generated from published specifications

21.78 × 71 mm

Samsung

INR21700-55E



Live page & updates

Samsung

- 21700
- NMC
- MOOCH-TESTED · 10 A

|                                          |                                             |                                                   |                                       |
|------------------------------------------|---------------------------------------------|---------------------------------------------------|---------------------------------------|
| <div>5,490 mAh</div> <div>CAPACITY</div> | <div>10 A</div> <div>MOOCH CONTINUOUS</div> | <div>3.6 V</div> <div>NOMINAL · 2.5 – 4.2 V</div> | <div>19.76 Wh</div> <div>ENERGY</div> |
|------------------------------------------|---------------------------------------------|---------------------------------------------------|---------------------------------------|

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.

|                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><div>CAPACITY AMONG 21700S</div><div>#15 of 72</div><div><div></div></div><div>Lowest in databaseHighest</div></div> <div>More capacity than 81% of 21700 cells in our database, but lower discharge than average.</div> | <div><div>VOLTAGE OPERATING WINDOW</div><div>1.7 V usable</div><div><div></div></div><div>Cutoff 2.5 VNominal 3.6 VMax 4.2 V</div></div> <div>Below nominal the cell sags fast under load; above it, the last of the capacity fills slowly on the constant-voltage taper.</div> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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         | Might work for smaller setups. Check your amp's peak current draw.                          |
| High-drain vaping | Below the 25A Mooch CDR threshold that high-drain vaping needs. Use a higher-drain cell.    |
| Flashlights       | High capacity means long runtime. Great for everyday carry and extended use.                |
| Power tools       | May work for lighter-duty tools. Check your tool's current requirements.                    |

IDENTITY

|              |                   |
|--------------|-------------------|
| Manufacturer | Samsung           |
| Model        | INR21700-55E      |
| Format       | 21700             |
| Chemistry    | NMC               |
| Wrap colour  | <div></div> Green |
| Terminal     | Flat top          |
| Protection   | Unprotected       |

ENERGY & POWER DENSITY

|                        |                  |
|------------------------|------------------|
| Energy                 | 19.76 Wh         |
| Volumetric density     | 747 Wh/L         |
| Power density (volume) | 1,361 W/L        |
| Capacity ranking       | #15 of 72 21700s |

PHYSICAL

|          |          |
|----------|----------|
| Diameter | 21.78 mm |
| Length   | 71 mm    |

ELECTRICAL

|                          |              |
|--------------------------|--------------|
| Rated capacity           | 5,490 mAh    |
| Nominal voltage          | 3.6 V        |
| Max charge voltage       | 4.2 V        |
| Discharge cutoff         | 2.5 V        |
| Energy                   | 19.76 Wh     |
| Internal resistance      | 16 mΩ        |
| Max continuous discharge | 10 A (mooch) |
| Discharge C-rate         | 1.8C         |
| Standard charge current  | 2,665 mA     |
| Typical charge time      | 2.1 h        |
| Standard discharge       | 1066mA       |

C-RATE CONVERSION · 5,490 MAH

| C-RATE | CURRENT | THEORETICAL RUNTIME |
|--------|---------|---------------------|
| 0.2C   | 1.1 A   | 5h 00m              |
| 0.5C   | 2.75 A  | 2h 00m              |
| 1C     | 5.49 A  | 1h 00m              |

Highlighted row is closest to the rated 10 A continuous discharge.

CHARGING

| RATE     | CURRENT  | ESTIMATED TIME TO FULL |
|----------|----------|------------------------|
| Standard | 2,665 mA | ~2h 04m                |
| 0.5C     | 2,745 mA | ~2h 00m                |
| 1C       | 5,490 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           | 16.5 Ah  | 178 Wh |
| 7S     | 25.2 V  | 29.4 V        | 21          | 16.5 Ah  | 415 Wh |
| 10S    | 36 V    | 42 V          | 30          | 16.5 Ah  | 593 Wh |
| 13S    | 46.8 V  | 54.6 V        | 39          | 16.5 Ah  | 771 Wh |
| 14S    | 50.4 V  | 58.8 V        | 42          | 16.5 Ah  | 830 Wh |

## EXAMPLE PACKS

|                                                                                               |                                                                                              |                                                                                         |                                                                                               |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>7S2P</b><br>24V ebike / small pack<br>14 cells · 25.2 V<br>10,980 mAh · 277 Wh<br>20 A max | <b>13S4P</b><br>48V ebike standard<br>52 cells · 46.8 V<br>21,960 mAh · 1,028 Wh<br>40 A max | <b>16S4P</b><br>DIY powerwall<br>64 cells · 57.6 V<br>21,960 mAh · 1,265 Wh<br>40 A max | <b>4S6P</b><br>Power tool replacement<br>24 cells · 14.4 V<br>32,940 mAh · 474 Wh<br>60 A max |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|

## SIMILAR CELLS

Same format and chemistry, within  $\pm 500$  mAh.

| CELL                             | MAH   | CONTINUOUS | WH    | WEIGHT | WH/KG |
|----------------------------------|-------|------------|-------|--------|-------|
| Samsung INR21700-55E (this cell) | 5,490 | 10 A       | 19.76 | —      | —     |
| Reliance RH60                    | 5,850 | 20 A       | 21.1  | 71 g   | 297   |
| Reliance RS60                    | 5,850 | 50 A       | 21.1  | 71.5 g | 295   |
| Lishen LR2170SK                  | 5,800 | 16 A       | 20.9  | —      | —     |
| EVE INR21700-58E                 | 5,700 | 16 A       | 20.5  | 71 g   | 289   |
| Vapcell F56                      | 5,600 | 12 A       | 20.2  | 74 g   | 272   |

## HANDLING &amp; 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

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|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Cell Saviors page        | <a href="https://cellsaviors.com/cell-database/samsung-inr21700-55e">cellsaviors.com/cell-database/samsung-inr21700-55e</a>                       |
| Manufacturer datasheet   | <a href="https://thebatteryshop.eu/shop_ordered/92904/pic/Samsung-INR21...">https://thebatteryshop.eu/shop_ordered/92904/pic/Samsung-INR21...</a> |
| Independent test (Mooch) | <a href="https://www.e-cigarette-forum.com/threads/bench-test-results-s...">https://www.e-cigarette-forum.com/threads/bench-test-results-s...</a> |
| Full cell database       | <a href="https://cellsaviors.com/cell-database">cellsaviors.com/cell-database</a>                                                                 |