



LEAD-ACID GUIDE

Depth of Discharge and Cycle Life: Get the Most From Your Battery

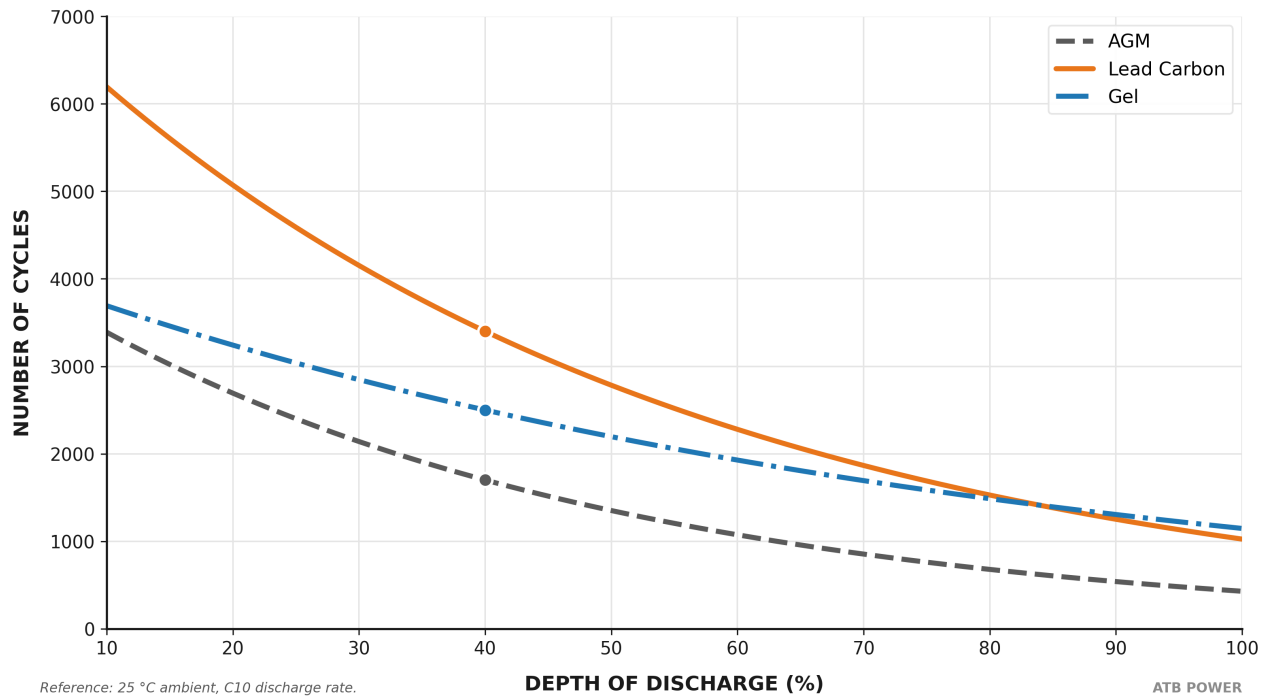
How deep you drain a battery decides how many cycles you get. A small change in depth of discharge can double its working life.

ATB Power · Battery Solutions · 5 min read

Depth of discharge (DoD) is how much capacity you take out before recharging. For lead-acid especially, shallower cycles mean dramatically more cycles. Understanding this is the easiest way to lower your cost per year.

CYCLE LIFE vs DEPTH of DISCHARGE

AGM, LEAD CARBON & GEL COMPARISON



ATB cycle life by series. Cycle life falls as depth of discharge rises, and lithium delivers many times the cycles of lead-acid at the same depth.

— The trade-off

Take a 100 Ah battery. Using 30 Ah is 30% DoD; using 80 Ah is 80% DoD. The deeper you go, the fewer total cycles the battery delivers before it reaches end of life (commonly 80% of rated capacity).

DEPTH OF DISCHARGE	LEAD-ACID (TYPICAL)	LIFEPO4 (TYPICAL)
30%	Most cycles	Very high
50%	Good balance	High
80%	Fewest cycles	Still 2000+ cycles

Lithium tolerates deep discharge far better, which is one reason it lasts so much longer in daily-cycle duty.

— Practical guidance

- For lead-acid cycling, size the bank so average use stays near 50% DoD or shallower.
- Recharge promptly; sitting discharged is as damaging as deep discharge.
- Avoid routinely going below 20% state of charge on lead-acid.

- Heat shortens life too: every sustained 10 C above 25 C roughly halves it.

SIZING TIP

If your daily load is 50 Ah and you want 50% DoD on lead-acid, specify about 100 Ah of usable capacity. With lithium you can size much closer to the actual load.

Need help choosing or specifying?

Talk to ATB for datasheets, fitment and custom configurations.

[Request specifications](#)

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