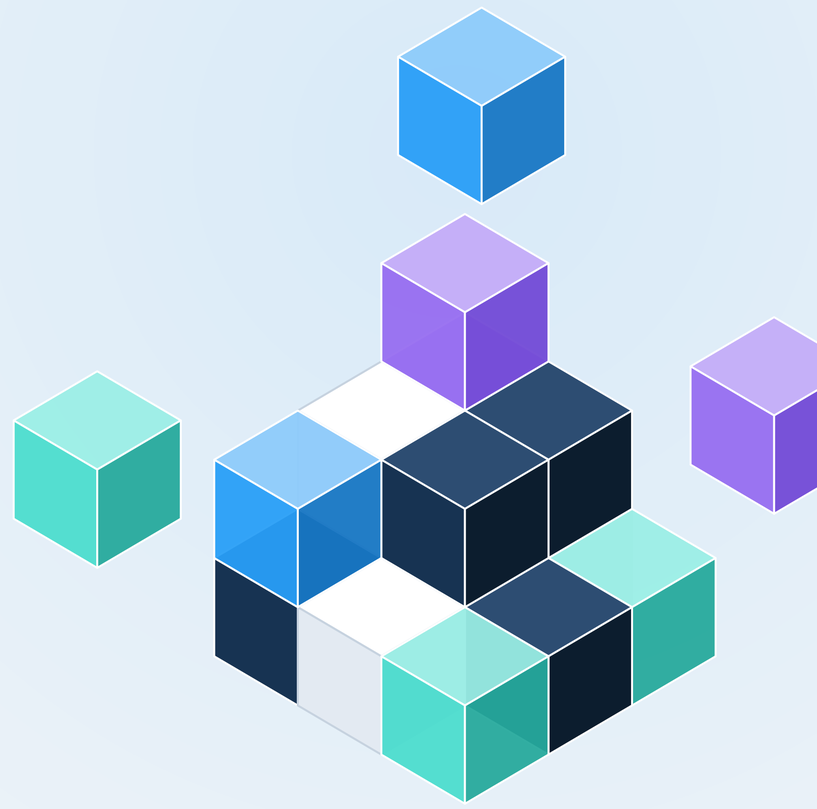
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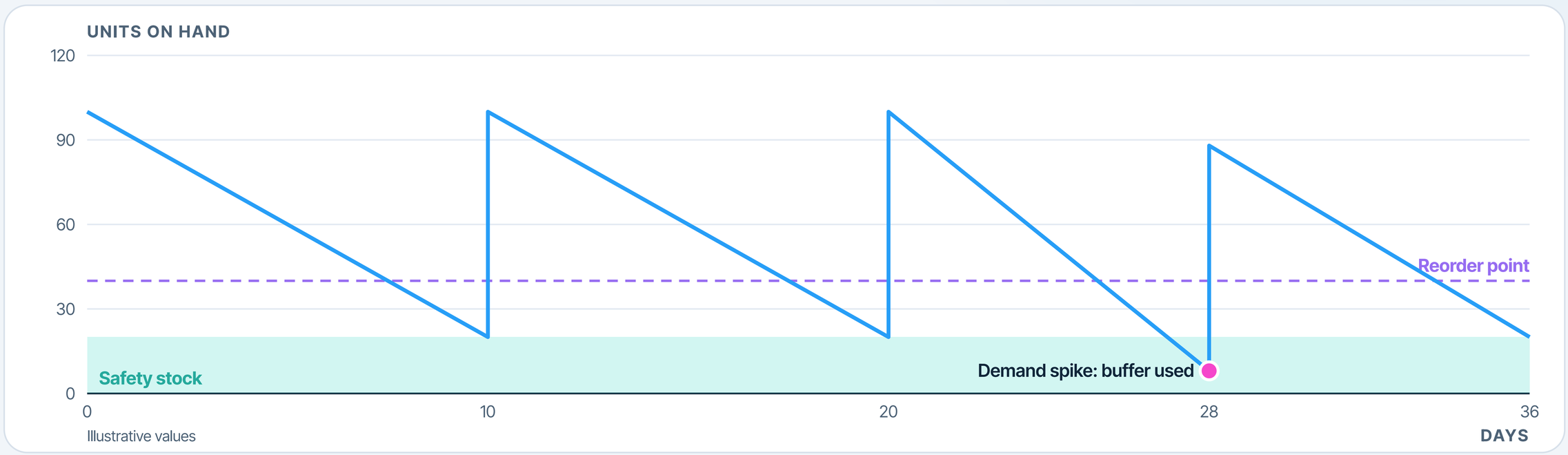
Safety Stock Explained

Safety stock is extra inventory held to protect against variation in demand and supply lead time, so a target service level can be met.



01 THE CORE MODEL

INVENTORY SAWTOOTH · BUFFER AGAINST VARIATION



Safety stock

Extra stock held to cover demand and supply variation during lead time.

Service level

The target probability of not running out in a replenishment cycle.

Common formula

z × standard deviation of demand × square root of lead time.

02 SIZING IT

Size safety stock from variability and service targets, not gut feel.

TOO LITTLE — TOO MUCH

TOO LITTLE

- − Stockouts when demand peaks
- − Expediting and premium freight
- \+ Low working capital

TOO MUCH

- \+ High availability
- − Capital and space tied up
- − Obsolescence on slow movers

03 WORKED EXAMPLE

FASTENER ITEM · ILLUSTRATIVE FIGURES

Z FOR 95 %		DEMAND STD. DEV.		ROOT OF LEAD TIME		SAFETY STOCK
1.65	×	20 / day	×	3	=	99 units
service level factor				lead time 9 days		1.65 × 20 × 3

04 MANAGEMENT TAKEAWAYS

01

Base it on data

Use measured demand variation and real lead times.

02

Differentiate by item

Critical, high-margin items deserve higher service levels.

03

Reduce the need for it

Shorter, more reliable lead times shrink safety stock.

05 COMMON MISTAKE

LIMITATION

Setting it once and forgetting it

Demand and lead times change. Recalculate safety stock on a regular cycle.

Related: Bullwhip Effect · Inventory ABC Analysis