

# Days Inventory Outstanding (DIO): key metric for procurement inventory coverage

Days Inventory Outstanding (DIO) denotes the average number of days a company holds its inventory before it is sold or processed. The metric sets the average inventory in relation to the cost of goods sold and thus shows how quickly capital is tied up in stock. For technical buyers and supply chain managers, DIO is a central lever between delivery capability, capital tied up and obsolescence risk.

## Key facts

- DIO indicates how many days inventory is on average available before processing or sale.
- The calculation is typically performed as (average inventory divided by cost of goods sold) multiplied by 365 days.
- Lower DIO values mean lower capital tied up, but tend to imply a higher risk of supply disruption.
- Industry comparisons are essential, as typical values vary considerably depending on the industry.
- DIO is a component of the Cash Conversion Cycle and therefore directly relevant to cash flow.
- In procurement controlling, DIO serves as an early indicator of planning errors, excess stock and obsolescence.

## Definition: Days Inventory Outstanding (DIO)

Days Inventory Outstanding, often referred to in German as inventory coverage in days or stock holding period, is a metric from balance sheet analysis and supply chain controlling. It measures how long the average stock of goods remains in the warehouse before it is sold off or consumed in production.

### Formal calculation

In practice, a formula-style calculation logic is often used:  $DIO = (\text{average inventory divided by cost of goods sold}) \times 365$ . The average inventory is often the mean of the opening and closing balances of the period; in businesses with strong fluctuations, monthly or quarterly averages are more meaningful. Alternatively, revenue can be used instead of cost of goods sold, but this impairs comparability with industry data, as revenues include profit mark-ups.

### Distinction from related metrics

DIO is not identical to dynamic coverage or the contribution margin day rate, although these measures are often confused. While DIO forms an average figure from balance sheet values, dynamic coverage looks at future demand based on planning data. In combination with Days Sales Outstanding and Days Payables Outstanding, DIO yields the Cash Conversion Cycle, which depicts the total duration of capital tied up in the revenue process.

### Significance for technical procurement

For procurement, DIO is less a balance sheet metric than a planning metric: high values indicate excess

stock, order quantities that are too large or weakening demand. Low values can indicate lean processes, but also jeopardised delivery capability, for example with critical materials. Interpretation therefore always requires looking at service level and delivery reliability at the same time.

## **Methods and approach for analysing inventory holding period**

The analysis of DIO follows a clear approach: secure the data basis, form segments, clarify root causes and derive measures. Only then does the pure metric become a basis for action for procurement and planning teams.

### **Data basis and segmentation**

Reliable inventory and consumption figures require a sound warehouse management system, including consistent goods receipt posting, ideally goods receipt with quality inspection, so that inspected quantities and blocked stock are correctly recorded. An analysis at group level usually obscures the real drivers; in practice, evaluation by ABC classes, risk classes, product groups and suppliers has proven effective. Includable and excludable inventory types such as consignment stock, customer-owned material or quality stock to be blocked must be clearly defined.

### **Root cause analysis for conspicuous values**

High DIO values frequently arise from oversized order quantities, long replenishment times, safety allowances on demand forecasts or outdated master data. Weak schedule adherence by suppliers also leads buyers to build up precautionary stock. A structured actual-versus-target comparison per material number, traced back to planning parameters, is the fastest route to effective corrections.

### **Linking to planning processes**

Sustainable inventory levels can only be managed with a coordinated Sales and Operations Planning that aligns sales planning, production and procurement on one forecast. In the detailed planning of procurement capacities, it is then decided which framework agreements and call-off quantities can realistically support the target coverage. In this way, procurement connects operational planning with strategic sourcing decisions.

## **Important KPIs around Days Inventory Outstanding**

DIO never acts in isolation; sound inventory controlling links the metric with service level, supplier reliability and sourcing strategy. A KPI set with only one metric frequently leads to misdirection.

### **Core metrics in combination**

In addition to DIO, at least the service level, inventory turnover and capital tied up should be considered. The Cash Conversion Cycle complements the perspective with payment terms and receivables days. Supplementary supplier metrics such as the dual-sourcing ratio or agreed safety capacity show how much inventory buffer is strategically necessary rather than wasteful.

### **Operational driver metrics**

At execution level, drivers such as supplier schedule adherence, the three-way match rate in the invoice process and transparency through supply chain traceability explain why inventory arises. Only when these drivers are measurable can DIO targets be bindingly reported as savings realized in procurement controlling, for example via reduced capital carrying costs and lower warehouse costs.

## Risks and controls: when DIO is poorly managed

Inventory reduction as an end in itself carries considerable risks for delivery capability and production stability. Professional risk management weighs the working capital saving against failure costs and obsolescence.

### Under-stocking and supply failures

DIO values that are too low lead in practice to more failures with long lead times, heightened customs or logistics disruptions and volatile markets. Especially with critical materials with tight supply markets, a deliberate safety stock is economically correct. Supplier failures can alternatively be cushioned by a higher dual-sourcing ratio or contractually committed safety capacity at the supplier, rather than tying up capital in one's own warehouse.

### Obsolescence and write-downs

Long inventory holding periods increase the risk that components age, corrode or become technically obsolete. The valuation of such obsolete stock follows the principles of lower-of-cost-or-market logic or the applicable commercial law provisions; concrete carrying amounts must always be examined with financial accounting and, where necessary, tax advisers on a case-by-case basis. Regular obsolete stock stocktakes and clear blocking criteria in the warehouse management system are simple, effective controls.

### Contractual and financial safeguards

Inventory strategies sometimes reach deep into contract work: consignment stock, call-off contracts and binding offer commitments by the supplier shift inventory between the parties and change the risk allocation. With financial hedging such as advance payment or bank guarantee, the capital tied up shifts from the warehouse to pre-financing; both effects belong in a joint assessment with the finance department. The choice of delivery terms, for example Incoterms CIP, also determines from which point the inventory is attributed to one's own company.

## Current developments: DIO in the age of resilience and digitalisation

The interpretation of DIO has changed: after years of lean inventory, supply chain crises, geopolitical risks and regulatory requirements demand new trade-offs between efficiency and resilience.

### From Just-in-Time to Just-in-Case strategies

Many companies in DACH industry have rebuilt strategic stock after the supply chain disruptions, causing DIO values to rise, in some cases above average. The challenge is to set these buffers selectively, for example via risk classes and ABC analyses, rather than applying blanket allowances. Load carrier management and structured warehouse technology help ensure that additional stock is not made even more expensive by handling problems.

### Digitalisation and supplier transparency

Automated inventory monitoring systems, AI-supported demand forecasts and real-time data from suppliers reduce the need for precautionary excess stock. At the same time, regulatory transparency requirements are growing: supply chain laws, sustainability reports in line with GRI Standards and supplier audits in the sense of KYC in procurement require documented processes that also make

inventory and material flows traceable. Robust procedures such as series release before production start also prevent unconfirmed parts from ending up as unusable stock in the warehouse.

## Typical metrics

### **Days Inventory Outstanding: industry-dependent, typically 60–120 days in mechanical engi**

Always assess in comparison to your own history and the industry environment

### **Service level: > 98 %**

Must be considered together with DIO, as inventory reduction would otherwise jeopardise delivery capability

### **Inventory turnover: typically 4–8 turns per year in capital goods**

Mathematically the flip side of DIO (365 divided by DIO)

### **Cash Conversion Cycle: commonly 30–90 days**

Links DIO, Days Sales Outstanding and Days Payables Outstanding into total capital tied up

## Practical example

A mid-sized mechanical engineering company with around 250 employees identified a DIO of over 140 days in a working capital analysis, clearly above the industry-typical range. The root cause analysis showed that three factors were interacting: oversized safety allowances in materials planning, fluctuating delivery reliability of a key supplier for castings and around 8 per cent obsolete stock from a discontinued product programme. The procurement team developed a package of measures that reduced the DIO to approximately 95 days within twelve months without jeopardising the service level.

- Re-planning parameters reset by risk class, safety stock now only for critical materials with proven failure risks
- Additional supplier for castings qualified and dual-sourcing ratio increased to 30 per cent in order to reduce precautionary excess stock
- Obsolete stock stocktake initiated with write-down; valuation details clarified with the auditors on a case-by-case basis
- Monthly inventory review established in procurement controlling linking DIO, service level and Savings Realized

## Conclusion

Days Inventory Outstanding is more than a balance sheet metric: it reveals how well procurement, production and sales are aligned. For buyers, it is always worth considering in combination with service level, supplier reliability and capital tied up, as isolated optimisation quickly generates supply failures. A clean data basis, segmentation by criticality and a structured root cause analysis are the prerequisites for effective measures. Companies that actively manage DIO improve their cash flow and their resilience at the same time. The metric therefore belongs in the standard reporting of every technical procurement function.

## Frequently asked questions

### **What does Days Inventory Outstanding mean?**

Days Inventory Outstanding (DIO) indicates how many days the average inventory remains in the company before it is sold or processed. The metric is calculated from the ratio of inventory to cost of

goods sold, multiplied by 365 days. A low value suggests low capital tied up, but may also signal supply disruption risks.

### **How is DIO calculated correctly?**

The standard formula is: average inventory divided by cost of goods sold, multiplied by 365. A consistent data basis is essential: inventory and cost of goods sold should cover the same period and the same value basis. In businesses with strong fluctuations, rolling averages over several months are more meaningful than a pure year-end figure.

### **What is a good DIO value?**

There is no universally good value, as DIO is highly industry-dependent: mechanical engineering with long lead times typically operates well above the values of high-volume consumer goods manufacturing. A comparison with your own history and industry benchmarks is sensible. What matters is the combination with the service level: a low DIO combined with a high delivery reliability is the true sign of well-managed inventory.

### **How can procurement reduce DIO?**

Effective levers include smaller, more frequent orders, agreed consignment-like models, shorter replenishment times through reliable suppliers and more precise demand planning via coordinated Sales and Operations Planning. Increasing the dual-sourcing ratio also reduces precautionary safety stock. It is important never to manage inventory reduction in isolation, but jointly with production and sales.

### **What is the difference between DIO and inventory turnover?**

Inventory turnover expresses how often the inventory is completely renewed per period; DIO translates the same information into days. Both metrics are mathematically two sides of the same coin: turnover equals 365 divided by DIO. In practice, DIO is used for cash flow discussions, while inventory turnover is used more for operational inventory comparisons.

### **Is DIO part of the Cash Conversion Cycle?**

Yes, DIO is one of the three components of the Cash Conversion Cycle alongside Days Sales Outstanding and Days Payables Outstanding. The Cash Conversion Cycle adds DIO and DSO and subtracts DPO. It thus shows the total duration for which capital is tied up in the revenue process and is a central focus in working capital optimisation.