Lot Number: Traceability in Manufacturing and Procurement

The lot number is a unique identifier for a produced or procured quantity of identical units manufactured under identical conditions. It makes it possible to trace each lot seamlessly from goods receipt through production to the end customer. For technical buyers, it is a central tool for quality assurance, recall preparedness and documentation-based collaboration with suppliers.

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Key facts at a glance

01 A lot number identifies a batch of identical units manufactured or procured under comparable conditions.

02 It is a fundamental prerequisite for traceability, recall actions and distinguishing defective from conforming stock.

03 In the automotive and regulated industries such as medical technology, seamless lot traceability is frequently required contractually or by regulation.

04 Lot numbers are typically generated in the ERP or MES system and carried on the product via label, barcode or DataMatrix code.

05 Lot size influences risk: small lots limit scrap in the event of a fault but increase administrative effort.

06 For supplier evaluations, lot numbers provide the basis for batch-related supply quality data.

Definition: lot number

The lot number is a unique identification number for a lot, i.e. a limited quantity of identical units that were produced, inspected or procured together and under uniform conditions. It must not be confused with the serial number, which identifies individual items.

Distinction from the serial number

While the serial number uniquely identifies an individual item, the lot number applies to an entire batch. In practice, the two are combined: standard parts manufactured lot by lot carry only the lot number, while safety-critical or high-value components additionally carry a serial number. The choice depends on inspection effort, customer requirements and regulatory demands. For procurement, what matters is which labelling the supplier contractually commits to and how it is represented on the accompanying documents.

Legal and normative foundations

Industry standards and product regulations sometimes require mandatory batch labelling, for example in the automotive or medical device industry. Product-related obligations such as take-back and recycling requirements, which in the area of electrical equipment are linked to WEEE, also presuppose that products are identifiable down to the batch. Tax and customs matters such as correct customs tariff classification, by contrast, only touch the lot number indirectly via the traceable origin and material documentation. Specific obligations should be legally reviewed on a case-by-case basis.

Methods and approach: anchoring lot numbers in the procurement process

For lot numbers to be usable along the supply chain, they must be consistently recorded, transferred and documented – from the supplier to one's own goods dispatch.

Requirements in supplier management

Lot number requirements belong in supplier handbooks, drawing specifications and framework arrangements such as a framework order. There, it is defined in what format the number is assigned, what information it encodes (e.g. production date, line, material routing) and on which documents it appears – delivery note, inspection certificate, label. New suppliers from a supplier longlist are already assessed during the selection process on whether their labelling systems are compatible. Without such requirements, proprietary numbering logics tend to emerge in practice, which are later costly to integrate.

Goods receipt and adopting labelling

During incoming goods inspection, the supplier's lot number is recorded and cross-checked against the delivery note and, where applicable, an inspection certificate. The receiver then decides whether to adopt the supplier's lot number or assign their own internal lot number – frequently in combination. In incoming quality inspections based on AQL sampling, the result is assigned to the lot, so that releases and blocks always occur at batch level. If labelling is missing, the lot is typically blocked and the supplier is issued a complaint.

Traceability in production and warehousing

Within one's own operation, every lot is handled via tools such as ERP, MES or warehouse management systems. In lean environments, Kanban cards and container labels link material movement to lot identity. What matters is consistent transfer when repacking, mixing or further processing: when several lots are merged, depending on the process logic a new lot or a lot mixture is created, which must be documented. Only in this way is backwards and forwards traceability maintained across all process stages.

Key KPIs around lot numbers and traceability

Lot numbers themselves are not a metric, but they enable a range of measurable quality and supply metrics that are established in supplier controlling and defect management.

Quality-related metrics

The most important metric is the batch-related defect rate, i.e. the proportion of rejected lots out of all incoming lot releases. Incoming goods compliance and the number of blocked lots per supplier also provide insight into process reliability. An Ishikawa diagram can be used to systematically attribute batch-related defects to root causes, since the lot number narrows down the affected production period and process conditions. Batch-related complaint data is regularly incorporated into the supplier evaluation.

Inventory and process metrics

Lot size and lot count influence inventory levels, turnover frequency and handling effort. Smaller lots improve traceability and limit blocked-stock risk, but can undermine the economies of scale of the optimal order quantity. Metrics such as average lot size, proportion of mixed lots or time to complete traceability of an affected lot show how mature the traceability system is. In practice, a target has proven effective whereby a complete trace-back should typically be completed within a few hours up to one working day.

Risks and controls: what happens without clean lot numbers

Missing or inconsistent lot numbers cause measurable costs – from overly broad blocked stock to escalated recalls.

Recall and failure costs

In the event of a fault, the lot number determines how broad a blocking measure will be. Without a batch reference, it may be necessary to block entire inventories, deliveries already shipped or complete product series – a risk that can be quantified using a risk matrix approach. Effective defective part management relies on the lot number to precisely delineate affected stock and quickly trigger replacement procurement. Recalls without batch data also damage supplier relationships and brand reputation.

Controls and communication processes

Effective controls include sampling of labelling at goods receipt, system maturity checks during supplier approval and regular traceability tests, in which a traceability path is fully retraced. Nonconforming products are handled according to a defined process, as described in quality standards under the heading Control of Nonconforming Product – always documented at batch level. In complaints with a credit note or replacement delivery, the lot number serves as a referencing document. Internal processes also benefit: a well-maintained procurement competency matrix ensures that staff can correctly check labelling requirements.

Current developments: digitalisation and sustainability reporting

The lot number is evolving from a pure quality tool into a data backbone for supply transparency, regulatory reporting and digital supply chains.

Digitalisation and standardisation

2D codes such as DataMatrix are increasingly displacing plain-text labels, as they carry more information in a smaller space and are machine-readable. Industry initiatives are working on standardised data formats for batch data so that information can be exchanged between the ERP systems of customers and suppliers without media discontinuity. Digital lot files bundle inspection certificates, measurement records and process data for the respective lot. For buyers, this significantly reduces the effort involved in audits and complaints.

Sustainability and supply chain transparency

Sustainability requirements increase the pressure for batch-exact evidence: recycled content rates, origin certificates for raw materials or CO data per unit can only be reliably assigned if the associated lots are identifiable. Reporting obligations such as the Corporate Sustainability Reporting Directive (CSRD) reinforce this requirement, as supply chain disclosures must be verifiable. Lot-related evidence is thus increasingly becoming part of procurement documentation, alongside classic quality and origin information.

Lot size strategy and resilience

The crises of recent years have revived the question of how large production lots should be from an economic perspective. Smaller lots improve traceability and flexibility, but increase set-up and administrative effort and can strain safety stock buffers and capacities. In practice, companies look for a middle ground that weighs the risks of blocked stock against the efficiency of large lots – a decision that procurement makes jointly with production and quality management.

Typical metrics

Metric	Typical value

Batch-related defect rate	< 2 % *Proportion of rejected lots out of all lot releases; target value varies by industry and criticality*
Trace-back duration	< 1 working day *Time until complete backwards traceability of an affected lot*
Labelling rate at goods receipt	> 98 % *Proportion of correctly labelled deliveries; sample check at goods receipt*
Proportion of mixed lots	< 5 % *Lots with multiple input batches make traceability more difficult*

Practical example

A medium-sized machinery manufacturer sources castings from several European suppliers. Following a field complaint, the company had to realise that, without batch-exact data, almost the entire inventory and several customer machines were considered affected. As a result, the lot number management system was re-established.

- Supplier handbook extended to include uniform labelling requirements, including a DataMatrix label on every container
- Incoming goods inspection extended to include automatic lot number capture via barcode scan
- Traceability test established: tracing a randomly selected lot must be completed within one working day
- Batch-related complaint rate included in the quarterly supplier evaluation

Conclusion

The lot number is the backbone of any robust traceability and therefore a topic that buyers should not leave to quality assurance alone. It determines how precisely stock can be blocked, complained about and evidenced in the event of a fault. The prerequisite is contractually secured labelling discipline on the part of suppliers as well as consistent adoption into one's own systems. With growing sustainability and transparency requirements, the importance of batch-related data continues to rise. Those who anchor lot number concepts early and in a structured manner reduce recall and blocking costs and strengthen their position vis-à-vis customers and auditors.

Frequently asked questions

? What is a lot number?

A lot number is a unique identifier for a batch of identical units that were manufactured or procured under identical conditions. It makes it possible to trace each lot backwards and forwards throughout

the entire supply chain. Unlike a serial number, it identifies not an individual item but the entire batch.

? What is the difference between a lot number and a serial number?

The lot number applies to an entire batch, while the serial number applies to a single item. Serial numbers are typically used for high-value, safety-critical or recall-relevant products. In practice, parts often carry both identifiers, for example a serial number plus the lot from which they originate.

? Who assigns the lot number – supplier or customer?

Frequently, the supplier assigns the lot number during production and the customer adopts it at goods receipt. Alternatively, the customer assigns their own internal lot number, which is linked to the supplier's number. What matters is that the mapping is documented without gaps.

? How long must lot numbers be retained?

Retention periods depend on industry-specific regulations, product safety requirements and commercial law documentation obligations. In regulated industries, periods ranging from several years to several decades are common in practice, sometimes tied to the expected product lifetime. The specific retention period should be legally reviewed and internally established as binding on a case-by-case basis.

? What information does a lot number contain?

There is no standardised format; commonly used are coded details such as production date, production line, shift, material routing or order number. Some companies use sequential numbers with a separate lot file, while others read codes directly. What matters is that all relevant process data can be retrieved from the number or the linked file.

? What happens in a recall without lot numbers?

Without batch data, it is often necessary to block all units ordered or delivered for an assembly, because it is not possible to determine which ones are affected. This significantly increases costs and lengthens response times. A functioning lot traceability system limits the block to the lots actually affected.

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