

Complaint rate: a metric for quality and supplier management

The complaint rate is a key quality metric describing the ratio of objected deliveries or units to the total quantity. In industrial procurement it serves as an early-warning indicator of supplier risks, process weaknesses and hidden quality costs. Those who systematically measure, analyse and feed the rate back to suppliers can reduce the cost of poor quality and manage supply relationships objectively.

Key facts

- The complaint rate relates the number of objected units or transactions to the total number of delivered units or transactions.
- Typical benchmarks vary widely by industry: in series production often in the single-digit per mille range, while in critical processes only fractions of that are considered target values.
- A uniform basis of reference (pieces, lots, transactions, effort) is essential; otherwise metrics from different suppliers are not comparable.
- The rate should always be considered together with the associated cost of poor quality (rework, sorting, freight, downtime costs).
- The metric is suitable for supplier evaluations, escalation levels and the development of A-suppliers.
- Digital quality management systems and procurement platforms facilitate continuous recording and analysis.

Definition: complaint rate

The complaint rate is the metric for the share of objected services or products in the total performance of a supplier or process. It is usually expressed as a percentage or in per mille and relates to a defined period.

Calculation basics

The most common formula is: number of complained-about units divided by the number of delivered units, multiplied by 100. Alternatively, the rate can be based on purchase orders (complaints per order), production lots or inspection lots. In practice, both the number of objected pieces and the complained quantity in per cent have proven effective. What matters is that numerator and denominator are based on the same reference and that the definition is documented uniformly – for example, whether a partially objected delivery counts in full or only proportionally.

Distinction from other quality metrics

The complaint rate only captures objections identified by the customer. It therefore differs from scrap, which arises in one's own production, and from first pass yield, which describes the share of defect-free parts on the first inspection run. It must also be distinguished from delivery reliability, for example within carrier performance: there, the focus is on on-time delivery and transport quality. Taken together, these

metrics form an overall picture of supplier performance.

Types of complaints

Complaints can be differentiated by cause and procedure: product quality defects, quantity or delivery date discrepancies, documentation errors as well as packaging and labelling errors. A distinction is also frequently made between the 8D report, interim containment action and permanent corrective action. For metric building, it is advisable to report critical complaints separately (production stoppage, safety relevance), as they weight the risk in supplier evaluation differently from simple documentation deviations.

Methods and procedures for recording

A reliable complaint rate presupposes a structured complaint process – from notification through root cause analysis to effectiveness verification. Without a standardised approach, the metric remains a snapshot.

Complaint management in the procurement process

The process typically begins with visual inspection at incoming goods or with an objection raised in production. Every complaint should be recorded in a clearly identifiable way – with batch number, delivery reference, defect pattern and photo. The inspection instruction defines which inspection steps and acceptance criteria apply and from when an objection becomes formal. Procurement forwards the notification to the supplier, tracks the 8D processing and only closes the case after proof of effectiveness.

Root cause analysis with the supplier

For significant deviations, joint 8D reporting has proven effective: the supplier describes the problem, contains its impact (interim containment action) and systematically analyses the root cause, for example using 5-Why or an Ishikawa diagram. The buyer reviews plausibility and sets deadlines for the permanent corrective action. In long-term partnerships, for example with an A-supplier, a joint pilot project with the supplier can also be used to verify improvements.

Data basis and analysis

The rate only becomes meaningful through continuous recording over sensible periods – usually rolling 3, 6 or 12 months. Analyses by product group, manufacturing process, material or location reveal patterns: if a particular production line performs consistently poorly, the rate shows concentration effects. Spend analyses add the cost dimension by relating the complaint rate to the supplier's purchase volume.

Key KPIs around the complaint rate

The complaint rate never unfolds its impact in isolation. In the procurement KPI cockpit, it is combined with cost, time and process metrics.

Failure and quality costs

In addition to the rate, the consequential costs of poor quality should be considered: rework, sorting costs, multiple transport, downtime costs in one's own production or at the end customer. In practice, expressing the cost of poor quality as a share of purchase volume is typical – even low percentage

points are often relevant. The trend of complaint costs per quarter also shows whether improvement measures are working or whether structural problems persist.

Process and response metrics

Metrics measuring the quality of handling are important: average processing time per complaint, share of 8D reports closed on time, share of repeated complaints about the same root cause. Related process metrics such as requisition cycle time or purchase order costs also show whether inefficient procurement processes themselves contribute to quality problems – for example through unclear demand specifications or missing inspection instructions.

Supplier metrics

In supplier evaluation, the complaint rate is typically weighted together with on-time delivery, price development and quality of cooperation. A common approach: the quality component, to which the complaint rate belongs, often accounts for one third to one half of the overall score. Delivery plan tolerance bands add quantity and schedule flexibility to the assessment, so that short-term adjustments do not come at the expense of quality.

Complaint rate in supplier management

As a steering variable, the complaint rate only takes effect once its consequences are defined – from target setting through escalation to structural decisions in the supplier portfolio.

Target setting and escalation

Realistic targets are set depending on industry, technology and the supplier's maturity. Tiered escalation levels have proven effective: from a defined rate, an information meeting; in the event of persistent exceedance, an improvement agreement with binding actions; then contractual penalties, reduced sourcing or qualification of a second supplier. Rather than penalties alone, the combination of target setting and joint improvement has proven more sustainable in many companies.

Integration into sourcing strategy and S&OP

The rate should feed into the sourcing strategy: suppliers with a permanently high rate are re-evaluated in the portfolio, while qualified suppliers (A-suppliers) receive higher volumes and earlier involvement, for example in prototype procurement or new projects. In the S&OP cycle, the metric helps assess capacity and quality risks together with production and sales – especially for critical components with long replenishment lead times.

Contractual safeguarding

Contractually, complaint processes can be governed by quality agreements: defined response times, assumption of costs for sorting and additional effort, recall provisions and defect rights. Where there are high pre-financing risks or critical orders, a bank guarantee or the purchase order reserve can be added as safeguarding instruments. Careful credit checks also protect against a supplier whose quality is already compromised being unable to bear the financial liability in the event of a dispute. Legal details must always be examined on a case-by-case basis.

Risks and controls

Anyone using the complaint rate as a steering metric must know typical distortions and compensate for

them through control mechanisms.

Typical measurement errors and distortions

Common problems: unclear definitions (what is a complaint, what is an information request?), different bases of reference between sites, or a denominator that statistically exaggerates the rate at low volumes. Under-recording is also realistic: plants that quickly rework defects themselves report fewer complaints – the true defect burden remains invisible but surfaces in the cost of poor quality. Regular data quality checks and a uniform catalogue definition of defect categories are therefore mandatory.

Mismanagement through blanket targets

Blanket targets such as 'rate below 0.5 per cent' can prove counterproductive if they motivate suppliers to suppress notifications. Target combinations of rate, share of repeat defects and handling quality are better. Moreover, the rate should never be evaluated in isolation: a supplier with a higher rate but excellent 8D behaviour can be more valuable in the long term than one that conceals defects. Transparent communication of the evaluation logic to suppliers strengthens acceptance.

Control mechanisms and contingency provisions

Practical controls: sample inspections at incoming goods based on the standardised inspection instruction, periodic supplier audits, cross-checks between complaint and failure cost data. For critical parts, a contingency plan for supply assurance belongs in risk management, so that production does not stand still in the event of complaint-related supply stops. Agile procurement supports this through fast alternative sourcing routes, while source-to-contract processes anchor quality requirements contractually from the outset.

Current developments: digitalisation and prevention

The recording and use of complaint data is changing: from retrospective documentation to preventive, data-based supplier management.

Digital complaint processes

Digital quality management and procurement platforms enable the structured recording of objections including photos, measurement data and status tracking. Suppliers can process 8D reports directly in the system, which in practice significantly shortens response times. Automated analyses – for example monthly rates per supplier and item – make supplier meetings fact-based. AI-supported analyses increasingly help to identify recurring cause patterns from defect patterns.

From reaction to prevention

The trend is towards early-warning indicators: process capability studies, first article inspections and risk-based incoming goods inspection (skip-lot) reduce the number of complaints before they arise. The sustainability dimension is also growing: for materials relevant to recyclability assessments and circular economy requirements, additional grounds for objection come into play, which flow into the rate and its cause categories. The complaint rate thus becomes an integral part of comprehensive supplier risk management.

Typical metrics

Complaint rate (series production): typically < 0.5%

Common industry target; considerably stricter for critical parts.

Complaint rate (critical components): often < 100 ppm

Defined as a parts-per-million target for safety or fit parts.

Share of 8D reports closed on time: > 90%

Measures the quality of suppliers' response in the complaint process.

Share of repeat defects: < 10%

A high share indicates inadequate permanent corrective actions.

Cost of poor quality as a share of purchase volume: typically 1–3%

Rule of thumb; high values signal hidden need for action.

Practical example

A medium-sized mechanical engineering company with around 40 strategic suppliers repeatedly encountered fit problems in assembly with one part family. This supplier's complaint rate was well above 2 per cent, far exceeding the internal target of below 0.5 per cent. Procurement initiated a structured improvement programme and incorporated the metric into the monthly supplier evaluation.

- Introduction of a standardised complaint form with batch reference, defect catalogue and photo in the procurement platform.
- Binding 8D requirement with a 48-hour response time and effectiveness verification after three production lots.
- Joint root cause analysis at the supplier's production site, including adjustment of the incoming goods inspection instruction.
- Qualification of a second supplier as a risk buffer and gradual volume shifting in the event of no improvement.

Conclusion

The complaint rate is more than a quality statistic: it reveals where supply relationships, specifications and processes lose stability. What determines the metric's value are a uniform basis of reference, a sound data basis and defined consequences in supplier management. Combined with the cost of poor quality, on-time delivery and responsiveness, it provides a reliable picture of supplier performance. Companies that use the rate preventively rather than merely documenting it reactively demonstrably reduce the cost of poor quality and supply risks. In combination with modern digital tools, it becomes an early-warning system for procurement.

Frequently asked questions

How is the complaint rate calculated?

The most common formula is: number of complained-about units divided by the number of delivered units, multiplied by 100. Alternatively, the rate can be based on purchase orders or lots. What matters is that numerator and denominator use the same basis and that the definition is documented uniformly across the company.

What complaint rate is acceptable?

There is no universally valid value. In series production, typical targets are often in the single-digit per

mille range, and for critical safety or fit parts considerably lower. Targets are meaningful when set per product group and supplier category, derived from industry benchmarking and the company's own cost of poor quality.

What is the difference between complaint rate and scrap rate?

The complaint rate measures objections raised by the customer, whereas the scrap rate measures defective parts in one's own production. The two metrics complement each other: a low internal scrap rate combined with a high complaint rate points to specification or inspection gaps, while high internal values indicate process problems in manufacturing.

What costs do complaints cause in procurement?

Typical cost blocks include rework, sorting actions, double freight, administrative effort, downtime costs in production and, in extreme cases, complaints from the company's own customers. In practice, the cost of poor quality is commonly expressed as a share of purchase volume. Full failure costs are often a multiple of the initially visible expense.

How can procurement reduce the complaint rate?

Effective measures include clear demand specifications, uniform inspection instructions, first article inspections and risk-based incoming goods inspections. In addition, joint 8D processes with suppliers, quality audits and escalation levels in supplier evaluation have proven their worth. In the long term, developing reliable A-suppliers contributes more to reducing the rate than contractual penalties alone.

What role does the complaint rate play in supplier evaluation?

It is usually one of the most heavily weighted components of the quality share in supplier evaluation, often alongside on-time delivery and price development. The rate can be used to derive escalation levels, volume decisions and development priorities. It is important to combine it with the quality of complaint handling, so that reporting behaviour and willingness to improve are weighted fairly.