

Complaint Rate: Key Figure for Defect and Rejection Rates in Procurement

The complaint rate is a central quality key figure in procurement and describes the proportion of rejected deliveries or parts as a share of the total quantity of incoming goods. It shows how reliably a supplier adheres to contractually agreed specifications and what effort complaints cause within the company. For buyers and supply chain managers, it is an indispensable control instrument within supplier evaluation and quality assurance.

Key facts

- The complaint rate sets rejected quantities or cases in relation to delivered or processed total quantities, typically as a percentage.
- It is also frequently measured in Parts per Million (PPM) in order to make even low defect rates comparable at volume level.
- The key figure is generally fed by incoming goods inspections, 8D reports and internal scrap analysis.
- Different target values apply depending on the industry; in series production, values in the single-digit PPM range are often targeted.
- Complaint rates typically flow into the supplier scorecard and the supplier audit score.
- A rising rate may have causes in the supplier's process, in parameter maintenance (MRP) or in one's own specification and should be analysed systematically.

Definition: complaint rate

The complaint rate is the key figure, determined over a period, for the proportion of rejected products, deliveries or services as a share of a supplier's total performance. It can be calculated by quantity (rejected parts / delivered parts), by value or by transaction (number of complaints / number of orders). As a quality indicator, it is a component of most supplier evaluation systems and serves for the objectifiable management of the supplier portfolio.

Distinction from defect rate and scrap

The complaint rate captures all cases rejected by the customer, regardless of whether an actual product defect exists. The defect rate in the narrower sense, by contrast, measures only technically defective units. Not every complaint is therefore a quality defect: partial deliveries with an incomplete remainder, incorrect accompanying documents or delayed deliveries followed by a delivery reminder can also be recorded as complaints. This demarcation must be bindingly defined within the company, as it decisively determines the comparability of the key figure across suppliers and sites.

Legal context

Complaints are practically always associated with warranty rights under the contract of purchase or work. Materially defective goods generally entitle the buyer to subsequent performance, rescission, price

reduction or, where applicable, damages. The specific arrangement – such as deadlines for the duty to give notice of defects, waivers or extended warranty periods – arises from the contract and the general terms and conditions. As the legal position depends on the individual case, contractual provisions governing complaint handling should be reviewed by legal counsel before the contract is concluded. This article does not constitute legal advice.

Methods and approach for determination

A robust complaint rate presupposes systematic recording of all complaints, from goods receipt to field complaints. The basis is a standardised complaint process with clear categories, responsibilities and response times. Only if recording and calculation are consistent can the key figure be compared across periods and suppliers.

Calculation variants

The quantity-based formula is: $\text{complaint rate} = (\text{rejected quantity} / \text{total delivered quantity}) \times 100$. In high-volume environments, Parts per Million (PPM) is frequently used instead, as percentage values become impractically small at large quantities. The transaction-based variant (complaints per order or per delivery) is suitable for low quantities, custom-made systems or services. It is important to define the reference period – typically monthly or quarterly – and to calculate rolling averages in order to smooth out random effects.

Data sources and system support

Relevant data comes from incoming goods inspection, from production complaints, from customer complaints attributable to the supplier, and from advance shipping notice (ASN) processing where the notice and the physical delivery differ. In the ERP system, complaint types, cause codes and cost rates should be defined; data from external systems is frequently transferred via a procurement ETL process into a central data model. Parameter maintenance (MRP) also influences the key figure: inaccurate master data, incorrect tolerances or outdated inspection plans generate false complaints that cannot be attributed to the supplier.

Supplier-side root cause resolution

For material complaints, professional procurement organisations demand structured 8D reports: team formation, problem description, containment action, root cause analysis, corrective and preventive actions, and evidence of effectiveness. In series production, the evidence is often tied to production part approval – requalification after process changes is only granted promptly if the defect history is clean. The effort the supplier invests in root cause resolution is a good early indicator of future quality development.

Key KPIs around the complaint rate

The complaint rate only unfolds its effect in the context of further key figures. Considered in isolation, it can be misleading, because it reflects neither costs nor delivery reliability. A set of key figures combining quality, delivery reliability, costs and responsiveness makes sense.

Quality and process key figures

Core additions are Parts per Million (PPM), the first-pass yield rate, internal rework costs caused by supplier errors, and the average response time to complaints. In addition, the number of open 8D

reports and their ageing show processing discipline. Anyone comparing suppliers systematically consolidates these values in a supplier scorecard and frequently weights quality at a third to a half of the total score – the exact weighting varies according to industry and the criticality of the goods.

Cost and risk perspective

In addition to the rate itself, the financial impact should be recorded: rework, sorting and freight costs, downtime costs during line stoppages, and administrative effort. A total cost tree makes these consequential costs transparent and shows that an apparently inexpensive supplier with a high complaint rate may be more expensive overall. On the risk side, a risk matrix helps to identify suppliers with a poor quality record and high switching difficulties; for critical items, a contingency plan for supply assurance belongs in the risk management process.

Target values and industry practice

There are no fixed standards. In series and automotive supply, PPM values in the single- to double-digit range are common and often contractually agreed; in special machinery construction or for prototypes, higher rates may be professionally justified. Target values should therefore be agreed specifically for the product and process and reviewed regularly. Trend observation is important: a stable value slightly above the target is often better than a value fluctuating around the target.

Risks and controls in complaint management

The greatest danger is distortion of the key figure: under-recording, inconsistent categorisation and missing cost attribution render complaint rates ineffective. In addition, operational risks arise if complaints do not lead to consequent supplier development.

Typical measurement errors

Common sources of error: complaints are recorded decentrally and without a system, cause attribution is done as a blanket assignment ('supplier' instead of a specific defect code), or internal errors are charged to the supplier. Time lags also distort the picture – a complaint may only appear weeks after receipt of goods. Remedies include a binding recording process, regular data quality checks (keyword: duplicate score for master data) and clear governance on who records which complaint type in which system.

Consequences and escalation

Complaint rates should have consequences: when defined thresholds are exceeded, level-1 discussions, improvement-driven audits, quality planning requirements and ultimately a re-sourcing decision typically follow. The supplier audit score can be corroborated using the complaint history. At portfolio level, procurement portfolio analysis classifies critical items with a poor quality record and prioritises dual sourcing or migration strategies. All measures should be documented in order to be robust in the event of disputes and audits.

Contractual safeguards

Effective complaint management begins in the contract: defined quality requirements, inspection agreements, PPM target values, response and remediation deadlines, and assumption of costs for sorting and rework. For long-running framework agreements, a price adjustment clause can be linked to the achievement of quality targets. The interface should also be organised – for example, how complaints from invoice clearing or from accountShortfall items flow back into the complaint process.

Current developments: digitalisation and integration

Complaint data is increasingly understood as a strategic raw material. Digitalising the complaint process reduces processing times and improves the data basis for supplier development and procurement decisions.

Data integration and analytics

Modern procurement organisations integrate complaint data from ERP, QM systems and supplier portals into a common data model; the procurement ETL process automates the preparation. This allows quality data to be linked with costs, delivery reliability and price effects – the basis for reliable attributions in the total cost tree. Regular data quality checks, for instance via a duplicate score for supplier and material master data, prevent analyses from being based on faulty data.

Integration into planning and evaluation processes

Quality key figures gain value when they feed back into planning processes: in the S&OP cycle, supplier risks with a high complaint history influence procurement planning and safety stocks. In ABC-XYZ analysis, items with high value and fluctuating quality (V and Y items) can be monitored more closely in a targeted manner. eAuction preparation also benefits: bidders with a documented poor quality record can be sorted out early, rather than generating costs through complaints later.

Quality, compliance and strategic alignment

Complaint data is increasingly flowing into compliance topics too: documentation requirements and proof obligations – for example in the context of the PPWR declaration of conformity for packaging – increase the effort involved in complaints about packaging and labelling defects. Strategically, leading companies embed quality demands in their procurement policy and evaluate suppliers holistically. Aspects of supply chain finance may also be affected: for suppliers in financial difficulty, identifiable through supply chain finance instruments, quality usually deteriorates first – the complaint rate acts here as an early warning indicator.

Typical metrics

Complaint rate: typically < 1%

Take industry and product type into account; trend matters more than a single value

Parts per Million (PPM): often < 500 PPM (series)

In series production, single-digit target values are sometimes contractually agreed

Complaint response time: typically 24–72 h for containment action

Fix the deadline contractually

Open 8D reports: Target: 0 for over ~30 days

Indicator of the supplier's processing discipline

Practical example

A medium-sized mechanical engineering company with around 60 active suppliers found during its annual evaluation that two suppliers of plastic components had a complaint rate of over five per cent – mainly surface defects and dimensional deviations. The rework costs and administrative effort had not previously been systematically recorded. The procurement department then introduced a structured complaint management process and, for the first time, linked the rate to the supplier scorecard.

- Standardised complaint process with cause codes and monthly evaluation per supplier, plus a switch to PPM measurement for volume items.
- 8D reports made mandatory with deadlines; contractually stipulated escalation, including an audit, in the event of a second missed deadline.
- Integration of the complaint rate into the risk matrix and development of a contingency plan for the more critical of the two suppliers.
- Critical items reassessed in procurement portfolio analysis and dual sourcing established for the critical component.

Conclusion

The complaint rate is more than a statistic: it translates quality problems into a controllable key figure and creates the basis for objective supplier discussions and procurement decisions. What matters are a binding definition, complete recording and the consistency to derive concrete measures from elevated values. In combination with key figures such as Parts per Million (PPM), cost follow-up and supplier evaluation, it shows a supplier's actual risk profile. Those who integrate it systematically into scorecards, planning processes and contract management sustainably reduce rework and downtime costs. The complaint rate therefore belongs in the indispensable standard repertoire of every professional procurement organisation.

Frequently asked questions

How is the complaint rate calculated?

The classic formula is: rejected quantity divided by total delivered quantity, multiplied by 100. Alternatively, it can be calculated by transaction (complaints per order) or by value. For high-volume series, the figure is usually stated in Parts per Million (PPM), because percentage values would be too small.

What complaint rate is acceptable?

There is no universally valid threshold; acceptable values depend on the industry, the product and the quantity involved. In series production, single- or double-digit PPM values are often targeted, whereas for complex individual parts higher rates may be professionally justified. What matters is a realistic target agreement with the supplier and the trend development over time.

What is included in the complaint rate?

That depends on the internal definition: pure product quality defects, but also quantity deviations such as partial deliveries with an incomplete remainder, documentation errors or packaging deficiencies can be included. It is important that the demarcation is fixed in writing and applied consistently across all sites, so that the figures remain comparable.

What role does the complaint rate play in supplier evaluation?

It is usually one of the weighted components of a supplier scorecard alongside delivery reliability, price development and service quality. When thresholds are exceeded, it typically triggers escalation stages, from quality discussions to a re-sourcing decision. The complaint history also serves as a decision basis for audits and release procedures such as production part approval.

What is an 8D report in the context of complaints?

The 8D report (Eight Disciplines) is a structured problem-solving report that suppliers provide after complaints. It documents the problem description, containment actions, root cause analysis and permanent corrective and preventive actions, including evidence of effectiveness. Many industry standards require 8D reports from defined complaint classes or quantity thresholds upwards.

What consequential costs do complaints cause?

In addition to the direct replacement delivery costs, there are rework, sorting and special transport costs, downtime costs in the event of production stoppages, as well as considerable administrative effort. A total cost tree makes these consequential costs visible and shows that apparently inexpensive suppliers with a high complaint rate can be significantly more expensive in terms of total cost of ownership.