

Material classes: systematically classifying materials and steering procurement processes

Material classes are a systematic grouping of materials, goods and services according to shared technical or commercial characteristics. They form the backbone of materials management and strategic procurement because they place materials planning, requirements determination, supplier selection and controlling on a single, consistent data basis. Anyone who maintains material classes consistently reduces range fragmentation, improves tender planning and creates transparency over cost structures and supplier concentration.

Key facts

- Material classes group materials by technical properties, areas of use or procurement characteristics.
- They form the basis for requirements determination, materials planning, tenders and supplier consolidation.
- Typical classification criteria are commodity policy, ABC analysis and the Kraljic portfolio.
- In ERP systems, material classes control MRP groups, valuation methods and planning logic.
- Consistent classification reduces material variety and enables benchmarking across sites and plants.
- Maintenance and governance of material classes are typically the responsibility of material master data management with clear allocation of duties.

Definition: material classes

Material classes denote the grouping of materials and items into categories with shared characteristics, such as material type, assembly affiliation, procurement type or intended use. They are a central element of the material master and act as a control mechanism for processes such as requirements planning, procurement, storage and valuation.

Distinction from commodity groups and categories

In practice, the terms material class, commodity group and (procurement) category are often used synonymously, but they differ in focus. Material classes typically originate from materials planning and production, whereas commodity groups are organised more from a trading perspective. Procurement categories consolidate material classes strategically and form the basis for category management, supplier consolidation and cost reduction programmes.

Structure of a classification hierarchy

Proven classification systems work in multiple levels: a top level, for example, separates raw materials, bought-in parts, finished parts, auxiliary materials, packaging, operating supplies and services. Below

this follow specialist areas such as metals, plastics, electronics or cast, steel and forged parts. The depth is chosen so that every item is assigned unambiguously and analyses remain meaningful without excessive detail. Classic coding systems such as central item numbers or industry classifications, as well as company-specific number ranges, are used in practice alongside international standard systems.

Purpose and benefits in the procurement process

Material classes provide the structural basis for almost all procurement-side decisions: from the strategy process through operational procurement to reporting.

Requirements determination and materials planning

In ERP systems, material classes determine how an item is planned: via production orders with bills of materials, via automatic replenishment, via framework contracts with call-off scheduling or via simple replenishment planning. Clean class assignment prevents BOM-relevant A parts from being treated like standard small parts. The purchase requisition also usually runs via classes: approval routes, responsible purchasing groups and standard texts are linked to them.

Strategy formation and category management

At class level, spend can be consolidated, supplier portfolios analysed and sourcing strategies derived. The combination of ABC analysis (share of value) and the Kraljic portfolio (supply risk) yields class-typical strategies, such as supplier consolidation for forward-looking standard materials or hedging and contingency management for critical bottleneck items. A commodity group value driver analysis should also sensibly start at material class level, because comparable cost structures exist there.

Award procedures and tenders

Material classes structure tenders: bidder registers, enquiry lots and specifications can be organised by class. Technically similar items within a class can be tendered as a bundle, which increases discount volumes and reduces the administrative effort per transaction. A well-maintained bidder register per material class also speeds up the qualification of new suppliers.

Methods and approach for forming material classes

Establishing a material class structure is a project with a clear methodology: as-is analysis, classification draft, alignment with specialist departments, migration and governance.

Analysis phase and classification principles

First, master data, procurement volumes and purchase requisition histories are analysed. Proven classification principles are: by origin (bought-in part, contract work, purchased part), by technology (material, manufacturing process) or by use (product, plant, consumable). Mixed forms are common; what matters is a consistent logic per hierarchy level. Inventory analysis also provides indications of stock ranges and seasonality per class.

Class formation and data migration

Subsequently, every existing item number is assigned to a class. In practice, a combination of automatic rule-based derivation (e.g. via material type, material group, nomenclature of the description) and expert review proves efficient. Threshold values for duplicates and class fragments should be defined in order to control new material numbers. A documented class catalogue with definitions and example entries is

essential so that planners and buyers assign items correctly and consistently.

Governance and master data maintenance

Material classes only remain alive if they are maintained. A request-based process has proven effective: every new item is created in the system according to class logic, if necessary with a review loop and approval by the responsible purchasing group. Regular reviews – for example annually or following significant volume shifts – keep the structure up to date. Duplicate catalogues, free-text orders and unclear responsibilities are typical causes of decay.

Important KPIs and analyses at material class level

Material classes make procurement management measurable. Analyses are frequently carried out by class and period, over time and in procurement benchmarking across plants or business units.

KPIs for procurement controlling

Key figures are procurement volume, number of items per class, number of suppliers per class, price index development and material group share of total volume. In addition, inventory analysis KPIs such as inventory coverage, stock turnover and inventory value provide indications of optimisable working capital. Order processing per class (schedule adherence, acceptance rate) shows where the operational levers lie.

Supplier analyses per class

At class level, supplier performance evaluation can be analysed in a differentiated way: delivery reliability, quality (e.g. supplier PPM target), response times and supply capability. This allows supplier consolidation potential or outsourcing potential analyses to be prepared on a sound basis. Netting and call-off control across sites also rely on class-related volume aggregation.

Risks and controls when using material classes

Material classes are a management instrument – used incorrectly, they create misdirection. Risks arise particularly from poor governance, lack of currency and insufficient system integration.

Typical risk areas

The most common risks include: duplicate classes (fragments), incorrectly assigned items, failure to update when the product range changes and insufficient authorisation management when creating new classes. Linking to approval and authorisation processes also carries risks: anyone choosing a class incorrectly can bypass approvals or, in the case of country risk in procurement, trigger the wrong hedging measures.

Control mechanisms and compliance

Proven controls include: the four-eyes principle for class creation, periodic duplicate checks, mandatory field logic in the ERP, documented responsibilities and a supplier audit programme that incorporates class-related criteria. For sensitive classes, for example with know-how-related manufacturing documentation, strict confidentiality rules must be observed; a non-disclosure agreement (NDA) before data exchange is standard. For safety- or compliance-relevant classes (e.g. critical raw materials), targeted contingency management and risk hedging processes must be maintained.

Interlocking with quality and supplier management

Material classes provide the structure for quality assurance measures: supplier quality requirements, quality gates in production and acceptance planning, and audit programmes can all be defined by class. Supplier release – for example for first-off or series samples – also frequently draws on class references to steer the responsible release rules and inspection steps.

Current developments and digitalisation

Material classes are changing with the digitalisation of procurement: classification standards, AI-supported assignment and integrated e-procurement platforms are making the structure more dynamic and more applicable.

International classification standards

In increasingly globally interconnected supply chains, a cross-company language for materials is becoming more important. Industry classifications and harmonised coding systems – for example in the context of EU customs tariff classification or the Harmonized System – facilitate country risk analyses and customs and proof-of-origin processes. In addition, cross-company standard classes are becoming established as a basis for supplier search and data exchange.

AI-supported assignment and automated processes

Modern systems use machine learning to assign descriptions, material specifications and historical order items to classes automatically. This reduces manual effort in record creation and minimises fragmentation. Automatic replenishment, catalogue-based replenishment processes and predefined standard texts per class make procurement faster and more error-free – particularly for C and K parts.

Integration into marketplaces and sourcing platforms

Material classes are also used as a search and matching criterion: on B2B marketplaces, providers assign their services and products to classifications, enabling buyers to search specifically for suitable suppliers. A consistent internal class structure makes it easier to map to external classifications and accelerates supplier search, tenders and supplier release.

Typical metrics

Items per material class: ranges from hundreds to tens of thousands per level

Extremely broad or fragmented classes indicate classification errors

Supplier concentration per class: typically a target of 2–5 suppliers for standard classes

Watch out for dependency; deliberately maintain multiple sources for bottleneck classes

Supplier PPM target per class: typically < 100 PPM for critical parts

Class-related quality targets enable differentiated management

Delivery reliability per class: > 95 % as a common benchmark

Class comparisons reveal where operational processes are underperforming

Practical example

A medium-sized mechanical engineering company with around 20,000 item numbers and procurement spend in the low hundreds of millions had material classes that had grown historically, partly by site and

partly by customer project. Analysis was only possible with great effort, and supplier concentrations went undetected. After a reorganisation into four hierarchy levels and the assignment of all items within six months, a considerably clearer picture of procurement emerged.

- Introduction of a class-related catalogue with defined assignment rules and a four-eyes check for new records
- Creation of an analysis per class: volume, item count, number of suppliers and supplier PPM target as standard reporting
- Identification of consolidation potential and launch of supplier consolidation in three classes
- Linking purchase requisition approval processes to classes and introducing regular inventory analysis for standard classes

Conclusion

Material classes are more than an ordering system within the material master: they are the structural foundation for strategic and operational management in procurement. Those who build and maintain them consistently and link them to materials planning, tendering, supplier evaluation and controlling gain transparency, reduce process effort and can steer procurement spend in a targeted manner. Clear classification logic, documented governance and regular maintenance are prerequisites. When introducing them, it is worthwhile to consider cross-class target figures and analyses from the outset, so that the structure is not merely archived but actively used for optimisation projects.

Frequently asked questions

What is a material class in procurement?

A material class is a group of materials combined according to shared technical or commercial characteristics. It structures the material master and controls processes such as requirements planning, materials planning, tenders and analysis. In procurement, classes form the basis for category management, supplier consolidation and controlling.

How do you build material classes systematically?

A proven approach is multi-stage: an as-is analysis of master data and spend, definition of a classification logic (e.g. by origin, technology or use), a multi-level class hierarchy and subsequent assignment of all items. A documented class catalogue, clear creation rules and regular reviews ensure the structure stays up to date.

What is the difference between a material class and a commodity group?

Material class and commodity group describe similar groupings but differ in origin: material classes typically come from production and materials planning, whereas commodity groups come from the retail and sales environment. In strategic procurement, material classes are often consolidated into procurement categories, on which category management and strategy processes are built.

Why are material classes important for procurement controlling?

Without classes, spend, item numbers and supplier portfolios cannot be meaningfully analysed or benchmarked. At class level, volumes can be consolidated, price developments tracked and supplier performance assessed. KPIs such as supplier PPM target, delivery reliability or inventory coverage are also only meaningful on a class-related basis.

How do material classes relate to the ABC analysis?

The ABC analysis ranks materials by their share of value and is typically applied to material classes or groups. A classes with high value and low item counts receive intensive strategic attention, while C classes with low value are handled with more automated replenishment. Combining this with the Kraljic portfolio yields class-typical procurement strategies.

What role do material classes play in ERP systems?

In ERP systems, material classes control key master data fields and processes: MRP groups, planning logic, valuation methods, approval routes for purchase requisitions and text modules. They therefore directly influence automatic replenishment, inventory analysis and order processing. Incorrect class assignments frequently lead to mis-planning and unnecessary process effort.