

ECLASS: The international standard for product classification and master data

ECLASS is an internationally established standard for the classification and unambiguous description of products and services, managed by ECLASS e. V., based in Germany. The standard organises product characteristics into a hierarchical four-level class system and structures technical properties in machine-readable attributes. For technical buyers and manufacturing suppliers, ECLASS is the central tool for harmonising item master data across manufacturers, formulating tenders precisely and automating data exchange processes in the supply chain.

Key facts

- ECLASS is a vendor-neutral standard for product classification and product master data with four hierarchical levels.
- The current version is published annually and typically comprises tens of thousands of classes and hundreds of thousands of attributes.
- ECLASS covers more than 40 subject areas, including mechanical engineering, electrical engineering, electronics, chemistry and packaging.
- The structure consists of classes (PR numbers), keywords, characteristics, values and application recommendations (AA).
- In practice, ECLASS significantly reduces the maintenance effort for item master data and improves data quality in ERP and e-procurement systems.
- ECLASS competes functionally with UNSPSC and is used particularly widely in European industry.

Definition: ECLASS

ECLASS denotes an international, vendor-neutral standard for the classification and unambiguous description of goods and services. It was developed from 2000 onwards on the basis of the German reference model eCl@ss and is now developed further by the association of the same name with members from industry, associations and academia.

Structure of the class system

The system is divided into four hierarchy levels: segment, main group, group and commodity class. Each class is assigned an eight-digit PR number plus a prefix for the subject area, for example CCG for electrical engineering content. The lowest-level commodity class describes the product so specifically that directly suitable characteristics can be derived from it.

- Level 1: segment (e.g. products, software, services)
- Level 2: main group (subject area assignment)
- Level 3: group (product family)
- Level 4: commodity class (specific product)

Characteristics, values and application rules

Each class is assigned keywords, characteristics (properties) with values and, optionally, application recommendations (Aspect/Application Assignment, AA). The AA describes the order and presentation of the characteristics from the user's perspective. In practice, a product may be assigned to several classes; the application recommendation determines which assignment is authoritative in each context.

ECLASS in procurement: methods and approach

For procurement organisations, the introduction begins with structuring the item assortment: first, an analysis is carried out of which commodity groups and material types are procured in the company and what data quality the existing master data exhibits.

Migration and mapping project

In a typical project, existing material groups are mapped to ECLASS classes, either manually for critical assortments or automatically using classification software. A pilot in one or two commodity groups has proven worthwhile before the entire assortment is migrated. The degree of standardisation of the master data increases measurably in the process, because duplicated material numbers become visible and can be consolidated.

Integration into e-procurement and catalogue processes

ECLASS attributes are maintained in the ERP system, in catalogue management and on tendering platforms. Formats such as BMEcat, which transmits ECLASS characteristics in a structured way, are suitable for data exchange with suppliers. A well-maintained commodity group board based on the ECLASS structure also makes it easier to steer the category and supplier strategy.

Distinction from UNSPSC and other systems

Besides ECLASS, alternative classification systems exist, above all UNSPSC, which is widespread internationally, particularly in the Anglo-American region and in the public sector. ECLASS generally offers more granular technical characteristics and is more firmly established in European mechanical and plant engineering. Which system is the sensible choice depends on the industry focus, customer requirements and the system landscape; in individual cases, a review with the responsible IT and data owners is recommended.

Benefits and KPIs for master data quality

The benefits of ECLASS are reflected in various key figures that represent the degree of standardisation and the data quality of the item master. These key figures can be checked regularly as part of a target-actual comparison.

Relevant key figures

Key metrics are the classification rate, the attribute fill rate and the duplicate rate in the material master. Companies that have consistently implemented ECLASS achieve classification rates of over 95 per cent for their active assortment in practice. These values serve as a starting point for continuous improvement and for budget planning of master data maintenance.

Impact on procurement processes

A classified item master shortens search times, improves catalogue searches and makes spend

analyses based on commodity groups reliable. In tenders, ECLASS enables unambiguous specification, which makes bid evaluation stages more objective and simplifies the comparison of supplier quotations. The uniform classification also provides a reliable data basis for steering the award maturity level of a category.

Risks, effort and controls

Implementing ECLASS is not a pure IT project; it requires organisational anchoring. Without clear responsibilities and quality assurance processes, incomplete classifications and proliferating multiple structures threaten.

Typical stumbling blocks

Common problems are inconsistent classifications by different maintainers, insufficient attribute completion and inadequate maintenance of historical legacy data. In addition, the annual version update of the standard makes lasting consistency difficult if no migration strategy exists. Interfaces to supplier data also require effort, as not every supplier delivers ECLASS-compliant data.

Controls and quality assurance

Regular sample checks of classified material records and defined review rules when creating new materials have proven effective. A data-side equivalent of an order approval workflow — i.e. a controlled material master release — prevents unclassified items from entering procurement processes. With clearly defined governance rules and training, the maintenance effort can be kept permanently at a reasonable level.

Current developments and outlook

ECLASS is evolving continuously, with annual release cycles and growing international adoption. Topics such as data spaces, sustainability indicators and the machine-readable description of products are increasingly coming into focus.

ECLASS and digital ecosystems

In the context of data spaces and digital product passports, structured product master data is gaining importance. ECLASS provides a semantic foundation here that can be exchanged machine-to-machine between partners along the supply chain. Aspects such as traceability and the Supply Chain Carbon Footprint (SCF) also benefit from standardised product identities, as material and product information can only be reliably linked with consistent classification.

Outlook for procurement organisations

For technical buyers, ECLASS becomes a strategic asset: those with classified master data can analyse categories better, compare suppliers more effectively and populate e-procurement catalogues automatically. A long-term maintained item master with an ECLASS reference also significantly reduces the effort involved in supplier changes and system migrations.

Typical metrics

Classification rate: > 95 %

Share of actively procured materials with an ECLASS class; typical benchmark after a complete rollout

Attribute fill rate: > 80 %

Share of maintained technical characteristics per class; depends on the commodity group

Duplicate rate in the material master: < 5 %

Share of potential duplicate records; typically falls significantly after classification

Search hit rate in the catalogue: > 90 %

Share of successful search queries after introducing classified catalogues

Practical example

A mid-sized mechanical engineering company with around 40,000 active material numbers suffered from high search costs and dubious duplicate records in its ERP system. After a pilot in the standard and purchased parts commodity group, the entire assortment was gradually migrated to ECLASS classes and integrated into catalogue processes.

- Pilot in two critical commodity groups followed by a rollout
- Automated mapping of legacy data with manual review of A-classes
- Introduction of mandatory classification when creating new materials
- Regular sample checks of the attribute fill rate by the master data team

Conclusion

For technical buyers and suppliers, ECLASS is more than a classification number: the standard creates a common language for products and services along the entire value chain. Those who consistently harmonise item master data on an ECLASS basis benefit from clean spend data, precise tenders and automatable processes. The implementation effort should not be underestimated and should be tackled with clear governance, training and continuous maintenance. Companies that take this step early gain a structural advantage in digitalisation and supplier collaboration. In each individual case, it is always worth checking whether ECLASS or an alternative system such as UNSPSC fits the company's own industry and system landscape.

Frequently asked questions

What is ECLASS?

ECLASS is an international, vendor-neutral standard for the classification and description of products and services. It consists of four hierarchy levels, technical characteristics and values. The standard is managed by ECLASS e. V., based in Germany.

What levels does the ECLASS classification have?

ECLASS is divided into four levels: segment, main group, group and commodity class. Each class is assigned an eight-digit PR number and belongs to an expert subject area. The lowest level describes the product so specifically that suitable technical characteristics can be derived directly from it.

What is the difference between ECLASS and UNSPSC?

UNSPSC is a widely used international classification standard, employed mainly in the public sector and in the Anglo-American region. ECLASS generally offers more granular technical characteristics and is more firmly established in European mechanical and plant engineering. The choice depends on the industry, customer requirements and the system landscape.

How many classes and attributes does ECLASS comprise?

The standard is updated annually and typically comprises tens of thousands of classes and hundreds of thousands of characteristics across more than 40 subject areas. The exact figures change with every release. Current figures are available via the association's official channels.

How do you implement ECLASS in a company?

A phased approach has proven effective: analysis of the assortment and data quality, piloting in selected commodity groups, followed by a rollout with automated mapping and manual review of critical classes. Clear governance, mandatory field rules when creating materials and regular sample checks are essential.

Is ECLASS also worthwhile for small businesses?

Yes, particularly if suppliers or customers demand structured data or if e-procurement is a priority. The effort can be limited through piloting and a gradual rollout. Full classification of the entire assortment is usually not necessary to get started.