

Unit of measure and currency master data: the foundation for error-free ordering and pricing processes

Unit of measure and currency master data encompass the centrally maintained definitions of quantity units, conversion factors, currencies and exchange rates in ERP and procurement systems. They form the technical foundation on which purchase orders, prices, delivery schedules and statistics are mapped in a computationally correct manner. Errors in this master data directly affect order values, invoice verification and key metrics. For buyers and supply chain managers, they are therefore an often underestimated but critical element of data quality.

Key facts

- Unit master data define quantity units, their ISO codes, decimal places and conversion factors between base units and packaging units.
- Currency master data contain currency codes, decimal places, rounding rules and the maintenance of exchange rates with validity periods.
- Inconsistent unit conversions are one of the most common causes of quantity discrepancies at goods receipt and invoice verification.
- Exchange rate differences between order and invoice must be posted cleanly via exchange rate difference accounts.
- Master data governance with defined roles, review steps and change logs demonstrably reduces downstream costs.
- Cleanly maintained unit and currency data are a prerequisite for reliable procurement metrics and supplier comparisons.

Definition: unit of measure and currency master data

Unit of measure and currency master data are central reference data that determine the quantity units and currencies in which business processes are mapped. They comprise both technical definitions (abbreviations, designations, decimal places) and computational rules (conversion factors, rounding, rate determination). Without consistent master data, purchase orders, supplier settlements and analyses cannot be processed reliably.

Components of unit master data

Unit master data include quantity units such as piece, kilogram, metre, litre or pallet, supplemented by international codes, internal designations and commercial descriptions. Added to these are conversion relationships, for example between base unit and sales unit or packaging unit. Typically, nominal dimensions and deviation tolerances for handling equipment such as containers or pallet cages are also maintained, directly linking handling equipment management to the unit master data.

- Base unit, order unit and consumption unit per material
- Conversion factors (e.g. 1 box = 24 pieces)
- Decimal places and rounding rules per unit
- Assignment to trade and shipping units

Components of currency master data

Currency master data contain the three-digit ISO currency code, the number of decimal places and the validity of the currency. Building on this, exchange rates are maintained with reference date, rate type (e.g. planning, average or daily rate) and conversion rule. For international framework supply agreements, it is also relevant whether prices are fixed in foreign currency or linked to a price index – this creates a link to price index linkage, whose settlement necessarily requires a uniform currency logic.

Distinction from other master data

Unit of measure and currency master data are global and material-independent, whereas material master data maintenance describes the specific attributes of individual articles. Only the linking of both levels – for example, a material's stored order unit – makes the data operationally usable. Changes to global unit or currency data therefore potentially affect many thousands of material master records and require particular care.

Structure and maintenance: methods and approach

The maintenance of unit of measure and currency master data follows a clearly regulated process in practice: creation according to standard, review by a second instance, approval and periodic checks. The aim is to avoid redundancies and incompatible conversions from the outset.

Creation and parameterisation

New units should only be created on the basis of international standards (SI units, ISO codes) in order to avoid duplicate structures. Later on, MRP parameter maintenance draws on these definitions, for example for lot sizes or call-off quantities in the order unit. For every conversion, numerator, denominator and the direction of conversion must be clearly documented; a common source of error in practice is confusing multiplication and division in conversion factors.

- Units only via a defined creation process with four-eyes review
- Document conversions as a numerator/denominator pair
- Define rate types and rate sources (e.g. daily reference rates)

Change process and governance

Changes to existing master data – for example, a switch from piece to tonne – must be versioned and logged with justification, comparable to the documentation discipline of a negotiation protocol.

Responsibilities should be governed by a master data governance framework, ideally embedded in an ISO 9001 quality management system. A change scenario for stock conversions is important: if order units are changed retrospectively, open purchase orders and residual quantities in framework orders must be converted.

Currency and rate maintenance in day-to-day operations

Exchange rates are typically imported daily or weekly from defined reference sources. For planning

values in controlling, a fixed monthly or annual planning rate is common; for foreign currency invoices, the daily rate applies. For long-term purchase commitments or framework agreements, the contractual currency rate should be documented separately so that payments can be settled in accordance with the contract independently of current daily rates.

Key KPIs and impact on procurement metrics

The quality of unit of measure and currency master data can be measured and directly affects key procurement metrics. Inaccurate conversions distort unit prices, material consumption values and thus the entire procurement reporting.

Data quality metrics

Typical metrics are the proportion of materials with complete unit maintenance, the number of incorrect conversions per month and the rate of invoices rejected due to quantity or currency variances. In practice, rejection rates below two to three per cent are considered manageable; significantly higher values usually indicate master data problems.

- Degree of completeness of unit maintenance in the material master (target: close to 100 %)
- Invoice rejection rate due to quantity/currency variances
- Number of master data changes requiring rework

Impact on classic procurement KPIs

Price variances, material value analyses and supplier comparisons from supplier segmentation are only meaningful if quantities and currencies are presented in a normalised form. Inventory coverage is also systematically over- or underestimated when conversion factors are incorrect, leading to poor decisions in materials planning and capital tie-up. Even forecasting processes suffer: forecast error increases with inconsistent units because planned and actual quantities cannot be cleanly compared.

Exchange rate differences as a controlling topic

Currency rate differences between order date and invoice date appear as exchange rate differences in financial accounting and can reach considerable amounts during volatile currency phases. Procurement and controlling should therefore report jointly what proportion of the price variance is actually due to exchange rates and what proportion is due to negotiation or quantity effects. Only then can supplier performance and currency risk be cleanly separated.

Risks and controls in day-to-day operations

Incorrect unit of measure and currency master data cause operational disruption up to supply bottlenecks and financial losses. This section describes typical risks and practical control mechanisms.

Typical error patterns

Common errors include duplicate units for the same item (KG and KGM), missing conversions between order and base unit, outdated rates on long-running purchase orders and swapped conversion factors. The consequences range from excessive order quantities and incorrect quantities at goods receipt to additional payment claims in invoice verification. In international procurement under EXW Incoterms, weight and quantity details must also be correct for transport billing, otherwise demurrage and detention risks arise.

- Duplicate or inconsistent unit abbreviations
- Missing conversion from order unit to base unit
- Outdated or incorrect exchange rates
- Incorrect decimal places for currencies without decimal places

Controls and checking mechanisms

Automated plausibility checks at creation (mandatory fields, uniqueness of the abbreviation), periodic data quality reports and sample checks by the functional departments have proven effective. Invoice verification should automatically flag quantity and rate variances and apply tolerance rules. Analogous to delivery schedule tolerance bands in call-off management, tolerance limits can also be defined for prices and quantities beyond which manual review is required.

Alignment with suppliers

Units and currencies should be clearly agreed contractually – ideally with reference to international standards. When onboarding new suppliers via a supplier network, the alignment of units, packaging units and invoice currency should be part of the standard scope. This avoids later friction in electronic invoice processing and in PO flip, where invoice line items are matched against order line items.

Current developments and digitalisation

Digitalisation, international procurement and sustainability reporting are raising the requirements placed on unit of measure and currency master data. New use cases are making data quality increasingly business-critical.

Automated rate and unit supply

Modern systems supply exchange rates automatically via interfaces and support multilingual unit designations. Data quality tools proactively detect duplicates and implausible conversions. As part of proof of concept procurement projects for new procurement platforms, unit and currency logic should be checked early as an integration criterion, since subsequent corrections are costly.

Requirements arising from sustainability reporting

CO2e accounting for procurement requires conversions between weight, volume and piece units, for example to extrapolate emissions per material. Recyclability assessment also requires reliable quantity data in normalised units. Without clean unit master data, emission values cannot be consistently allocated to procurement volumes.

International procurement and multi-currency

Increasing globalisation means: more foreign currencies, more exchange rate volatility and greater requirements for transparent conversion in reports. International tenders – whether open procedure or non-open procedure – require unambiguous currency specifications on the tender form in order to make bidders' offers comparable. Even with price sliding-scale clauses with price index linkage, base date, index currency and conversion cut-off date must be capable of being mapped in master data.

Typical metrics

Unit maintenance completeness: > 99 %

Proportion of materials with a defined order and base unit

Invoice rejection rate (quantity/currency): < 3 %

Typical guideline value; higher values indicate master data errors

Conversion errors per month: < 10 cases

Guideline value for mid-sized master data organisations

Exchange rate currency: daily import

For daily rates; planning and average rates fixed monthly

Practical example

A mid-sized mechanical engineering company with around 40,000 materials discovered during a system migration that parallel unit abbreviations had accumulated over several years – including three variants for tonne and two for square metres. At the same time, exchange rates for two Eastern European currencies had only been maintained irregularly, which led to additional payment claims on framework supply contracts in foreign currencies. Following a clean-up initiative, the company established a central master data governance framework with defined roles and automated quality reports.

- Clean-up of duplicates and standardisation of all unit abbreviations to ISO standards
- Daily automated rate import with documented rate types for planned and actual values
- Tolerance-based invoice verification with automatic flagging of quantity and rate variances
- Contractual agreement of units and invoice currency during supplier onboarding

Conclusion

Unit of measure and currency master data are an unglamorous but business-critical foundation of procurement. They determine whether order values, invoices and metrics are computationally sound. Investment in data quality pays off twice: through less friction in day-to-day operations and through reliable decision-making bases in strategic procurement management. Procurement organisations should therefore treat this master data not as an IT side issue but as an integral part of their master data governance. Those who work cleanly here create the conditions for automation, international procurement and credible sustainability reporting.

Frequently asked questions

What are unit of measure and currency master data?

Unit of measure and currency master data are central reference data in ERP and procurement systems that define quantity units, conversion factors, currencies and exchange rates. They form the computational basis for purchase orders, prices and invoice verification. Errors here affect all downstream processes.

What role do conversion factors play in procurement?

Conversion factors link a material's order unit and base unit, for example 1 box = 24 pieces. They are a prerequisite for correct order quantities, goods receipts and price comparisons. Incorrect factors lead to quantity discrepancies, invoice variances and distorted procurement metrics.

How often should exchange rates be updated in the ERP system?

In practice, daily rates for foreign currency invoices are typically imported daily, while planning and average rates are fixed monthly or annually. The choice of rate type should be agreed between

procurement, controlling and financial accounting. For framework agreements, the contractually agreed rate must be documented separately.

What are the consequences of errors in unit of measure and currency master data?

Typical consequences are incorrect quantities at ordering and goods receipt, rejected invoices, incorrect order values and distorted metrics such as inventory coverage or price variances. For international deliveries, demurrage and detention risks may additionally arise. Rectification is usually more costly than preventive checking.

Who is responsible for maintaining unit of measure and currency master data?

Responsibility usually lies with a central master data organisation, often within master data management or IT, supported functionally by procurement, controlling and financial accounting. A creation and change process with four-eyes review and change logging has proven effective. Integration into an ISO 9001 quality management system is recommended.

What belongs in the currency master data of an ERP system?

The currency master data include the ISO currency code, decimal places, validity periods and the exchange rate table with rate types, reference date and conversion rule. In addition, rounding rules and exchange rate difference accounts are defined. These specifications govern price conversion, invoice verification and posting.