Recycled content rate: systematically controlling recyclate content in products and packaging

The recycled content rate describes the proportional content of recyclate, i.e. recycled material, in a product, a component or packaging. For technical buyers, it is a central parameter in sustainable procurement management, increasingly driven by regulatory requirements, customer demands and the company's own climate targets. Anyone wanting to make recycled content rates binding needs clear definitions, robust evidence and a functioning collaboration with supplier management. This article explains the definition, calculation, KPIs, risks and practical implementation of the recycled content rate in industrial procurement.

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Key facts at a glance

01 The recycled content rate is the proportion by mass of recycled material relative to the total mass of a product, component or packaging.

02 In practice, post-consumer recyclate is usually preferred, as it is rated higher from a regulatory and market perspective than post-industrial material.

03 Typical target values frequently range between 10 and 50 percent depending on material and application, often considerably higher for packaging.

04 Robust evidence requires certificates, material data sheets and, in some cases, mass balance procedures according to recognised standards.

05 The rate is increasingly becoming a criterion in tender management and supplier self-disclosure.

06 Quality risks such as fluctuations in material properties must be safeguarded through FMEA and incoming inspections.

Definition: recycled content rate

The recycled content rate is the proportion of recyclate in a material, product or packaging relative to the total mass, usually expressed in percent. It is the central key figure for making the use of secondary raw materials measurable and comparable.

Distinction: post-consumer and post-industrial

Post-consumer recyclate comes from the recycling of used products or packaging and is regarded as the higher-value evidence. Post-industrial recyclate, by contrast, arises from production waste, such as injection moulding runners or trim, and often never reached the end customer. Many regulatory requirements and customer specifications expressly require post-consumer content or separate the two categories in the calculation. Buyers should contractually define this distinction, otherwise every kind of material source can be declared as "recyclate".

Legal and normative classification

At EU level, requirements for recycled content are increasing, for example for plastic packaging, vehicle components and electronic devices; specific thresholds and deadlines differ depending on the legal act. In addition, there are certification and mass balance schemes with which recyclate content can be verified across the value chain. The details are partly in flux and should be checked legally and normatively on a case-by-case basis. For procurement, this means: requirement profiles in the data model and specifications must reflect the currently applicable requirements.

Relevance for technical procurement

The recycled content rate touches several procurement fields at once: material specification, supplier selection, price presentation and evidence documentation. Recyclate can offer price advantages, but is subject to greater price fluctuations and tighter availability. For this reason, the rate is increasingly becoming a standardised query field in supplier self-disclosure and tender management.

Methods and approach for collecting the recycled content rate

Without robust data, a recycled content rate is merely an assertion. Building a reliable data collection process starts with the material specification and ends with regular verifications.

Set up master data and specification cleanly

Recycled content rates should be maintained as an attribute in the material master or data catalogue, ideally separated into post-consumer and post-industrial shares. This way, the rate is automatically carried through bills of materials, demand planning and reporting. A uniform calculation rule is important: is it reported at product, component or packaging level, and how is multi-layer packaging assessed? Without these conventions, key figures are not comparable across sites and categories.

Demand evidence from suppliers

A combination of supplier self-disclosure, supplier certificate and material data sheet has proven itself in practice. For critical applications or public tenders, audit reports and declarations according to recognised mass balance standards are added. The evidence should be stored in supplier management and regularly updated, e.g. annually or upon material changes. For new parts, it makes sense to include the recycled content evidence already in the tender management request for quotation.

Mass balance versus physical evidence

In mixed production lines, recyclate cannot always be physically assigned to an individual batch. The mass balance approach allocates the recyclate used to products arithmetically, while the so-called segregated approach relies on separate storage and processing. Both approaches have advantages and disadvantages in terms of evidential rigour, cost and availability. Buyers should define which approaches they accept and record this in the specification and contract.

Important KPIs around the recycled content rate

The recycled content rate only unfolds its effect in combination with supplementary key figures that reflect progress, quality and economic efficiency.

Core key figures for reporting

In addition to the absolute rate by material group or category, the weighted rate across procurement volume, the share of qualified suppliers with recycled content evidence and target achievement per business unit have proven effective. For packaging, the absolute recyclate use in tonnes per year is frequently also reported. These KPIs are equally suitable for sustainability reporting and internal target agreements.

Linking with quality and delivery key figures

Recyclate must not come at the expense of quality. It is therefore sensible to monitor scrap and complaint rates as a function of recyclate content and to incorporate them into the FMEA for material changes. Warehouse KPIs and the availability of recyclate materials also deserve attention, as secondary raw materials sometimes have narrower supply markets. Fluctuations in recyclate content per batch should be made visible through delivery advice note processing and incoming goods inspection.

Set target values realistically

Typical target rates frequently range between 10 and 50 percent depending on material and application; for high-performance technical components, lower shares are sometimes realistic initially due to safety requirements. For packaging, considerably higher rates are common and sometimes prescribed by regulation. Targets should be raised step by step via a measures pipeline and secured with pilot runs before becoming binding in specifications.

Risks and controls when using recyclate

Higher recycled content rates bring technical, commercial and compliance risk potential with them. Systematic controls keep these risks manageable.

Mastering technical risks

Recyclates sometimes show wider variations in molecular structure, contamination and colour shades than virgin material. This can affect mechanical properties, surface appearance and processing windows. Proven controls are enhanced incoming inspections, defined delivery specifications per batch and an FMEA that systematically evaluates material inhomogeneities. Higher hurdles often apply to safety-relevant parts; here, a gradual entry via non-critical applications and a controlled pilot run helps.

Compliance and verification risks

The biggest reputational risk is so-called "recycling fraud", i.e. demonstrably falsely declared recyclate content. This can be countered with contractual warranties, audit rights, certificates from recognised schemes and sample analyses at goods receipt. Price formulas should also take into account that recyclate materials have their own market prices, so that price adjustment clauses do not hang on incorrect reference values. For cross-border supply chains, it should also be checked whether waste and export regulations are affected – an individual review is recommended here.

Commercial and logistical implications

In practice, recyclate markets are narrower and more volatile than virgin material markets. This affects availability, delivery date commitments and, in extreme cases, air freight cost components for express support. Adequate safety stocks, alternative sources of supply and demand planning that considers recyclate availability early on mitigate these risks. Early payment discount calculation can also be adjusted for more expensive recyclate materials in order to realistically assess liquidity advantages.

Current developments: recycled content rates between regulation and market

Regulators, customers and capital providers are increasing the pressure for verifiable recyclate content. At the same time, new business models are emerging around secondary raw materials.

Regulatory trend towards binding rates

Several EU legal acts provide for or announce binding minimum recycled content levels, particularly for plastic packaging, vehicles and electronics. In parallel, more and more corporate customers are demanding rate evidence in their supplier evaluations. Buyers should therefore maintain requirement profiles per product family and plan changes early into the supplier settlement process. Binding rates shift recyclate from a "nice-to-have" to a spec-in criterion.

Digital evidence documentation and data quality

Certificates and analysis reports are increasingly exchanged digitally and linked with article data. A well-maintained data catalogue and a consistent data model are prerequisites for being able to report and verify rates automatically. Duplicate material or supplier master records make such evaluations considerably more difficult; duplicate detection makes a direct contribution to data quality here. In the medium term, digital material passports are likely to further standardise evidence along the supply chain.

New procurement models for secondary material

Increasingly, recyclate qualities are secured through long-term off-take contracts or material partnerships, similar to virgin raw materials with index price formulas. Tender management is also evolving: sustainability criteria including the recycled content rate are being set as weighted evaluation factors more frequently. Suppliers that make recycling capabilities and evidence available digitally early on gain a noticeable competitive advantage.

Anchoring the recycled content rate in the procurement process

A rate is only useful if it is binding in processes – from enquiry through qualification to ongoing monitoring.

From enquiry to award

The rate should be a mandatory field in enquiries and framework agreements, including definition, type of evidence and permissible tolerances. In tender management, the rate can be mapped directly as an evaluation criterion. Contract analysis should include defining which documents must be submitted when and what the consequences of falling below the rate are, such as remediation, price reduction or delivery stop.

Qualification and ongoing monitoring

In supplier management, evidence capability is used as a qualification criterion; in addition, a credit check can reveal whether a supplier has the stability required for certifications. In ongoing business, incoming goods inspection, delivery advice note processing and periodic re-audits ensure compliance. Target values are tracked with deadlines via the measures pipeline, including escalation paths for delays or evidence gaps.

Typical metrics

Metric	Typical value
Recycled content rate (weighted, procurement volume)	10–50 % *typical target range depending on material and application, often higher for packaging*

Share of suppliers with verifiable recycled content evidence	> 90 % *share of qualified suppliers with a certificate or valid self-disclosure*
Scrap/complaint rate for recyclate parts	<= virgin material level + 1–2 percentage points *indicative; deviations require an FMEA review*
Evidence currency (certificates/audits)	<= 12 months *frequently practised re-review cycle in supplier management*

Practical example

A medium-sized mechanical engineering company wanted to significantly increase the recyclate content of its plastic components and transport packaging within two years without jeopardising process reliability. Procurement began with an inventory of all affected material groups and set quota attributes in the material master.

- Recycled content rate established as a mandatory field in supplier self-disclosure and as a weighted criterion in tender management
- Pilot runs carried out for three non-critical components with enhanced FMEA and batch traceability
- Certified mass balance evidence stored in supplier management and annual re-audits agreed
- Warehouse KPIs and safety stocks recalibrated for tightly available recyclate types

Conclusion

The recycled content rate is long since no longer a purely reporting-oriented key figure, but a steering-relevant procurement goal with regulatory tailwind. What matters is the combination of clean definitions, robust evidence and technical safeguarding through FMEA and pilot runs. Anyone who integrates rates into enquiries, contracts and supplier management makes recyclate comparable and obligations enforceable. At the same time, the availability and variability of recyclates remain real risks that require forward-looking demand planning. Implemented early and in a structured way, the recycled content rate turns from a compliance topic into a competitive advantage.

Frequently asked questions

? What is the recycled content rate?

The recycled content rate is the proportion by mass of recycled material in a product, component or packaging, expressed in percent. It often distinguishes between post-consumer and post-industrial recyclate. As a key figure, it makes the use of secondary raw materials measurable and comparable.

? How is the recycled content rate calculated?

The usual formula is: mass of the recycled content divided by the total mass of the product or

packaging, multiplied by 100. Companies should consistently define whether the calculation is made at product, component or packaging level. For mixed production lines, the mass balance approach is used.

? What recycled content rates are required by law?

There are various EU legal acts with binding or announced minimum levels, for example for plastic packaging, vehicles and electronics; the specific values and deadlines differ. In addition, customer-specific specifications apply. The currently applicable requirements should be checked on a case-by-case basis.

? How can a buyer verify recycled content?

Typical means are supplier self-disclosure, supplier certificates from recognised schemes, material data sheets and audit reports. For mixed production, mass balance evidence is added as well. Sample analyses at goods receipt further increase robustness.

? What is the difference between Recyclat and Rezyklat?

Both terms describe the same thing: material reintroduced into production from recycling processes. In German technical usage, the preferred spelling is "Rezyklat", while "Recyclat" is used synonymously. In standards and legal acts, the spelling Rezyklat predominates.

? What risks does the use of recyclate involve?

Possible risks are variations in material properties, contamination, optical deviations and narrower procurement markets. In addition, there are verification and declaration risks. These are counteracted with enhanced incoming inspections, FMEA, contractual warranties and certificates.

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