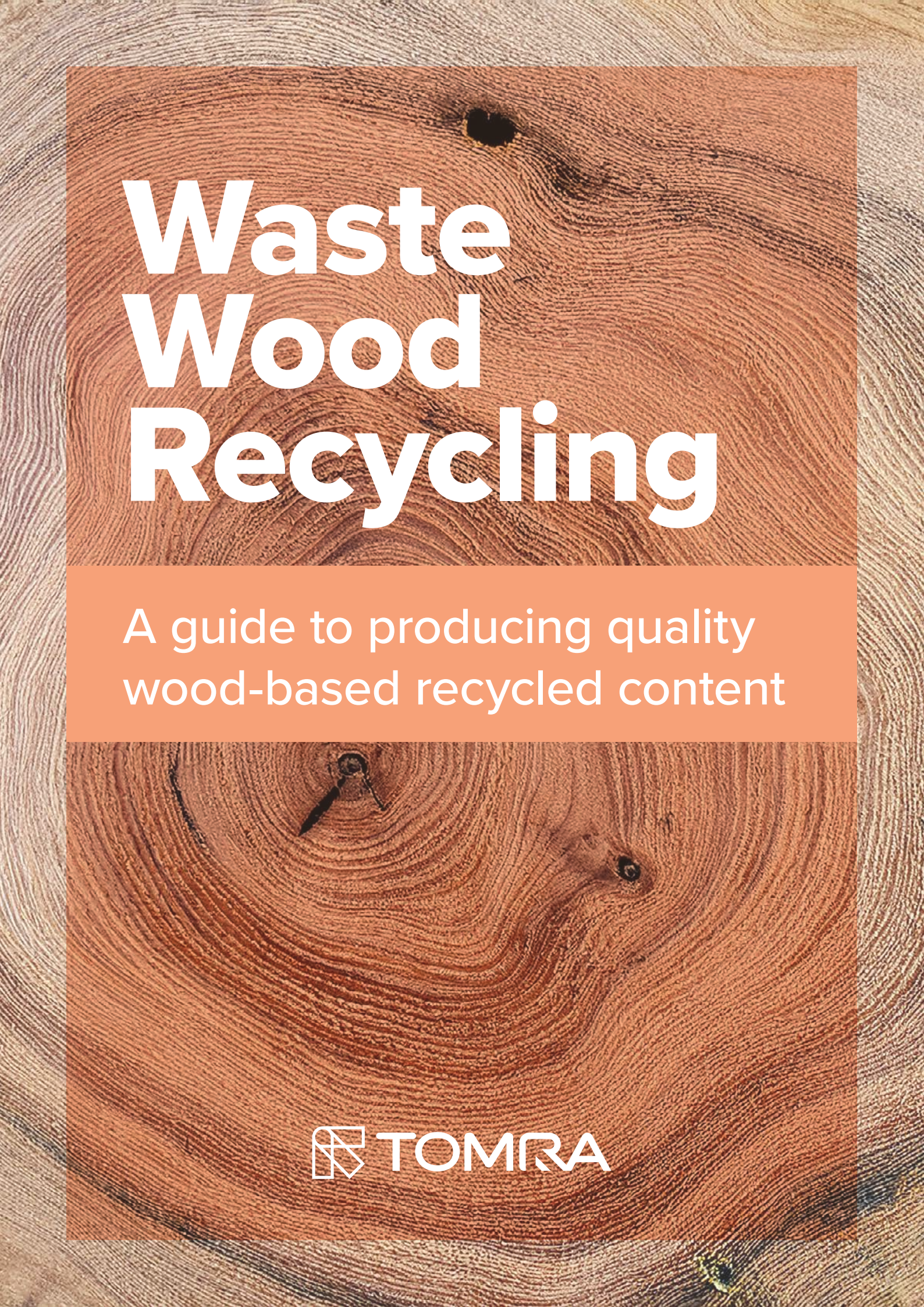


Waste Wood Recycling

A guide to producing quality wood-based recycled content

TOMRA

Extending the lifecycle of wood

Globally, the wood recycling market is growing rapidly. Panelboard manufacturers are increasing their reliance on recycled wood primarily to access materials, but modern technology also helps them develop higher-quality products. Recycled wood content enables the panel industry to achieve higher yields and outputs while profiting from considerable cost reductions.

Millions of tons of wood waste from forestry, construction, and manufacturing that could be recycled end up in landfill or being used as fuel. Maximizing resources depends on the collection, sorting and recycling of wood waste. Technology-driven solutions offer recyclers, manufacturers, and wood biomass production chains new opportunities to create added value and potentially new revenue streams.

Extending the material lifecycle and boosting sustainability requires non-processed wood (Wood A) and different types of processed wood (Wood B) to be identified and separated into high-purity fractions. The future of wood recycling depends on sorting systems that effectively separate woodchips by type – from plywood to MDF and more.


Waste wood processing in a circular economy
Collection
Construction, demolition, industrial and bulky waste
Cleaning
Contaminant removal
Sort wood by type
Recovery of recyclable woodchips
Panel production
Consumer goods

A market with untapped potential

An estimated 27 million metric tons of waste wood is produced in high-income countries around the world each year.[1] Today, only a small portion of this waste wood is recycled into new products. In fact, global estimates show that only around 15% of wood waste is currently recycled, and less than 1% is used to manufacture new wood products. Much of the remaining material is either downcycled into mulch or burned for energy, limiting its value and carbon storage potential.[2]

With the particleboard industry expecting massive growth and limited supplies of fresh wood resulting in price volatility, manufacturers are turning to recycled wood content to meet demand. Wood recyclers are also benefitting from these trends, expecting similar growth in the same timeframe. Once infrastructure for wood recycling is in place, demand for recycled wood content will continue to grow.

Recycled wood content offers more durability and lower moisture content, making it an economically viable option for manufacturers. Extending the lifecycle of wood promotes sustainability by conserving trees and reducing the energy used to mill lumber. What's more, it diverts waste from landfills and reduces disposal costs.

1 World Bank (2018). What a Waste 2.0. Calculation based on 4% waste wood composition in high-income countries that generate 683 million tonnes of the world's waste per annum.
2 Phys.org (2023). "Recycling wood could make a big contribution to net zero."

Did you know?

In Japan, more than 90% of wood waste from the furniture industry is recycled into wood-based panels and fuel – a model example of circular use in action.

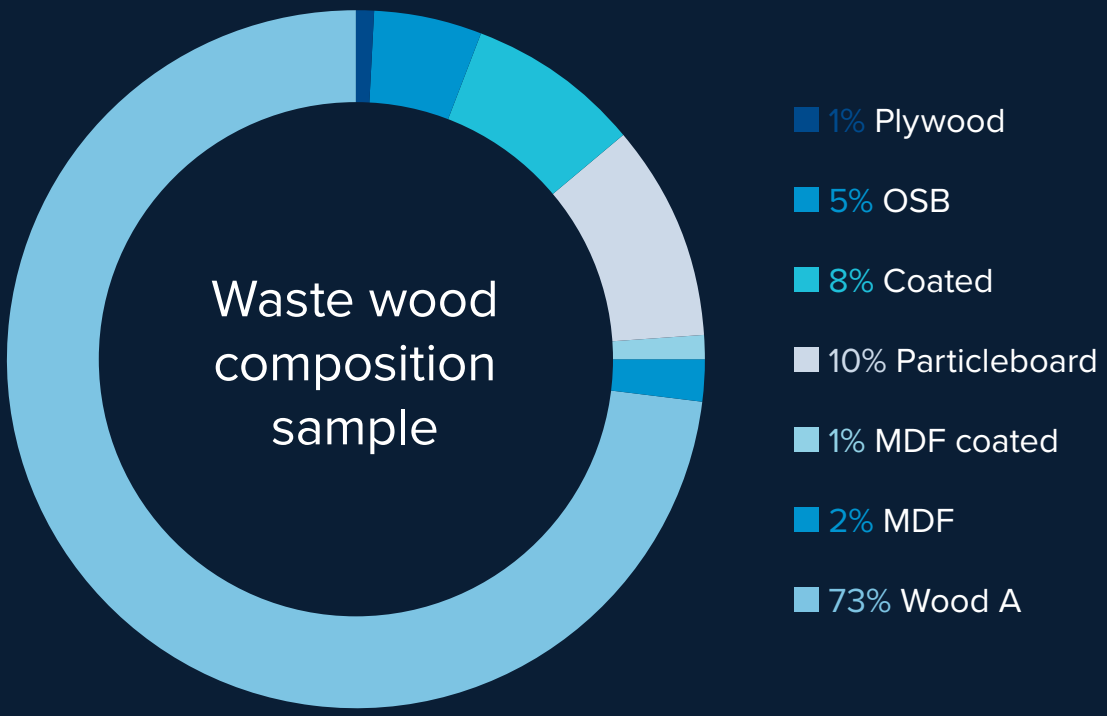
Wood Recycling Market

- **29.42 billion by 2032**
  USD Value
- **5.3% CAGR (2025-2032)**[1]

Particleboard Market

- **31.7 billion by 2033**
  USD Value
- **3.2% CAGR (2025-2033)**[2]

1) Coherent Market Insights. Wood Recycling Market Forecast 2025–2032.
2) IMARC Group. Particle Board Market – Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2024-2033.



From waste to high value wood chips

High-precision analysis of the composition of waste wood is paramount for recycling and cascading use. Whether sorting wood from the construction and demolition sector, recycling depots or wood biomass production, the material stream is always highly variable and complex. Effectively sorting waste wood at an industrial scale requires modern systems to achieve higher throughput and purity levels.

Scaling the recovery of recyclable wood chips to meet future market demand requires advanced sensor technologies to remove impurities like metals, glass, inert materials and plastics. Data-driven software and deep learning neural networks take sorting capabilities to the next level by classifying and sorting wood by category and type.

Recovery → Cleaning → Classification

AUTOSORT™

Recovers waste wood from C&D waste, C&I waste and bulky waste

FINDER™

Removes heavy metals

X-TRACT™

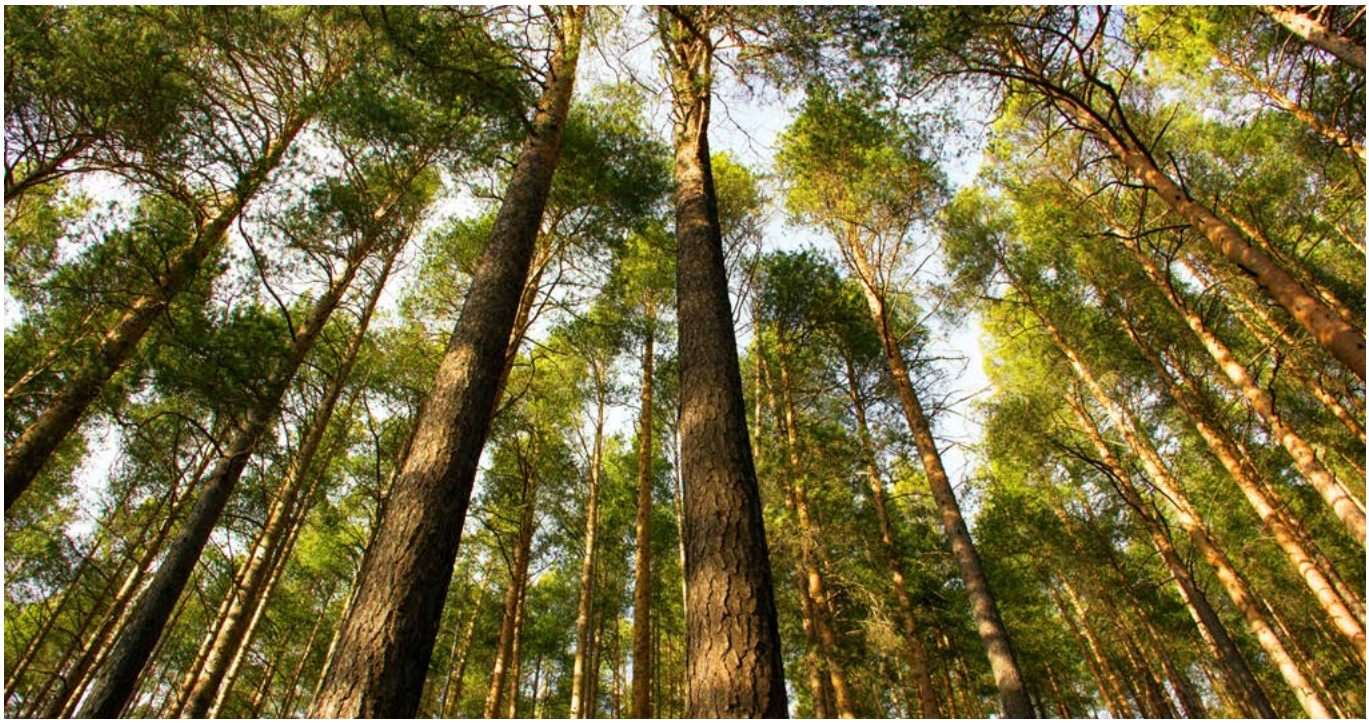
Removes heavy metals and aluminum inserts

AUTOSORT™

Removes glass and plastics

GAINnext™

Sorts wood by type: MDF, wood A/B, plywood and more



Transforming waste wood into high-value materials

At TOMRA, we specialize in transforming waste wood into high-quality resources through cutting-edge sorting technology. With decades of experience and industry-first innovations in deep learning and sensor-based systems, we help recyclers and manufacturers unlock the full value of waste wood.

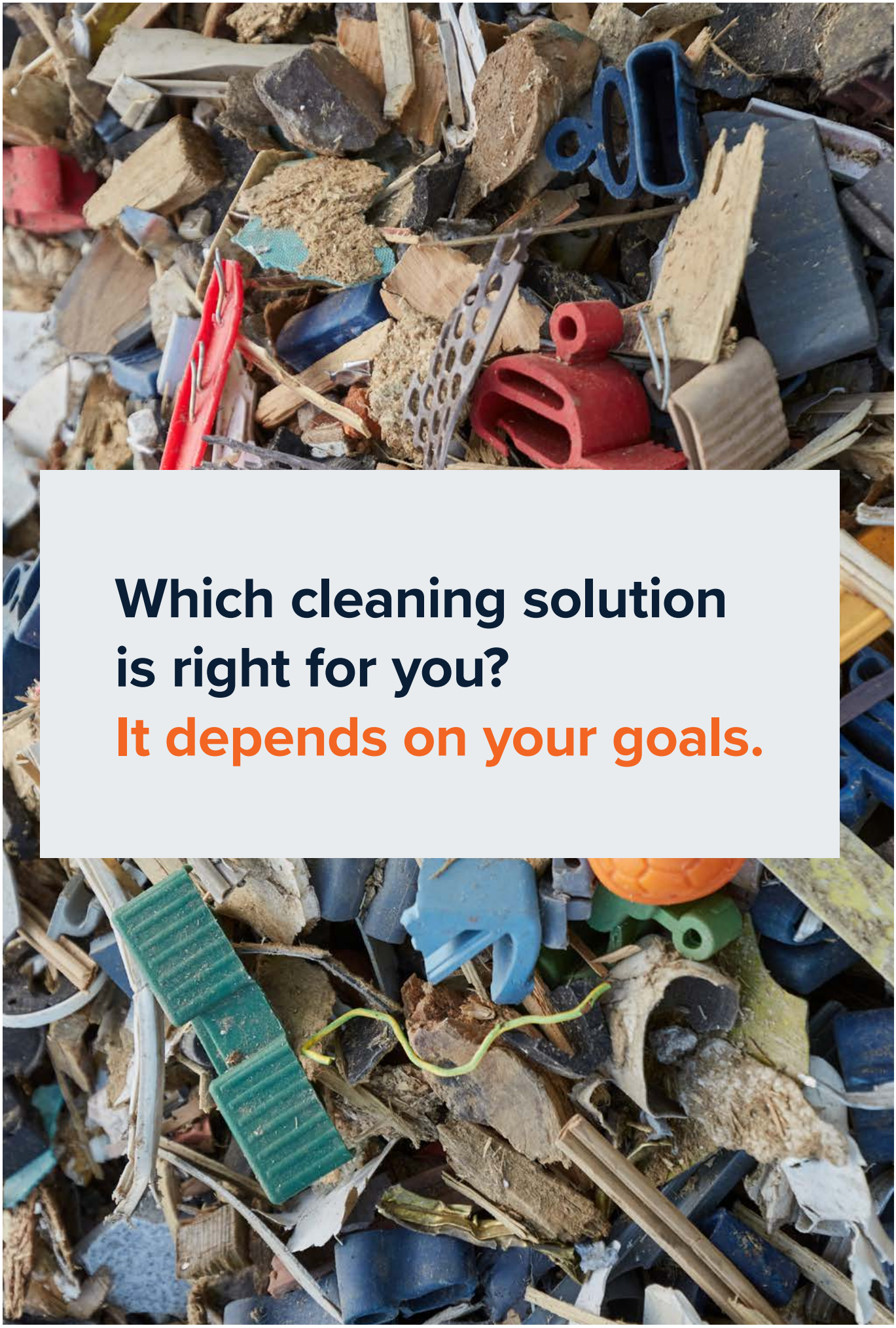
The process begins with **AUTOSORT**™, which recovers waste wood from mixed material streams such as construction, industrial, and bulky waste. It creates a consistent waste wood product that can be further processed and cleaned to produce high-quality wood fractions.

In the cleaning phase, TOMRA offers scalable options depending on contamination type and processing goals. For operations focused solely on metal removal, **FINDER**™ provides an efficient solution for extracting metallic impurities. For the highest purity levels, a combination of **X-TRACT**™ and **AUTOSORT**™ is used to remove metals, inerts, and other contaminants – delivering exceptional cleaning performance unmatched in the market.

Finally, **GAINnext**™, a deep learning-powered add-on for **AUTOSORT**™, classifies and sorts the cleaned wood into high-purity categories such as Wood A, Wood B, MDF, and coated materials – ensuring it's ready for use in recycled wood applications.

Key benefits

- **Highest purity levels** for premium wood products
- **Flexible setup** to match your processing needs
- **Proven performance** – up to 30 t/h throughput



Which cleaning solution is right for you?

It depends on your goals.

In the cleaning phase of waste wood processing, TOMRA offers high-performance systems tailored to material size and contamination type:

X-TRACT™

Ideal for wood chips, X-TRACT™ uses x-ray transmission (XRT) to detect and remove dense contaminants such as metals, glass, and inert materials. For over a decade, particleboard manufacturers and recyclers have relied on X-TRACT™ to clean complex wood waste streams. Based on atomic density, this technology identifies and separates impurities – even down to 5 mm in size – while maintaining high throughput of up to 30 metric tons per hour.

FINDER™

While typically used for pre-crushed or coarse fractions, FINDER™ can also be applied to smaller wood particles when the main objective is removing metals such as nails. Using powerful electromagnetic sensors, it delivers fast, precise metal removal regardless of material size – making it a flexible solution for metal-specific cleaning needs.

AUTOSORT™

Multifunctional sorting for wood applications

Engineered for flexibility, AUTOSORT™ delivers exceptional performance across a wide range of wood recycling applications. Whether dealing with coarse fractions from construction and demolition waste or finer post-shredded wood chips, AUTOSORT™ automatically detects and removes key contaminants like plastics, black plastics, textiles, paper, and some metals. Its intelligent sorting capabilities ensure a reliable and consistent output.

Applications include:

Pre-crushed / C&D waste (80–400 mm)

Efficient removal of mixed contaminants in larger material streams

Wood chips (10–80 mm)

Consistent cleaning of finer particles for downstream processing

AI-powered wood classification
Sort for higher value.

GAINnext™ sets a new standard in wood recycling, enabling accurate separation of material types for unmatched purity and product value.

GAINnext™

Deep learning classification of wood-based materials

As demand grows for high-quality recycled wood, GAINnext™ takes sorting to a new level with AI-powered classification. Developed by TOMRA's wood recycling experts and software engineers, this deep learning add-on integrates seamlessly with AUTOSORT™ to accurately distinguish wood types based on visual characteristics—enabling material separation that was previously unattainable with conventional sensors.

GAINnext™ enables:

- Reliable separation of Wood A from Wood B
- Targeted ejection of coated wood
- Effective removal of MDF

By training on thousands of labeled images, GAINnext™ delivers unmatched accuracy in wood type classification – supporting recyclers and manufacturers in creating cleaner input streams, reducing contamination and improving end-product quality. This results in more consistent feedstock for particleboard production and increased value across the wood recycling chain.

Ready to unlock the full value of your waste wood?

TOMRA

Let our wood sorting technologies help you recover more material, enhance purity and transform waste wood into high-value materials.

Book a test today!