

SUSTAINABILITY FACT SHEET
 MASS BALANCE APPROACH | MARCH 2023



THE MASS BALANCE APPROACH AT WACKER

Climate Change Requires New Methods

Through its use of renewable raw materials, WACKER has taken an initial step toward a climate-neutral circular economy. Our goals:

- Reduce our dependence on fossil resources
- Improve the CO₂ footprint of our products
- Address the needs of our customers

Renewables Cover a Wide Range of Raw Materials

WACKER can use renewable raw materials from different types of sources:

- Bio-based
- Recycled
- CO₂-based

These sources all place different demands on procurement – after all, sustainability requires more than simply using renewable raw materials.

Sustainable Procurement Is Key

The following sustainability criteria guide us in our use of renewables:

- Reduction of greenhouse gas emissions
- Production of environmentally and socially responsible biomass from waste materials, byproducts, regional sources, etc.
- Protection for areas with considerable biodiversity or carbon stock, such as rain forests
- Compliance with human rights throughout the supply chain, i.e., certified palm (kernel) oil, etc.

Making It Easier to Get Started

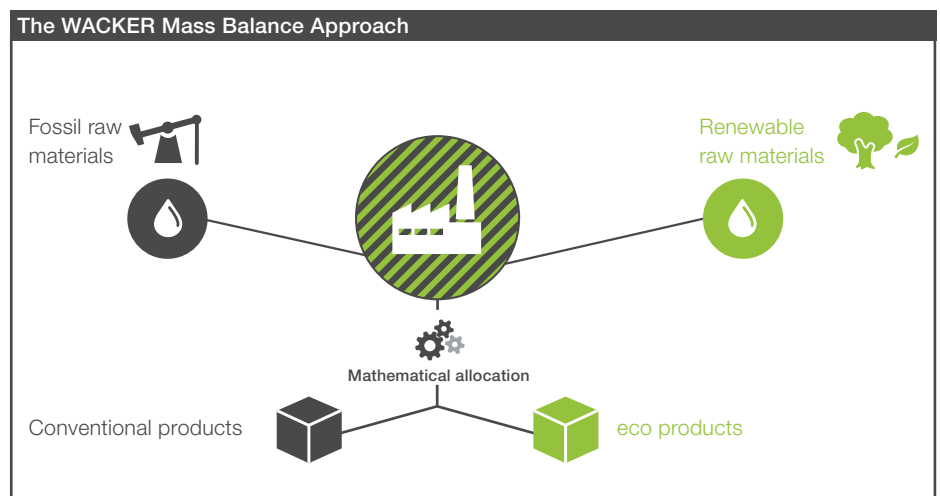
Our overriding goal is to reduce fossil raw materials, and the mass balance approach allows us to begin pursuing that goal quickly and easily. This method involves feeding the fossil-based material into the integrated production system along with the alternative raw material, and the two blend here. Applying the mass balance approach, we then mathematically allocate the renewable raw materials to specific products. This results in two types of products: those made of renewable raw materials – our line of eco products – and those produced from conventional, fossil-based materials. For this to work, we must ensure that the quantity of eco products purchased does not exceed the quantity of renewable raw materials used. (See diagram).

Expanding Production According to the Mass Balance Approach

While demand for more sustainable products is growing, it does not yet dominate the market. For this reason, WACKER continues to manufacture traditional products, which it produces alongside those made according to the mass balance approach – at the same time and in identical production plants. As customer demand for products from renewable raw materials grows, so does the share of those products in the production stream. The goal here is to continually raise the proportion of sustainable raw materials used in production.

Two Methods for Saving Resources

The mass balance approach replaces fossil raw materials with renewables, which can be done in one of two ways: through substitution or compensation.



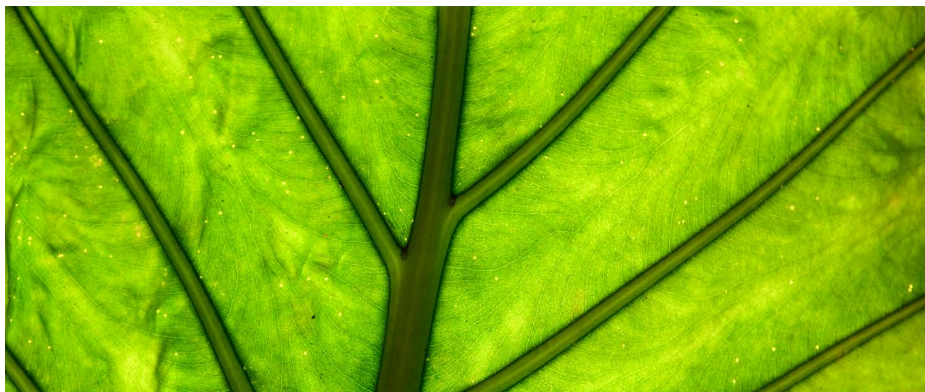
Substitution involves the 1:1 replacement of the fossil-based material with a chemically identical renewable resource. The result is a chemically identical product with no difference in performance.

In many supply chains, however, it can be difficult or even impossible to procure renewable alternatives to certain raw materials. The mass balance method offers a solution here as well – via compensation. When no renewable equivalent with the same properties exists for a fossil feedstock, the material is offset by using a renewable raw material at another point in the production process. In this case, the quantity of the non-fossil raw material does not have to be identical to that of the offset material as measured in kilograms or liters. The critical parameter here is the usable thermal energy released upon combustion – the lower calorific value in other words – which must be the same for both materials.

Compensation, however, is not recognized for issuing certificates such as an environmental product declaration (EPD), which is why WACKER has decided in favor of the substitution method. For the resulting products, the product certificate indicates the calculated proportion of fossil-based raw materials that have been replaced with renewables.

High-Quality Eco-Products

When customers purchase a product based on the mass balance method, they receive a certificate from a recognized, independent inspection body verifying that the product they have purchased conserves fossil resources. This certified



product is identical to its fossil counterpart in terms of specifications, quality and performance. Customers will not need to alter their formulations in any way. Currently available eco products can be found at wacker.com.

Environmental Impact Assessed from Beginning to End

For WACKER, keeping our eye on the entire life cycle of every product is what counts. The focus here is on the environmental impact of raw material acquisition, shipping, usage of intermediates and production itself. The life cycle assessment process described in ISO 14040/44 is the tool used for analyzing and assessing the overall environmental impact.

WACKER has enhanced this tool to make it useful for assessing products based on the carbon mass balance method, an innovative approach that complies with standards and allows WACKER to calculate the environmental impact of its eco products. The carbon mass balance method accounts for the replacement of fossil raw materials with physicochemically identical renewable feedstocks. This ultimately allows the company to

determine the environmental impact of mass-balanced products throughout the entire product life cycle.

Advantages of the Mass Balance Approach

- ① Conserves fossil resources without compromising formulations or quality
- ② Serves as a “drop-in” solution enabling the transition to a higher proportion of certified renewables
- ③ Meets the criteria of the REDcert² standard for tracing renewable raw materials and is audited by third parties
- ④ Can be applied to a very large range of products
- ⑤ Use of its specially developed carbon mass balance method allows the company to quantify the resulting environmental impact

Support Tools und Links

- [REDcert² mass balance approach](#)
- [Sustainable products](#)
- [PEFC Deutschland e.V.](#)
- [ISCC System](#)



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