

Report on Supply Chain Compliance Volume 2, Number 17. September 12, 2019 Finding it hard to trace materials in your supply chain? Try the 'mass balance' method

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Supply chains are undergoing a mass transformation, as regulatory bodies and organizations realize the pressing need for sustainable global value chains. Stakeholders demand the transformation, from investors to consumers to nation-states, and organizations are currently seeking solutions.

One solution is the mass balance accounting method. Mass balance accounting can be defined as:

A system for administratively monitoring the inputs and outputs of certified material/product throughout the supply chain. It allows for mixing of these materials/products with non-certified material at any stage in the supply chain, provided that the outputs of certified material/product do not exceed the inputs of certified material/products.

Mass balance accounting is one of several well-known chain of custody approaches, designed to trace the flow of materials through a complex value chain. It is used in several established, sustainable and responsible sourcing programs, such as the Forest Stewardship Council and the Better Cotton Initiative. The method can be essentially applied to any industry.

Mass balance in practice

Bonsucro, for example, established their own Mass Balance Chain of Custody Standard and published that standard, along with the implementation guidance, in March 2019. Bonsucro describes itself as “a global multi-stakeholder non-profit organisation that exists to promote sustainable sugarcane production, processing and trade around the world.” The community is made up of more than 500 members in 40 different countries. The standard they established allows sugarcane producers and processors to account for and track different grades of sugarcane throughout the supply chain.

Another project put together by Circular Economy 100 and the Ellen MacArthur Foundation investigated how the mass balance method could enable sustainable supply chains within the chemicals industry. The project looked specifically at recycling chemicals to help meet the growing demand for recycled plastics. The major obstacle to recycling chemicals is being able to account for and track the many different chemicals in a complex mixture. The study proposed the mass balance method as a means for measuring the various chemical compounds within the supply chain and determining the appropriate value to use in order to best account for the value of the different compounds:

A mass balance approach to enable the sale of certified recycled products at virgin-grade quality could be very valuable to all users of materials and chemicals in the value chain. The demand for recycled materials from downstream customers is crucial to drive the development of chemically recycled materials.

Furthermore, increasing shares of recycled content in products is one of the key ways for a business to transition to a circular economy approach.

One last example of how the mass balance method can be used within the supply chain is in the recycling and reverse logistics sectors. Kevin Shea, an industrial engineer at GEODIS, demonstrates how mass balance can help with dismantling and recovering valuable components in the electronics industry by accounting for recoverable and hazardous materials. He lists out the following steps that companies can take to evaluate how mass balance can help with recycling, disposal and recovery of components within the electronics supply chains:

- Identify the complexity of the product design.
- Define the tools required to dismantle.
- Determine the dismantle time.
- Identify the valuable commodities.
- Identify the hazardous materials.
- Identify components for data destruction.

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