

## **Calculation of the recycling rates according to Waste Framework Directive**

In order to calculate the recycling rates, the shares (losses) sorted out during the individual recycling steps (sorting, cleaning, conversion, etc.) and are not recycled have to be deducted from the waste generated.

### **1. "Determination of the loss rate"**

The total amount of waste generated (sum of all inputs to the first treatment operations) has to be determined, this is 100% (measuring point I), as well as the sum of inputs into the (recycling) operation, where the waste property ends (up to this point waste-related duties do apply, afterwards they no longer apply).

Example: Waste paper segregated at source and collected separately from other waste.

The quantity is weighed at the entrance to the first treatment / operation (measuring point I). At the end of the recycling chain (one or more recycling operations), the losses or rather the targeted material is weighed as well to determine the loss rate. Likewise, in the case of further necessary process steps for the production of commercially available paper grades (see European list of varieties EN 643), the process ends when the waste material enters the operation whereby waste materials are actually reprocessed into products, materials or substances (measurement point II). With entering this operation, the total losses can then be set in relation to the original quantity (measuring point I).

For example: A loss rate of 20% would apply if 10,000 tons were weighed as input for the first treatment operation, and losses of 2,000 tons were registered in the further recycling steps until the entry to the paper mill.

### **2. "Entrance of the Operation"**

Example Paper: In cases where the pulp mill uses standardized grades (CEN) as raw materials and the pulp mill corresponds to the state of the art, the entrance of the pulp mill is assumed to be the measuring point II.

### **3. "Average Loss Rate" (ALR)**

Multi-stage recycling chains (more than one process step before the final recycling process is achieved) may result in the mixing of municipal waste with waste from other sources (commercial, industrial) or from abroad or is exported. In these cases, the tracing is not possible and through this the statistical allocation is despite the weighing not possible either. For these cases, the Waste Framework Directive provides the possibility of determining a rate of loss (or recycling rate) by determining an average loss rate (ALR) for the treatments.

For example, after the first sorting process, which removes large pieces of non-paper items, waste paper is taken to another sorting facility that sorts out packaging boxes and separates

them into corrugated, gray and brown cardboard. In another sorting operation the remaining quantity is separated into newspaper and magazine paper. CEN 643 applies to all types of paper in question. Sources from other areas and from abroad are treated together in the respective sorting steps; It is therefore not possible to allocate the losses to the share of the input from national municipal waste. Here, the ALR can be attributed to the national municipal waste content by regular examinations.

The sum of all loss rates (determined by statistical or examination methods) gives the total loss rate.

#### 4. "Biodegradable waste"

When determining the losses in biological processes (composting, fermentation, etc.), the actual losses separated (stones, objects from non-plant degradable substances, etc.) must be weighed and deducted. Metals or other materials that are recycled in other recycling process are not losses.

#### 5. "Composting at home"

The total amount of biodegradable waste that is fed into a Home Composting, is statistically difficult to determine, since a weighing and a centralized collection of data does not take place. Therefore, the amount must be estimated using indirect methods. The Commission will make a proposal for this.

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