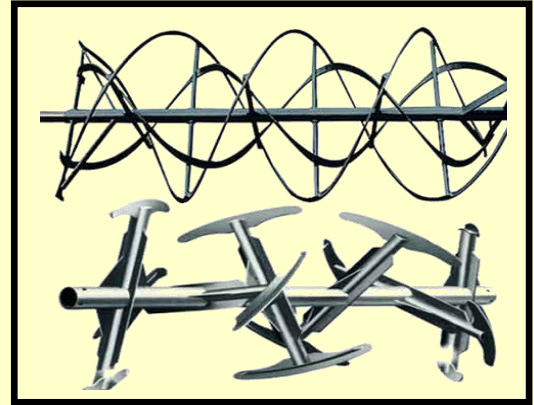


Mixture Homogeneity in feed industry

The mixture homogeneity in feed industry is a key element of good quality of the finished product.

This parameter is measured through a simple protocol:

- Set the mixing time and the filling rate.
- Choice of a tracer (raw material to be analyzed in all samples). Generally, we choose manganese.
- 10 samples to be taken, dividing the mixer drain time by 11.
- Tracer analysis.
- Calculation of the coefficient of variation.
- Result analysis and decision making :

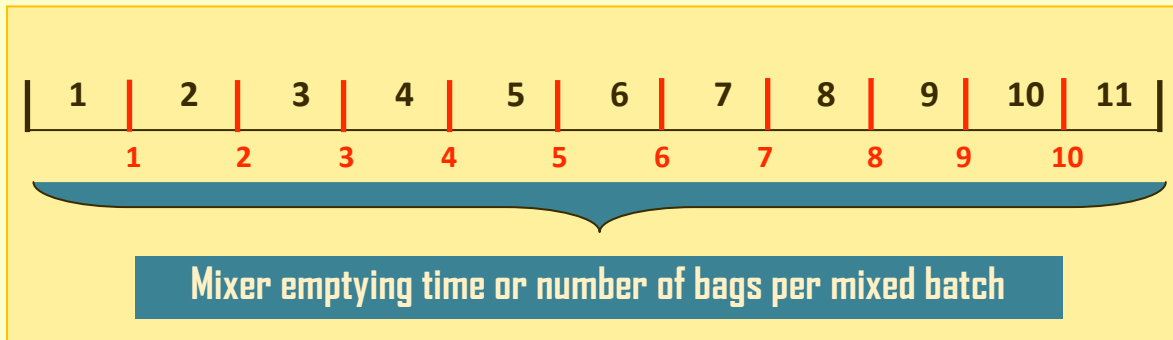


Important Notes:

- The fill rate is as important as the mixing time when testing for homogeneity.
- Do not fill the mixer below 2/3 of its maximum capacity.
- Take into consideration the importance of the particle size after grinding on the efficiency of the mixture.
- The addition of liquids in the mixer must be done through well-maintained nozzles and well directed towards the axis of the mixer.

< 6 % → Excellent Homogeneity
Between 6 et 12 % → Good homogeneity
>12 % → Bad Homogeneity

In practice



1

If the sampling is at the mixer outlet, divide the mixer emptying time by 11 to be able to take 10 samples as shown in the figure (in red).

If the sampling is at the bagger, divide the number of bags in the batch by 11 bag groups and take the sample from the last bag in each group.

3

It must be ensured that analyzes of chosen tracer are carried out under the best conditions (reliable method, accredited laboratory).

Results are used as follows:

- Calculation of the recovery rate (RR):

$$\text{RR \%} = (\text{average of the 10 values} / \text{expected concentration}) * 100$$

(The acceptable RR is between 70 and 110%)

- Calculation of coefficient of variation :

$$\text{CV \%} = (\sqrt{\text{Variance}} / \text{average}) * 100$$

2

Sampling during the same operation must be done by the same method (person, tool). The sample weight should be between 300 and 1000 g. All samples must be of similar weight.

Clearly identify the samples in relation to the test conditions (lot, date, mixing time, filling rate, etc.)

4

If the recovery rate is outside the norm (between 70 and 110%) and if the coefficient of variation is greater than 6% (action plan for improvement) or 12% (action plan for correction), it is necessary to initiate a process of analysis of failures causes. The possible causes are (related to the factory equipment) :

- Bad mixing time.
- Inadequate grinding.
- Filling rate.

Please contact us for more details if needed