



Supporting Document Feed Monitoring

Sampling and Retained Samples

1 Goal of sampling

The goal of sampling is to obtain a feed sample, the properties and composition of which represent the average characteristics of the entire lot.

Only proper, carefully conducted sampling can form the basis of a reliable test result during self assessment, so correct and meticulous sampling is essential. This supporting document is intended to help with the formation of laboratory samples and retained samples. Sample photos of the accessories mentioned in the text, which are also intended as sampling support can be found at the end of the document (chapter: Enclosures).

2 Terminology

- **Lot:** A quantity of feed that forms a unit and of which it is assumed that it has uniform characteristics.
- **Individual sample:** A quantity drawn from one place in a lot.
- **Collective sample:** Total quantity of individual samples drawn from one lot.
- **Reduced collective sample:** Sub-quantity of the collective sample obtained after representative reduction of the sample mass (approx. 2-3 kg).
- **Final sample:** Sub-quantity of the reduced collective sample or homogenised collective sample; a final sample (min. 500 g) is submitted for analysis while one or two other final samples are kept on the premises as **retained samples** to guarantee traceability (e.g. in the event of complaints).

Note: Individual samples should be the same size and drawn at random from the entire lot.

3 What should be observed during sampling and shipping?

The following measures are recommended to obtain a representative sample:

Sampler:

- Samples may only be drawn by qualified (proficient) persons who have received special training in sampling. If the necessary knowledge cannot be conveyed in internal training, the sampler should participate in external training. If this cannot be guaranteed within a business, an external sampler should be commissioned (e.g. from a laboratory).
- To avoid contamination when sampling, it should be ensured that samplers wear clean clothing and observe hygiene measures when sampling. This includes appropriate hand hygiene (e.g. washing hands immediately before sampling) and/or wearing clean gloves.
- When using automatic sample drawing equipment, sampling should be monitored and controlled by a trained person. The presence of the sampler is always required at the beginning and end of sampling (opening/closing of sample container).

Sampling:

- Special case: sterile sampling (with qualitative microbial testing, e.g. Salmonella):
 - Thermal sterilisation (stainless steel devices) or chemical disinfection (weighing equipment) must be carried out before using sampling equipment.
- As sampling has a decisive influence on the analysis result, it must be structured and adapted to the lot in such a way that the final samples represent the entire lot as precisely as possible. To ensure this, the manner of drawing the sample must be adjusted to the



size, properties and composition of the lot, as well as the parameters to be examined. If, for example, an undesired or prohibited substance is unevenly distributed within a lot (localised accumulation of Aflatoxin B1, for example), faulty sampling can easily lead to a result that is not representative of the lot. Where ingredients or substances can be unevenly distributed in feed, sampling in accordance with **Regulation (EU) No. 691/2013** is recommended.

- The sampling equipment used (buckets, shovels, scoops, insertion devices) must be made of materials which cannot contaminate the feed to be sampled. Equipment intended for multiple use must be easy to clean in order to avoid cross-contamination. Accordingly, equipment should be thoroughly cleaned (and disinfected if necessary) before use or as often as possible. In addition to this, equipment should be stored in such a way (in a firm, dry and clean place) that contamination can be prevented.
- External influences have to be considered during sampling. Contamination of samples with dust etc, or due to unsuitable weather conditions (e.g. rain) should be avoided.
- The combining of individual samples into one homogenous collective sample and the subsequent formation of final samples must also be done under hygienic conditions and in a suitable place (clean and free of contamination) using suitable accessories (e.g. sample separators). Final samples must be homogenous to the greatest possible extent.
- The time of sampling on feed producers' premises also plays a decisive role. To obtain a representative sample at a compound feed plant, it is necessary to draw the sample from the flowing product flow during production. Sampling at the beginning of the production process or from the storage cell of the final product is not suitable. With pelletised compound feeds, the sample should be drawn at the inflow to the finished goods cell. With pulverised compound feeds, the sample should be drawn after the process stage in which all recipe ingredients have been measured out and mixed in.
- Samples should be drawn at different points and at different depths in bulk freight hoppers and spread as far as possible over the entire cargo area. Use of a sample insertion device or rod is recommended.
- Where samples were taken from sacks or Big Bags, the puncture points must be resealed. Particularly strongly adhesive labels or tape which can be written on and which will stick to severely soiled surfaces should be used for this purpose.

Sample quantity

- Sufficient sample material has to be drawn for proper analysis. To ensure that all commissioned parameters can be examined, the minimum size of the final sample must be dimensioned accordingly. It must also be taken into account that a second analysis from the same sample has to be conducted if a result is rejected and that additional retained samples have to be drawn at the same time as the final sample. These are for the business's own protection as they can help with the investigation of customer complaints. It should also be considered that sufficient material must be retained for possible checks by the authorities (see Annex II, Quality Control section of feed hygiene regulation **Reg. (EC) No. 183/2005**). Accordingly, the recommended sample quantity per final sample should be at least 500 g or 500 ml. If necessary, the laboratory should be consulted to establish which sample quantity is required for the planned analyses.



Qualitätssicherung. **Vom Landwirt bis zur Ladentheke.**



- It is important to keep the individual lots strictly separate from one another and to form separate reference samples for each lot (no average samples from different lots). The general rule here is the smaller the lot used for sampling, the fewer goods have to be rejected in the event of contamination and the easier it is to trace the source and find the cause.

Sample containers:

- Choosing a suitable container (e.g. sample bag) for the representative final sample and retained sample is also of decisive importance. The container must be clean and suitable for keeping the sample hygienically in such a way that its properties and quality are not altered. It must also be ensured that it is not possible to open and reclose the container unnoticed prior to analysis in the laboratory. Containers must be sealed for this reason.

Sample shipment:

- Special case: qualitative microbial testing (e.g. Salmonella):
 - The sample must be kept cool during transport (Salmonella die off at temperatures of over 60°C over a period of more than half an hour).
- Once a sample has been drawn, it should be transported or shipped to a laboratory as quickly as possible. Care should be taken here to ensure that the sample is not affected by any external factors, such as sunlight or moisture. The form of transport should be appropriate to the sample material (e.g. sufficient cooling when necessary).
- If a lot is to be examined within the scope of QS feed monitoring, the sample-related data should be entered in the database and the laboratory commissioned via the database. The accompanying certificate can be printed out directly from the database and should be enclosed with the sample when shipped. It should list all of the relevant data. In this way, the laboratory can recognise immediately that it is a QS sample the results of which have to be entered in the database.

4 Keeping of retained samples

Retained samples must be sealed and kept in compliance with the perishability of the product (e.g. refrigeration, freezing). The length of time for which retained samples should be kept depends on the durability of the product.

Note: *It is no longer possible to detect yeasts and moulds from a frozen sample.*

5 Further documentation

Feed monitoring guideline

European and national laws and ordinance

All laws and regulations apply as amended, i.e. including updates and amendments. Several of the mentioned laws and regulations are linked to the homepage of the Federal Ministry of Food and Agriculture (BMEL):

<http://www.bmel.de/DE/Tier/Tierernaehrung/texte/FuttermittelGesetzeVerordnungen.html>

- **Regulation (EU) No. 691/2013**
- Annex II, Quality Control section of **Regulation (EC) No. 183/2005**



Qualitätssicherung. **Vom Landwirt bis zur Ladentheke.**



6 Enclosures (photos)

- Sample container (bucket):

Clean, free of aromas, with a smooth surface, easy to clean.



- Hand shovel/long shaft shovel:

Used to draw an individual sample from a moving flow (e.g. elevator) or dumped load (e.g. from a truck).





■ Sampling rod (compartmentalised spear) with one or more compartments/chambers:

Used for pre-sampling of grain from transport vehicles (e.g. trucks) or in storage. The sampling rod should always be adjusted to the depth of the products in the vehicle/storage area.



■ Dipper:

The dipper is typically used for the sampling of liquid feeds. It is also used for drawing samples from hoppers or trucks and for the pre-sampling of ship cargoes if there are no other available options (e.g. automatic sampling equipment).



■ Collective sample:

■ Special case: qualitative microbial testing (e.g. Salmonella):

- The hygienic conditions must be maintained, even during homogenisation and reduction, e.g. by laying out (brand) new film.



Qualitätssicherung. **Vom Landwirt bis zur Ladentheke.**



The individual samples (number representative of the tonnage of the entire lot) are combined into a collective sample which has to be homogenised, with lumps being pulverised if necessary.

This can be done in a plastic basin.

If the collective sample has to be reduced, this should be done with the help of the sample divider.



■ Final/laboratory sample or retained sample:

