

# IAFMM

# INTERNATIONAL ASSOCIATION OF FISH MEAL MANUFACTURERS

international association of fish meal manufacturers

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## RECOMMENDED METHOD OF SAMPLING FISH MEAL FOR ANALYSIS

The following sampling procedure is recommended by the IAFMM for the determination of the physical and chemical properties of fish meal. The procedure is **not** recommended for bacterial analysis.

### EQUIPMENT<sup>1</sup>

a. **Bag Probe:** A circular spearing tube made of aluminium, brass or stainless steel of 15 to 25 mm internal diameter with one end closed to a point to permit easy access into the bag. The tube should contain a slot of length between 40cm and 50cm. The tube may be designed to permit closing of the slotted opening.

b. **Bulk Probe:** A hand probe similar to the bag probe and in sufficient length to reach the bottom of the bulk load may be used.

An alternative probe for this purpose is a pneumatic operated one which will permit a cross section of the fish meal to be cut as the probe is inserted from the top to the bottom of the load. The sample must be caught in a cyclone which is designed to prevent a change in moisture content of the meal, and from which all the sample can be recovered.

c. **Belt Conveyor Sampler:** When sampling fish meal or pellets being carried by a belt conveyor, an automatic sampler must be used. A mechanical pelican, which can be installed at the end of the conveyor is required to travel from one side to the other while cutting the full stream of material. The pelican must be protected so that material is not withdrawn during the idle period.

d. **Bucket Elevator or Screw Conveyor Sampler:** When fish meal or pellets are being unloaded by a bucket elevator or screw conveyor, sampling should only be done on a "freely falling" stream of the meal after it has left the elevator. A mechanical pelican can be installed to cut a cross section of the full stream periodically by travelling from one side to the other. The pelican must be protected so that material is not withdrawn during the idle period.

## SAMPLING

Sampling must be carried out by a person trained in these techniques.

a. **Bag Sampling:** The sampling procedure for fish meal in bags should consist of taking not less than one sample out of every twentieth bag with a minimum number of samples per stack of 60 and a maximum of 200.

The samples should be taken by inserting the spearing tube inverted, rotating it until the slot is on top, and shaking it before withdrawal. Alternatively, a "double tube" spear may be used, in which the slot is covered during insertion of the spear, opened when in position and closed again before withdrawal. In either case the sample should be poured into a clean moisture tight sample container which is then sealed.

The sample should be taken at random, i.e. the stack must be broken down so that bags throughout the cross section are sampled, and not only those on the periphery. Alternatively the bags may be speared during the loading or unloading for transport.

b. **Bulk Sampling:** The sampling procedure for fish meal in bulk should consist of taking a number of primary samples not less than the square root of the product of 20 multiplied by the number of tonnes in the lot with a minimum number of samples per lot of 60 and an upper limit of 200 samples.

For fish meal or pellets stored in bulk where a sampling spear can be used, the spear should be lowered into the fish meal at intervals of about a metre apart throughout the depth of the whole bulk. The sample should be stored in clean, moisture tight sample containers.

To sample the bulk with a pneumatic probe, insert it vertically into the top while the air stream is in motion and allow it to travel to the bottom at a uniform rate. Stop the pneumatic action as soon as probe reaches the bottom. When sampling to complete, empty the contents of the cyclone into a clean, moisture tight container and seal.

In cases where bulked fish meal cannot be sampled by these methods, it should be sampled during the movement of the meal, e.g. during unloading of the bin or bulk. Continuous or intermittent sampling of at least 100 g./ton should be applied to a complete cross section of moving meal, and not by simply using a bleeding screw or drag conveyor.

#### MIXING AND SUB-SAMPLING

The composite sample shall be formed by combining the increments and mixing them well. A minimum of 2kg is required. The composite sample must be reduced to the amount required for analysis by successive thorough mixing and sub-sampling under conditions where no loss of moisture will occur. Coning and quartering on a clean sheet of paper is adequate for this purpose. A mechanical sample-divider which yields samples for analysis which are as representative as those obtained by the above named manual method can also be used. The reduced sample must be transferred to airtight containers immediately.

#### SAMPLE CERTIFICATE

A sample certificate must be supplied by the person or company responsible for the sampling operation. This certificate should contain the information below, but care should be taken to comply with any statutory requirements relating to certificates which apply in individual countries.

1. Identity of the sample.
2. Owner of fish meal.
3. Company and individual conducting sampling.

4. Place and date of sampling.
5. Quantity sampled.
6. Physical conditions of the lot sampled.
7. Destination of the shipment.
8. Product specifications.

One sample should be supplied to the seller, one to the buyer, and one retained by the sampling company.

#### PREPARATION OF THE SAMPLE FOR ANALYSIS

All samples for analysis must be ground to pass 100 mesh sieve. The laboratory mill should be constructed in such a way that air is excluded as much as possible from the unground and ground product during milling. The mill should not overheat, and should be easy to clean. The following mills have been found suitable; microhammer-cressmill, closed cornfodder grinder, slow running cone mill, micro-disintegrator cooled by water, crown wheel mill cooled by water.

<sup>1</sup>Particulars of industrial units for taking samples from bulk fish meal and sub-dividing samples are obtained from the Scientific Adviser, IAFMM.