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GB/T 14698-2002

Replacing GB/T 14698-1993

Test method of feed microscopy

饲料显微镜检查方法

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China

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Foreword

This standard is the revision of GB/T 14698-1993 “Test method of feed microscopy”.

As compared with GB/T 14698-1993 “Test method of feed microscopy”, the main technical revisions of this version are as follows:

- CHANGE the term “single feed” in the subject content and scope of application of the original standard into “feed material”;
- CHANGE 8.3 chloroform treatment of the original standard into carbon tetrachloride treatment;
- USE the ninhydrin test to substitute Millon reagent test;
- ADD an iodine test;
- In result expression, CANCEL the judgement of “odor”; CHANGE the word “conclusion” into “judgement opinions”.

This standard was proposed by AND shall be under the jurisdiction of National Feed Industry Standardization Technical Committee.

The drafting organizations of this standard: National Feed Quality Supervision and Inspection Center (Wuhan).

The main drafters of this standard: Yang Haipeng, Yang Lin, Qian Fang

This standard replaces the standards previously issued as follows:

- GB/T 14698-1993.

Test method of feed microscopy

1 Scope

This standard specifies the microscopy method of feed materials and compound feed.

This standard applies to the qualitative microscopy method of feed materials and compound feed.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 14699.1 Feed - Sampling

SB/T 10274 Atlas of microscopic examination for feeds

3 Principles

The morphology, color, hardness, organization structure, cell morphology, and staining characteristics of each feed standard sample and impurity sample are referred to by the use of the visual functions of the microscope extension inspector, to identify and assess the sample type and quality.

4 Instruments

4.1 Stereo-microscope: magnification can be 7 times ~ 40 times, with variable magnification.

4.2 Biological microscope: 3-place above noise piece, magnification can be 40 times ~ 500 times.

4.3 Magnifying glass: 3 times.

4.4 Standard sieve: bore diameter 0.42 mm, 0.25 mm, 0.177 mm sieve and base which can be assembled together.

TAKE sample in accordance with the feed sampling method in GB/T 14699.1, MIX the specimen uniformly, USE the quartering method to reduce the sample to the amount as required for inspection, generally 10 g ~ 15 g.

8.2 Screening

Based on the particle size of the specimen, SELECT the appropriate sieve group, PLACE the sieve of the maximum bore diameter above the sieve of the minimum bore diameter, PLACE the sieve base at the bottom. FULLY SHAKE the specimen as taken by the quartering method on the sieve set, USE a spoon to take some of specimens from above and below each sieve, respectively LAY it horizontally in the culture dish [If necessary, the specimen can be subject to carbon tetrachloride treatment first before being screened (as shown in 8.3)].

8.3 Carbon tetrachloride treatment

The specimen having higher fat content or attached with a large amount of fine particles can be subject to carbon tetrachloride treatment first (fish meal, meat and bone meal, most of poultry feed and unknown feed should be treated by this method).

TAKE about 10 g of specimen, PLACE it into a 100 mL high beaker, ADD about 90 mL of carbon tetrachloride (5.1) (in the fume hood), STIR it for about 10 s, LET it be standing for 2 min, after the upper and lower layers are separated clearly, USE spoon to take out the floating substance, FILTER it, after it is slightly evaporated dry, PLACE it in the oven at 70 °C for 20 min, TAKE it out to cool it to room temperature, MAKE the specimen filtered. If necessary, it can also filter, dry and screen the sediments.

8.4 Acetone treatment

For the specimen having a lump structure due to molasses OR having high moisture content and being vague, it can be treated first using this method. TAKE about 10 g of specimen, PLACE it into a 100 mL high beaker, ADD about 70 mL of acetone solution (5.2), STIR it for a few minutes to dissolve the molasses, LET it be standing to allow it to settle. Carefully DECANT it, USE the acetone solution to make repeated rinsing, settlement, and decantation for two times. After it is slightly evaporated dry, PLACE it into a 60 °C oven for 20 min, TAKE it out, COOL it at room temperature.

8.5 Particle or pellet specimen treatment

TAKE a few grains into a mortar, USE pestle to grind it to scatter it into different compositions, BUT do not CRUSH the composition itself. After initial grinding, MAKE it pass the sieve of bore diameter 0.42 mm. In accordance with the

further for each target. COMPARE it with the reference sample. TAKE off the glass slide, LIFT up the cover slip, ADD one drop of iodine solution (5.5), STIR it uniformly, ADD the glass slip again, PLACE it under microscope for observation. At this time, the starch is dyed blue to black, yeast and other protein cells are yellow to brown. If sample transparency is too low to be observed easily, it may take a small amount of specimen, ADD about 5 mL of suspending agent II (5.10), MAKE it boil for 1 min, COOL it down, TAKE 1 ~ 2 drops of bottom sediment on the glass slide, COVER the glass slip to perform microscopic inspection.

11 Identification of major inorganic components

PLACE the dried sediment (8.3) on a sieve set composed of sieves having hole-diameters 0.42 mm, 0.25 mm, 0.177 mm and base-plates to sieve it, respectively PLACE the sieved four parts into the culture dishes, USE the stereomicroscope to inspect it (refer to 9), the bone and scale of animal and fish as well as the shell of molluscs are generally easily identifiable. The salt is usually cubic; the calcite in limestone is rhombohedral.

12 Identification test

USE the tweezers to place the unknown particles on the spot plate, gently CRUSH it, PERFORM the rest operations under stereomicroscope, SEPARATE particles from each other to make them have a spacing of 2.5 cm, DRIP 1 drop of relevant reagent around each particle, USE the fine glass rod to push it into the liquid, OBSERVE the change at interface.

12.1 Silver nitrate test

PUSH the unknown particles into the silver nitrate solution (5.11) to make observation.

12.1.1 If white crystals are formed and slowly become larger, it is indicated that the unknown particles are chloride.

12.1.2 If yellow crystals and yellow flaky pieces are formed, it is indicated that the unknown particles are dihydrogen phosphate and hydrogen phosphate dibasic.

12.1.3 If slightly soluble white acicular pieces are formed, it is indicated that the unknown particles are sulfate.

12.1.4 If the particles slowly darken, it is indicated that the unknown particles are bone.

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