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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Determination of lysine, methionine and threonine in commercial amino acid products and additive premixture feeds

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1.Structure and Drafting Rules of Standardization Documents"

Drafting.

This document has been modified to adopt ISO 17180.2013 "Lysine, methionine and threonine in animal feed amino acid products and premixed feeds"

"Determination of Acid".

Compared with ISO 17180.2013, this document has many structural adjustments. Comparison list of structure number changes between two files

See Appendix A for the table.

The technical differences between this document and ISO 17180.2013 and their reasons are as follows.

a) The scope of application has been changed (see Chapter 1, Chapter 1 of ISO 17180.2013) to meet the requirements of my country's additive premixed feed products

The detection of lysine, methionine and threonine is required;

b) Changed the requirements for test water (see 5.1, 3.1 of ISO 17180.2013) to comply with my country's national standards for test water

Provisions;

c) Increased weighing accuracy (see 5.6, 5.11, 5.13, 5.14, 8.2.1, 8.2.2, 8.3.1, 8.3.2) to increase operability;

d) The dissolution operation has been changed (see 5.14, 8.2.1, 8.2.2, 8.3.1, 8.3.2, 3.11.2,

5.3.1, 5.3.2, ISO 17180.2013)

5.4.1, 5.4.2), the volumetric flask is not used for dissolution to increase standardization;

e) A 500mL glass beaker (see 6.1) was added to increase operability;

f) The 500mL volumetric flask (see 4.2 of ISO 17180.2013) was deleted to increase operability;

g) Added accuracy requirements for analytical balances (see 6.9) to increase operability;

h) The sample preparation method has been changed (see Chapter 7, 5.1 of ISO 17180.2013) to increase operability;

i) The weighing range of lysine sulfate and its fermentation by-products has been increased (see 8.2.1 and 8.3.1) to meet the requirements of my country's feed industry

Practical testing needs for lysine sulfate and its fermentation by-products;

j) The content of inter-laboratory inspection has been deleted (see 7.1 of ISO 17180.2013) to adapt to my country's technical conditions;

k) Changed the precision requirements (see Chapter 10, 7.2 of ISO 17180.2013) to meet the actual testing requirements of my country's feed industry

need;

l) The content of reproducibility has been deleted (see 7.3 of ISO 17180.2013) to adapt to my country's technical conditions;

m) The test report (see Chapter 8 of ISO 17180.2013) has been deleted to adapt to my country's technical conditions.

The following editorial changes have been made to this document.

a) In order to coordinate with the existing standards, the name of the standard is changed to "Lysine, methionine and amino acid products and additives in premixed feeds"

Determination of threonine content?;

b) Changed the scope of use of abbreviations in the notes in Chapter 1;

c) Added CAS numbers of 4 amino acid standards;

d) Changed the expression of hydrochloric acid concentration;

e) Delete the hanging paragraph in the chapter "Instruments and Equipment";

f) Added the formula number for converting lysine hydrochloride into lysine;

g) The content of Appendix A has been changed;

h) Added Appendix B (Informative) "Chromatogram of Amino Acid Standards".

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document describes methods for the determination of free lysine, methionine and threonine in premixed feeds with amino acid products and additives.

This document applies to feed additives amino acids, amino acid sulfates and amino acid hydrochlorides, mixed feed additives and additive premixes

The determination of free lysine, methionine and threonine content in compound feed is not applicable to feed additives methionine hydroxy analogues, methionine hydroxy analogs, and methionine hydroxy analogs.

The base analogue calcium salt is also not suitable for the determination of bound lysine content in the feed additive lysine sulfate and its fermentation by-products.

This document does not apply to distinguish between D and L forms of individual amino acids.

The limit of quantification for free lysine, methionine and threonine in this document is 0.1%.

Note. For convenience of expression, "amino acid" will be used instead of "free lysine, methionine and threonine" below.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 20195 Preparation of animal feed samples

3 Terms and definitions

There are no terms or definitions to be defined in this document.

4 Principles

The amino acids in the sample are extracted with dilute hydrochloric acid, diluted with sodium citrate buffer solution, and the internal standard norleucine is added.

High-performance liquid chromatography (HPLC), cation exchange chromatographic column separation, sodium citrate buffer solution for elution, and ninhydrin post-column derivatization of purple

Amino acids are measured using an external spectrophotometric detector or an o-phthalaldehyde (OPA) post-column derivatization fluorescence detector.

5 reagents or materials

Unless otherwise specified, use only analytically pure reagents.

5.1 Water. GB/T 6682, Level 1.

5.2 Lysine hydrochloride standard (CAS number. 657-27-2). purity not less than 99%, put into vacuum dryer containing phosphorus pentoxide before use

Dry in a desiccator for 2 days.

5.3 Threonine standard (CAS number. 80-68-2). purity not less than 99%, put into a vacuum dryer containing phosphorus pentoxide before use