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CCS B46



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 20802-2017

Replacing GB/T 20802-2006

Feed additive-Cupric methionine complex (chelate)

饲料添加剂 蛋氨酸铜络(螯)合物

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6	Label, package, transport and storage
7	Shelf life
10	Lead (Pb)/(mg/kg) $\leq$
16.8	Methionine /% $\geq$
20	Particle size (

Foreword

The first chapter of this standard, Chapter 3 and Chapter 5 is mandatory, the rest are recommended. This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 20802-2006 "feed additive methionine copper." This standard compared with GB/T 20802-2006, the main technical differences are as follows:

--- "Sensory traits" to "appearance and traits", appearance and traits added water-soluble indicators.

--- Removed the molar ratio of 1. 1 methionine copper network (chelate) related content.

--- In the technical indicators added chelation rate indicators.

--- The expression of copper and methionine content by the percentage of the amount of marked changes to copper and methionine content.

--- The molar ratio of 2. 1 methionine copper moisture content from less than or equal to 5% to less than or equal to 2%; the lead content from small Modified to equal or equal to 20 mg/kg at 30 mg/kg; the sieve was sieved from "100% through

0.42 mm (40 mesh) 0.20mm (80 mesh) sieve screenings less than or equal to 20% "was revised to" 0.20mm sieve sieve screen is less than or equal to 20%. "

--- Inspection rules provided for the factory inspection and type inspection. This standard is

proposed and managed by the National Feed Industry Standardization Technical Committee (SAC/TC76). This standard drafting unit. Chinese Academy of Agricultural Sciences Beijing Institute of Animal Husbandry and Veterinary, Feed Quality Supervision and Inspection Station in Shanghai, Shanghai feed Industrial Standardization Committee. The main drafters of this standard. Luo Xu Gang, Lu Lin, Zhu Yongwen, Zhang Liyang, Zhang Ling Yan, Zhao Zhihui, Feng Mao Xi, Yang Haifeng, Lei Ping. This standard replaces the standards previously issued as.

--- GB/T 20802-2006. Feed additive methionine copper (chelate) compounds

1 Scope

GB 20802-2017 is the Chinese national standard on feed additive-cupric methionine complex (chelate), in the field of agriculture. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 14 October 2017 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2018. Classification: ICS 65.120, CCS B46. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the requirements of feed additive methionine copper (chelate) compounds, test methods, inspection rules and labeling, packaging, transportation, Storage and shelf life. This standard applies to methionine (2-amino-4-methylthio-butyric acid) and copper sulfate synthesis molar ratio of 2. 1 methionine copper network (chelation) Compound products. The molar ratio of 2. 1 methionine copper network (chelate) formula .C₁₀H₂₀N₂O₄S₂Cu, the relative molecular mass of 359.95 (press 2007 International relative atomic mass meter).

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 601 chemical reagent standard titration solution preparation

GB/T 5917.1 forage particle size determination two sieve screening method

GB/T 6435 Determination of moisture in feed

GB/T 6682 analytical laboratory water specifications and test methods

GB 10648 feed label Determination of total arsenic in feedstuffs

GB/T 13079-2006 Feedstuffs - Determination of lead - Atomic absorption spectrometry

GB/T 13080-2004

GB/T 13080.2-2005 Feed additives - Determination of chelating rate of methionine iron (copper, manganese, zinc) Gel Filtration Chromatography

GB/T 14699.1 feed sampling

3 Requirements

3.1 Appearance and traits The methionine copper complex (chelate) with a molar ratio of 2.1 is a blue-purple powder slightly soluble in water with a slight methionine odor. No caking, hair Mold, deterioration phenomenon.

3.2 Specifications Feed additive methionine copper (chelate) products should be consistent with the provisions of Table 1. Table 1 technical indicators Project Indicators Copper (Cu) /%
>=

4.2.1 Reagents and solutions

4.2.1.1 Methanol.

4.2.1.2 Trichloromethane.

4.2.1.3 Dithizone solution in chloroform (10 µg/mL) Weigh 1 mg of dithizone and dissolve in 100 mL of chloroform (4.2.1.2).

4.2.1.4 pyridine.

4.2.2 Identification method Weigh 1.0g sample, extracted with 25mL methanol (4.2.1.1), filtered, the filtrate was taken 0.1mL, sequentially added dithizone trichloromethane dissolved Liquid (4.2.1.3) 3mL, the test solution shall not appear cloudy, precipitation phenomenon; then add pyridine (4.2.1.4) 0.5mL, blue liquid test solution shall not appear.

4.3 Determination of copper content

4.3.1 Principle After digestion with nitric acid and hydrochloric acid, the sample was complexed with copper ions with ethylenediaminetetraacetic acid (EDTA) at a pH of 5, Pyridylazo) -2-naphthol (PAN) indicator indicates the end point of the titration, calculated from the volume of disodium ethylenediaminetetraacetate standard solution consumed Copper content.

4.3.2 Reagents and materials

4.3.2.1 Nitric acid.

4.3.2.2 Hydrochloric acid.

4.3.2.3 ammonia solution. Ammonia water = 1 9.

4.3.2.4 acetic acid - sodium acetate buffer solution (pH = 5) .82g of sodium acetate plus 25mL of acetic acid, diluted with water to.200mL.

4.3.2.5 disodium edetate standard titration solution (EDTA-2Na) .c (EDTA-2Na) = 0.02mol/L. 4.3.2.6 1- (2-Pyridylazo) -2-naphthol (PAN) indicator

0.2 g of 1- (2-pyridylazo) -2-naphthol (PAN) was dissolved in 100 mL of 95% Ethanol.

4.3.3 Analysis steps Weigh 0.25g sample, accurate to 0.0001g, placed in 250mL conical flask, add 3mL nitric acid (4.3.2.1) and 3mL hydrochloric acid (4.3.2.2), heated to near dry, after cooling, add 20mL water heated to near dry, add water after cooling 80mL, with ammonia solution (4.3.2.3) tune The solution pH is about 5, then the solution was dark blue, added acetic acid - sodium acetate buffer solution (4.3.2.4) 10mL and PAN indicator (4.3.2.6) 3 drops, then heated to boil, while hot Disodium ethylenediaminetetraacetate standard titration solution (4.3.2.5) titration to yellowish green end. At the same time, another 250mL Erlenmeyer flask, a blank test, in addition to not adding the sample, the other types of operations and the amount of reagents and measurement are measured The same test.

4.3.4 Calculation and representation of results The copper content in the sample X1 is mass fraction, the value is expressed in%, and can be calculated according to the formula (1). $X1 = (V1-V0) \times c1M1 \times 10^{-3} m1 \times 100$ (1) In the formula. V0

--- titration blank solution consumption of disodium edetate standard titration solution (4.3.2.5) of the volume in milliliters (mL); V1

--- titration sample solution consumption of disodium edetate standard titration solution (4.3.2.5) of the volume in milliliters (mL); c1

--- disodium edetate standard titration solution (4.3.2.5) concentration in units of moles per liter (mol/L); M1

--- molar mass of copper in grams per millimolar (g/mol) (M1 = 63.55); m1

--- sample quality, in grams (g). The arithmetic mean of the two parallel determination results is the determination result, and the result is retained to one decimal place. The absolute difference between the two measurements is not more than 1%. Determination of methionine content 4.4

4.4.1 Principle Excess iodine solution is added accurately in neutral medium, two iodine atoms are added to the sulfur atom of methionine, the excess iodine solution is treated with sulfur Substitution of sodium sulfate standard titration solution back to the sample from the consumption of sodium thiosulfate standard titration solution volume calculated methionine content of the sample.