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

GB 7300.601-2020

Feed additives - Part 6: Non-protein nitrogen - Urea

饲料添加剂 第6部分：非蛋白氮 尿素

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Foreword

Clause 3 and Clause 6 of this part are mandatory provisions; the others are recommended provisions.

GB 7300 Feed additives is divided into a number of parts according to the product.

This part is Part 601 of GB 7300.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part was proposed by, and is under the jurisdiction of, the Ministry of Agriculture and Rural Affairs of the People's Republic of China.

The drafting organisations of this part are the Institute of Feed Research of the Chinese Academy of Agricultural Sciences and China Agricultural University.

1 Scope

China's mandatory national standard for the urea sold as a non-protein nitrogen feed additive, published as Part 601 of the GB 7300 series on feed additives. A cow does not need protein so much as it needs nitrogen: the microbes in its rumen will build microbial protein out of simple nitrogen sources, and urea is the cheapest nitrogen there is. That is why ruminant rations have used it for decades, and also why it is dangerous - fed to a pig or a chicken, which has no rumen, or fed to cattle in excess or unevenly mixed, it becomes ammonia poisoning. The margin between a useful dose and a lethal one is narrow enough that the composition of the material and the wording on the bag both matter. This standard fixes the sensory properties and the technical indicators of feed additive urea, covering the total nitrogen on a dry basis, the biuret, the moisture, the methylenediurea, the alkalinity, the particle size and the heavy metals as lead; biuret and methylenediurea are limited because they are the by-products of urea manufacture that are toxic to the animal. It assigns a published test method to each indicator, sets out the inspection rules and the sampling procedure, and requires the label to carry the warning that the product is for use only in ruminant feed. It applies to urea prepared by the reaction of ammonia with carbon dioxide.

This part of GB 7300 specifies the requirements, test methods, inspection rules, label, packaging, transport and storage of the feed additive urea.

This part applies to urea prepared by the reaction of ammonia and carbon dioxide, used as a non-protein nitrogen feed additive.

Chemical name: carbamide. Molecular formula: $\text{CO}(\text{NH}_2)_2$. Relative molecular mass: 60.056 (calculated according to the 2016 international table of relative atomic masses). The structural formula is given in the standard.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 2441.1, GB/T 2441.2, GB/T 2441.3, GB/T 2441.5, GB/T 2441.7 and GB/T 2441.9
Determination of urea - Parts 1, 2, 3, 5, 7 and 9.

GB/T 6682 Water for analytical laboratory use - Specification and test methods.

GB 10648 Feed label.

GB/T 13080 Determination of lead in feeds - Atomic absorption spectrometry.

GB/T 14699.1 Feeding stuffs - Sampling.

JJF 1070 Rules of metrological testing for net quantity of products in prepackages with fixed content.

Measures for the metrological supervision and administration of prepackaged commodities (Order No. 75 of 2005 of the General Administration of Quality Supervision, Inspection and Quarantine).

3.1 Sensory properties

White granules, with a slight ammoniacal odour.

3.2 Technical indicators

The technical indicators of the feed additive urea shall comply with the requirements of Table 1.

Table 1 fixes seven indicators: the total nitrogen on a dry basis, the biuret, the moisture, the methylenediurea as HCHO, the alkalinity as ammonia, the particle size within a stated sieve range, and the heavy metals as lead.

4.1 Reagents

Except where specially specified, only analytically pure reagents are used in the determinations. The water used in the tests shall comply with the requirements for grade three water in GB/T 6682.

4.2 Sampling method

Carried out according to GB/T 14699.1.

4.3 Sensory properties

Examined visually in natural light as white or light-coloured granules.

4.4 Determination of the total nitrogen content

Carried out according to GB/T 2441.1.

4.5 Determination of the biuret content

Carried out according to GB/T 2441.2.

4.6 Determination of the moisture content

Carried out according to GB/T 2441.3.

4.7 Determination of the methylenediurea

Carried out according to GB/T 2441.9.

4.8 Determination of the lead content

Carried out according to GB/T 13080.

4.9 Determination of the alkalinity

Carried out according to GB/T 2441.5.

4.10 Determination of the particle size

Carried out according to GB/T 2441.7.

5 Inspection rules

All the indicator items listed in the requirements of this part are factory inspection items; they shall be inspected batch by batch and a quality certificate shall accompany the product.

Products packaged from the same batch of raw material and produced in the same shift, having the same process conditions, the same batch number and specification and the same quality certificate, constitute one batch.

The number of sampling units is as specified in GB/T 14699.1. In sampling, the sampler is inserted to three quarters of the depth of the material layer; the sample obtained is mixed and reduced by quartering, and divided between two dry, clean, ground-stoppered bottles which are labelled with the name of the manufacturer, the product name, the production date and the batch, one bottle being used for the inspection and the other kept in reserve.

Judgement rules: a product whose inspection results all comply with the requirements of Clause 3 is judged conforming. Where one indicator does not comply with the requirements of this part, samples shall be taken again from double the quantity of packages for re-inspection; if one indicator in the re-inspection result still does not comply with this part, the product is judged non-conforming.

6 Label

The label shall comply with GB 10648 and shall additionally bear the note "This product is for use only in ruminant feed".

7 Packaging, transport and storage

The product is packed in a suitable light-proof container and kept sealed; the packaging