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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Feed additive - L-carnitine

饲料添加剂 L-肉碱

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Standardization Administration of the PRC

Table of Contents

Foreword

Clauses 1, 3 and 5 of this standard are mandatory; the remainder is recommendatory.

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

This standard was proposed by and is under the jurisdiction of the National Technical Committee on Feed Industry of Standardization Administration of China (SAC/TC 76).

1 Scope

The Chinese national product standard for L-carnitine sold as a feed additive. L-carnitine is the molecule that ferries long-chain fatty acids into the mitochondria, and in animal nutrition it is fed to piglets, poultry, fish and shrimp to push the carcass towards lean tissue rather than fat; it is a fine chemical, made by synthesis, and dosed in grams per tonne of feed. At that dilution the buyer cannot see what he has bought, and the two things that matter are that the material really is the L enantiomer and that it is not carrying heavy metals, arsenic or cyanide residues out of the synthesis. This standard is the answer to both: it fixes the requirements, the test methods, the inspection rules, the label, the packaging, transport and storage, and the shelf life of the product, and it applies to feed additive L-carnitine obtained by chemical synthesis. The requirements are built on nine specified indexes, from assay and specific rotation down to residue on ignition, each with its own analytical procedure written out in Clause 4. Clauses 1, 3 and 5 are mandatory and the rest of the standard is recommendatory, which in the Chinese system means the scope, the requirements and the inspection rules carry the force of law. Feed premix plants, additive manufacturers, importers and the feed inspection service are the ones who use it.

This standard specifies the requirements, the test methods, the inspection rules, the label, the packaging, the transport, the storage and the shelf life of the feed additive L-carnitine.

This standard applies to the feed additive L-carnitine obtained by chemical synthesis.

Chemical name: L-carnitine. The structural formula is shown in Clause 1 of the standard. Molecular formula: C7H15NO3. Relative molecular mass: 161.20 (calculated as C7H15NO3, according to the 2007 international table of relative atomic masses).

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 601 Chemical reagent - Preparations of standard volumetric solutions.

GB/T 602 Chemical reagent - Preparations of standard solutions for impurity.

GB/T 603 Chemical reagent - Preparations of reagent solutions used in test methods.

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

GB/T 9724 Chemical reagent - General rule for the determination of pH value.

GB 10648 Feed label.

GB/T 14699.1 Feeding stuffs - Sampling.

3.1 Appearance and characters

White or off-white crystalline powder, with a slight fishy odour, hygroscopic, and very readily soluble in water.

3.2 Technical indexes

The product shall comply with the requirements of Table 1.

Table 1 fixes nine indexes: the L-carnitine content on a dry basis, the specific rotation, the pH value of an aqueous solution, the loss on drying, heavy metals expressed as lead, total arsenic, chloride, cyanide, and the residue on ignition. The values themselves are in the standard.

4 Test methods

Unless otherwise stated, the reagents and the water used in the test methods of this standard are analytically pure reagents and grade 3 water as specified in GB/T 6682. Unless otherwise stated, the standard volumetric solutions, the standard solutions for impurity, the preparations and the products used in the tests are prepared in accordance with GB/T 601, GB/T 602 and GB/T 603.

5.1 Batching

A batch is made up of the uniform and consistent product made from the same materials and by the same production process, produced continuously or produced in the same work shift.

5.2 Sampling

Sampling is carried out in accordance with GB/T 14699.1.

5.3 Exit-factory inspection

Of the items listed in Table 1, the L-carnitine content, the specific rotation, the pH value, the loss on drying and the residue on ignition are the exit-factory inspection items.

5.4 Type inspection

The type inspection items are all the requirements of Clause 3. In normal production a type inspection is carried out at least once every six months, and it is also carried out in any of

the following cases: when the product is being finalized; when there has been a considerable change in the production process or in the source of the raw materials that could affect the quality of the product; when production resumes after having been stopped for more than three months; and when the exit-factory inspection results differ considerably from those of the previous type inspection.

5.5 Judgment rules

If one of the indexes of the inspection result fails to meet the requirements of this standard, samples shall be taken again from twice the number of packages and re-tested; if even one index of the re-test result fails to meet the requirements of this standard, the whole batch of product is judged non-conforming.

6.1 Label

The label is made out in accordance with GB 10648.

6.2 Packaging

The packaging material shall be non-toxic, harmless and moisture-proof.

6.3 Transport

During transport the packaging shall be protected from damage, from sunlight and from rain, and the product shall not be carried together with toxic or harmful substances.

6.4 Storage

During storage the product shall be protected from sunlight and from rain, and shall not be stored together with toxic or harmful substances.

7 Shelf life

Under the specified transport and storage conditions the shelf life is the period stated in the standard.