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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 1903.64-2023

National Food Safety Standard Food Nutritional Enhancer Manganese Chloride

Issued on: September 6, 2023 **Implemented on: March 6, 2024**

Issued by: National Health Commission of the People's Republic of China, State Administration for Market Regulation

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1 Scope

This standard applies to manganese chloride, a food nutrition fortifier, which is purified from electrolytic manganese or manganese carbonate as raw material and reacted with hydrochloric acid.

2.1 Chemical name

Manganese chloride tetrahydrate

2.2 Molecular formula

MnCl2.4H2O

2.3 Relative molecular mass

197.90 (according to.2018 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements should comply with Table 1.

Table 1 Sensory requirements

Project requirements inspection method Color pink to rose red State translucent irregular crystals Take an appropriate amount of sample and place it evenly in a clean, dry white porcelain plate or transparent beaker.

Observe its color and condition under natural light

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3.2 Physical and chemical indicators

The physical and chemical indicators should comply with the provisions of Table 2.

Table 2 Physical and chemical indicators

Project indicator inspection method Manganese chloride (MnCl2.4H2O) content (on a dry basis), w/% 98.0~102.0 A.3 in Appendix A Loss on drying, w/% 36.0~38.5 A.4 in Appendix A Water-insoluble matter, w/% <= 0.005 A.5 in Appendix A pH(50mg/mL) 4.0~6.0 GB/T 9724 Sulfate (calculated as SO4), w/% <= 0.005 A.6 in Appendix A Ammonium sulfide does not precipitate, w/% <= 0.2 A.7 in Appendix A Iron (Fe)/(mg/kg) <= 5 A.8 in Appendix A Lead (Pb)/(mg/kg) <= 4.0 GB 5009.12 or GB 5009.75 Zinc (Zn) passed test A.9 in Appendix A

Appendix A Testing method

Warning. Some of the inspection processes of this standard use strong acid reagents. Please operate with caution to avoid human injury.

A.1 General provisions Unless other requirements are specified, the reagents and water used in this standard refer to analytically pure reagents and grade three water specified in GB/T 6682.Under test Unless other requirements are specified, the standard solutions, standard solutions for impurity determination, preparations and products used shall be in accordance with GB/T 601, GB/T 602, Preparation in accordance with GB/T 603.The solutions used in the test refer to aqueous solutions unless the solvent used to prepare them is specified.

A.2 Identification test A.2.1 Reagents and materials A.2.1.1 Ammonium sulfide solution (mass fraction greater than 8%).

A.2.1.2 Acetic acid.

A.2.1.3 Nitric acid.

A.2.1.4 Silver nitrate solution (10g/L). Weigh 1g of silver nitrate (accurate to 0.01g), add water to dissolve and dilute to 100mL.

A.2.1.5 Ammonia solution (10%). Measure 40mL of concentrated ammonia solution and add water to dilute to 100mL.

A.2.2 Analysis methods A.2.2.1 Identification of manganese ions Weigh about 0.5g of the sample, add 10mL of water to dissolve it, and add ammonium sulfide solution (A.2.1.1) to produce a light orange precipitate, which should be dissolved in acetate.

Acids (A.2.1.2).

A.2.2.2 Chloride ion identification Weigh about 0.5g of the sample, add 10mL of water to

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dissolve it, and add silver nitrate solution (A.2.1.4) to produce a white precipitate. This precipitate should be insoluble in nitrate.

Acid (A.2.1.3), dissolved in excess ammonia solution (A.2.1.5).

A.3 Determination of manganese chloride content (on a dry basis)

A.3.1 Method principle In an ammonia-ammonium chloride buffer solution with a pH value of 10, using chrome black T as the indicator and disodium ethylenediaminetetraacetate (EDTA) as the standard Titrate the solution and calculate the content of manganese chloride based on the dosage of disodium ethylenediaminetetraacetate standard titration solution.

A.3.2 Reagents and materials A.3.2.1 Hydroxylamine hydrochloride solution. 10%.

A.3.2.2 Disodium ethylenediaminetetraacetate standard titration solution. c(EDTA)=0.1mol/L.

A.3.2.3 Ammonia-ammonium chloride buffer. Weigh 54g of ammonium chloride, dissolve it in water, add 350mL of ammonia, and dilute to 1000mL (pH~10).

A.3.2.4 Chrome black T indicator liquid. 5g/L.

A.3.3 Instruments and equipment Electronic balance, accuracy is 0.0001g.

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