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

GB/T 31576-2015

**Animal and vegetable fats and oils -- Determination of copper,
iron and nickel contents -- Graphite furnace atomic absorption
method**

动植物油脂 铜、铁和镍的测定 石墨炉原子吸收法

(English Translation)

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Foreword

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

This revised standard adopts ISO 8294:1994 "Animal and vegetable fats Determination of copper, iron and nickel graphite furnace atomic absorption method" (in English).

The main technical content of this standard and ISO 8294:1994 is consistent, but made the following modifications.

--- On normative references, this standard has been adjusted technical differences are reflected in Chapter 2, "normative references" the specific adjustments are as follows.

- equivalents adoption of international standards GB/T 6682, instead of the ISO 3696;

- equivalents adoption of international standards GB/T 15687, instead of ISO 661.

--- Increased niobium chloride can also be used as a niobium solution formulation (see 4.5).

--- Reorganize the structure and content of Chapter 11.

The standard proposed by the National Food Authority.

This standard by the National Grain and Oil Standardization Technical Committee (SAC/TC270) centralized.

This standard was drafted. Academy of State Administration of Grain, Grain and Oil Textile Import and Export Co., Nanjing University of Finance and Economics, Hebei Province, grain and oil quality the amount of the test center.

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Animal and vegetable fats Determination of copper, iron and nickel Graphite Furnace Atomic Absorption Spectrometry

1 Scope

This standard applies to unrefined and refined edible oils trace copper, iron and nickel in.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696:1995, IDT) GB/T 15687 animal and plant oils prepared sample (GB/T 15687-2008, ISO 661:2003, IDT) Principle 3 Fats pretreated, take appropriate graphite furnace atomizer in atomized measured at selected instrument parameters and settings optimal wavelength Absorbance in the corresponding standard solution of an organic compound of a metal element calibration, calculate the content of metal elements in the oil.

4 Reagents

Unless otherwise indicated, the reagents used were of analytical grade standard. Water should be consistent with GB/T 6682 stipulated two of water.

4.1

Alumina. AR.

Note 1: The recommended use by Merck (D-1600Darmstadt, Germany) alumina (QualityNo.1077).

4.2

Dilution oil. liquid form at ambient temperature in edible oil refining, stored in polyethylene or polypropylene bottles containing no metal component (5.1). Oil, copper content should be less than 3 μ g/kg; iron content should be less than 5 μ g/kg; the nickel content should be less than 5 μ g/kg.

Note 2: The diluted oil can be prepared according to the following steps. Press 1kg 3L oil plus petroleum ether (boiling range 40 °C ~ 60 °C) the proportion of the oil was dissolved in petroleum ether. use to the oil was purified twice by mass of alumina (activated at 150 °C 14h) preparing an alumina column (diameter. height = 1.10). The oil solution on Column, and the equivalent of dissolving grease with petroleum ether 5/3 times the volume of petroleum ether as eluent. In a nitrogen stream (2L/min ~ 5L/min) under the protection of ships Distilled eluent petroleum ether on a hot water bath, the last remaining small amount of petroleum ether to vacuum distillation divisible.

4.3

standard stock solution. Dilute the standard preparation of organometallic material into standard stock solution was diluted oil (4.2), the metal element content of it is. Cu was

2mg/kg; Fe of 10mg/kg; Ni of 10mg/kg.

Note 3: The reference material available on Continental Oil Company (Poncacity, Oklahoma, United States) (5000mg/kg) or Merck (D-1600Darmstardt, Germany State (1000mg/kg).

4.4

standard solution. diluted oil (4.2) standard stock solution (4.3) formulated in a standard working solution. When we use the existing service. Standard Operating Concentration as follows.

Cu --- 0.05mg/kg, 0.1mg/kg and 0.2mg/kg;

Fe --- 0.25mg/kg, 0.5mg/kg and 1.0mg/kg;

Ni --- 0.25mg/kg, 0.5mg/kg and 1.0mg/kg.