ICS 59.060.10
CCS W 30

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 45582-2025

Test method for quantitative analysis of hemp chemical components

大麻化学成分定量分析方法

Issued on: April 25, 2025 **Implemented on: November 1, 2025**

Issued by: State Administration for Market Regulation;
Standardization Administration of China

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

Attention is drawn to the possibility that some of the content of this document may be the subject of patent rights. The issuing body of this document shall not be held responsible for identifying patents.

This document was proposed by and is under the jurisdiction of the National Technical Committee on Fibres of Standardization Administration of China (SAC/TC 513).

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This document is a first edition; it does not replace any earlier standard.

1 Scope

WARNING - Personnel using this document should have practical experience of work in a regular laboratory. This document does not purport to address all of the safety problems that may arise. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with the conditions laid down in the relevant national regulations.

This document describes methods for determining the content of fat and wax, pectin, water-soluble matter, hemicellulose, lignin and cellulose in hemp fibre.

This document applies to the testing of the chemical components of hemp fibre.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through the normative references made to them in the text. For dated references, only the version corresponding to that date applies; for undated references, the latest version (including all amendments) applies.

GB/T 6682 Water for analytical laboratory use - Specification and test methods · GB/T 8170 Rules of rounding off for numerical values and expression and judgement of limiting values · GB/T 16984 Raw hemp

3 Terms and definitions

No terms and definitions need to be defined in this document.

4 Principle

Use is made of the different reactions of the several components of hemp fibre to different chemical reagents. The fat and wax, pectin, water-soluble matter, hemicellulose, lignin and cellulose are extracted or separated from the hemp fibre specimen one after another, and are quantified by gravimetric analysis, so as to obtain the content of each chemical component of the hemp fibre.

5 Reagents or materials

Unless otherwise stated, all reagents used in this method are of analytical grade.

5.1 Sodium carbonate, content >= 99.8 %, CAS No. 497-19-8.

5.2 Sodium hydroxide, content >= 96.0 %, CAS No. 1310-73-2.

5.3 Anhydrous calcium chloride, content >= 96.0 %, CAS No. 10043-52-4.

5.4 Barium chloride, content >= 99.0 %, CAS No. 10361-37-2.

5.5 n-Hexane, content >= 97.0 %, CAS No. 110-54-3.

5.6 Glacial acetic acid, content >= 99.5 %, CAS No. 64-19-7.

5.7 Concentrated sulfuric acid, content 95.0 % to 98.0 %, CAS No. 7664-93-9.

5.8 Sodium carbonate - sodium hydroxide aqueous solution: a mixed solution with a sodium carbonate mass fraction of 2 % and a sodium hydroxide mass fraction of 0.16 %.

5.9 Calcium chloride solution (mass fraction 25 %).

5.10 Acetic acid solution (1 g/L).

5.11 Sodium hydroxide solution (20 g/L).

5.12 Sulfuric acid solution (mass fraction 72 %).

5.13 Barium chloride solution (100 g/L).

5.14 Nylon bolting cloth: 500 mesh (aperture about 30.8 ?m).

5.15 Filter paper: medium-speed qualitative filter paper.

5.16 Grade 3 water complying with GB/T 6682.

6 Apparatus

6.1 Soxhlet extractor: 250 mL.

6.2 Flat-bottomed flask: 250 mL.

6.3 Condenser: 250 mL.

6.4 Stoppered conical flask: 50 mL and 250 mL.

6.5 Filtering flask: 1 000 mL.

6.6 G3 sintered-glass filter: filter plate aperture 16 ?m to 30 ?m.

6.7 Glass desiccator.

6.8 Volumetric flask: 100 mL, 500 mL and 1 L.

6.9 Measuring cylinder: 10 mL and 250 mL.

6.10 Analytical balance: scale interval 0.1 mg.

6.11 Electronic balance: scale interval 0.01 g.

6.12 COD thermostatic heater: room temperature to 399.0 °C, accuracy ± 2.0 °C; COD heating tube 40 mm x 210 mm; air condenser 760 mm to 770 mm long. A heating plate, conical flask and condenser or any equivalent heating and condensing arrangement may

also be used.

6.13 Electrically heated thermostatic drying oven: room temperature to 200.0 °C, accuracy ± 2.0 °C.

6.14 Electric heating plate: room temperature to 300.0 °C.

6.15 Thermostatic water-bath shaker: room temperature to 100.0 °C, accuracy ± 2.0 °C.

6.16 Grinder: rotational speed greater than 25 000 r/min.

7 Sampling and preparation of test specimens

7.1 Batch sample and laboratory sample - sampling shall be carried out by the method specified in GB/T 16984.

7.2 Test sample - the laboratory sample is spread out flat on a platform board, each bundle of fibre is divided lengthwise into two parts, one half is discarded and the other half kept, and the halving is repeated until the combined mass of the retained parts of the bundles is 100.0 g to 150.0 g.

7.3 Preparation of the test specimens - the test sample is divided at random, ground in the grinder for 2 min, and three specimens of 5.00 g ± 0.01 g each are taken. Each specimen is wrapped in 500 mesh nylon bolting cloth of known dry mass and dried to constant mass at 105 °C, then cooled in the glass desiccator for 30 min and weighed to the nearest 0.1 mg. NOTE: constant mass is regarded as reached when two successive weighings 30 min apart differ by not more than 0.1 %.