

ICS 71.040
CCS N50



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

GB/T 44374-2024

Determination of performance of pressurized fluid extractor

加压流体萃取仪性能的测定方法

Issued on: August 23, 2024

Implemented on: August 23, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1 Scope ...	1
2 Normative references ...	1
3 Terms and Definitions ...	1
4 Reagents and Materials ...	2
5 Instruments and equipment ...	2
6 Determination of performance indicators ...	2
6.1 Measurement conditions ...	2
6.2 Temperature performance ...	3
6.3 Pressure performance ...	3
6.4 Deviation between extraction solvent delivery channels ...	4
6.5 Consistency of extraction results ...	5
7 Appendix B (Normative) Determination of oil content in vegetable oils - pressurized fluid extraction method (taking soybean as an example) ...	8
8 B.1 Test steps	8
8 B.2 Result calculation	9

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting is required. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the Ministry of Science and Technology of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee for Standardization of Instrumental Analysis and Testing (SAC/TC 481). This document was drafted by: China Customs Science and Technology Research Center, China Institute of Metrology, Vicoto (Beijing) Technology Co., Ltd. Beijing Haiguang Instrument Co., Ltd., Beijing Labtech Instrument Co., Ltd., Ruike Group (Xiamen) Co., Ltd., Beijing Lindian Weiye Electronic Technology Co., Ltd., Beijing Academy of Agricultural and Forestry Sciences, Beijing Zhongren Testing Technology Service Co., Ltd., Guangxi Zhuang Autonomous Region Radiation Environment Supervision and Management Station, Beijing Institute of Standardization, and Beijing Miyun District Center for Disease Control and Prevention. The main drafters of this document are: Qiu Ye, Liu Xin, Shi Junwen, Song Dewei, Kong Weiheng, Wang Yikai, Yun Huan, Gao Feng, Jia Wenshen, He Ying, Zhu Tianyu, Song Jialu, Han Shen, Liu Zebin, He Jingming, Li Wenfeng, Jia Yueqin,

Yin Xiaobo, Zhang Weiwei, Zhou Jie. Method for determining the performance of pressurized fluid extractors

1 Scope

GB/T 44374-2024 gives the Chinese method for determining the performance of pressurised fluid extractors, the instruments that extract analytes from solid samples with solvent at elevated temperature and pressure and that are standard equipment in environmental, food and pharmaceutical laboratories. The instrument is trusted implicitly and rarely checked, yet its recovery depends on the cell temperature actually reached, on the pressure held, on the solvent volume delivered and on whether the cells cross-contaminate, none of which is visible to the operator. The standard sets the test conditions and the methods: the accuracy and uniformity of the cell temperature and its stability, the accuracy and holding of the pressure, the accuracy of the solvent volume delivered and of the purge, the extraction recovery measured with a defined reference material, the repeatability between cells and between runs, the carryover, and the safety and leak checks, followed by the calculation of each performance index and the report. It took effect on 23 August 2024.

This document defines the terms and definitions for the performance measurement of pressurized fluid extractors and describes the measurement methods, including reagents and materials, instrumentation and Steps for measuring equipment and performance indicators. This document applies to the temperature performance, pressure performance, extraction solvent delivery channel deviation, extraction result consistency and Determination of cross contamination.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 14488.1 Determination of oil content in vegetable oils

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Pressurized fluid extractor A type of pretreatment equipment that uses heated and pressurized extraction solvents to quickly extract organic components from solid and

semi-solid samples (see schematic diagram) Figure A.1).

Note 1: A pressurized fluid extractor is also called a rapid solvent extractor or an accelerated solvent extractor. Note

2. During the extraction process of the pressurized fluid extractor, the extraction temperature and extraction pressure are the core parameters that affect the extraction results. The set pressure of the extraction cell and its connecting fluid pipes. The extraction temperature refers to the set temperature of the internal heating furnace of the pressurized fluid extractor when extracting samples.

3.2 Heating time After the extraction cell is loaded into the heating furnace, it begins to be filled with the extraction solvent. The time from the completion of the addition of the extraction solvent to the start of the static extraction is measured.

3.3 Temperature balance between extraction cell and heating oven When the pressurized fluid extractor extracts the sample, the temperature inside the extraction cell containing the sample and the extraction solvent reaches equilibrium with the temperature of the heating furnace. process.

3.4 Static extraction time When the pressurized fluid extractor extracts samples, the extraction starts from the end of the heating time, that is, the extraction temperature and pressure reach the set value, until the first extraction The time elapsed until the loop ends.

3.5 Cycles of extraction When a pressurized fluid extractor extracts a sample, the process starts with delivering the extraction solvent (pressurization) and ends with static extraction. NOTE. The number of extraction cycles performed is also called the cycle number.