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

GB/T 44626.2-2025

**Fine bubble technology - Elimination method for sample
characterization - Part 2: Elimination techniques**

微细气泡技术 表征用样品中气泡消除方法 第2部分：消除技术

(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 2 of GB/T 44626 "Methods for eliminating bubbles in samples for characterization using microbubble technology". GB/T 44626 has been...

The following sections have been published.

---Part 1: Evaluation Procedure;

---Part 2: Elimination Techniques.

This document is modified to adopt ISO 24261-2:2021 "Methods for eliminating bubbles in

samples for characterization using microbubble techniques - Part 2: Microbubble technology".

Bubble elimination technology.

The technical differences between this document and ISO 24261-2:2021, and the reasons therefor, are as follows.

---ISO 20480-1 has been replaced by the normatively referenced GB/T 41914.1 and GB/T 44626.1-2024 (see Chapter 3).

And ISO 24261-1:2020 (see Chapter 6) to adapt to my country's technical conditions and improve operability.

The following editorial changes have been made to this document.

---The standard title has been changed to "Methods for bubble removal in samples for characterization using microbubble technology - Part 2: Removal techniques";

---ISO 20298-1:2018 (see 3.1) and GB/T 12604.1 have been replaced by GB/T 42843.1-2023 (referenced for informational purposes).

GB/T 2020 replaced ISO 5577:2017 (see 3.2), GB/T 6682 replaced ISO 3696 (see 4.1), and GB/Z 44387 replaced...

ISO/T R23015 (see 4.2) and GB/T 25915.1 have replaced ISO 14644-1 (see Chapter 5);

---Change the title of Appendix C to "Examples of Results from the Freeze-Thaw Method".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the Chinese Academy of Sciences.

This document is under the jurisdiction of the National Technical Committee on Standardization of Microbubble Technology (SAC/TC584).

Introduction

Microbubble technology has recently seen increasing applications in cleaning, water treatment, agriculture, forestry, animal husbandry, fisheries, and biomedicine. Currently, there is an urgent need...

The evaluation methods for the performance and efficiency of microbubble generation systems need to be standardized, especially for parameters such as the number concentration index and particle size index of microbubbles.

Evaluation of key parameters and indicators.

Furthermore, microbubble dispersions may contain other solid particles and droplets.

Contaminants such as particles hinder the precise description of microbubble dispersions.

Fine bubbles are extremely difficult to distinguish. Therefore, differentiating between fine bubbles and contaminants is a pressing problem that needs to be solved. This is precisely why the "index" is used.

The term is used because it is never 100% certain that a particle is a bubble and not a contaminant.

Although various methods exist for detecting particle number concentration index and particle size index, it is possible to distinguish between bubbles in a microbubble dispersion system and their components.

He has relatively few methods for processing particles.

The problem can be solved if the bubbles can be completely eliminated through mechanisms such as dissolution or buoyancy (leaving no residual bubbles). If a degassing agent is used...

Methods that exclude microbubbles within a specific particle size range may allow for the differentiation of microbubbles from other solid particles and droplets. After elimination...

The concentrations of the aforementioned types can be compared using the particle concentration index to the pre-formation concentration. If elimination is successful, they will be identical, through this...

Comparison can lead to the development and optimization of elimination technologies.

This document aims to explain effective techniques for eliminating microbubbles in microbubble dispersion systems and their optimization.

GB/T 44626, "Methods for Eliminating Bubbles in Samples for Characterization by Microbubble Technology," aims to characterize microbubbles in microbubble dispersion systems.

The method for evaluating the elimination rate will be standardized and regulated, and will consist of two parts.

---Part 1: Evaluation Procedure. The purpose is to standardize the microbubble elimination procedure and evaluate the elimination rate in microbubble dispersion systems.

standardization.

---Part 2: Elimination Techniques. The purpose is to specify methods and corresponding operations for eliminating microbubbles in microbubble dispersion systems.

Procedures.

Microbubble technique for characterizing bubbles in samples Elimination Methods Part 2: Elimination Techniques

1 Scope

This document describes techniques for eliminating microbubbles in microbubble dispersion systems, and how to optimize the elimination process to achieve higher efficiency.

Besides efficiency.

This document applies to uncoated microbubbles (without membranes).

This document does not apply to encapsulated microbubbles (coatings).

Note: Microbubbles dispersed in a liquid are classified into coated microbubbles and non-coated microbubbles. Coated microbubbles refer to those whose surface/interface is almost completely coated.

A tiny bubble covering an object or a group of objects.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 41914.1 Microbubble Technology - General Rules for the Use and Measurement of Microbubbles - Part 1: Terminology (GB/T 41914.1-2022, ISO 20480-1:2017, IDT) GB/T 44626.1-2024 Methods for eliminating bubbles in samples for characterization using microbubble techniques - Part 1: Evaluation procedures (ISO 24261-1:2020, MOD)

3 Terms and Definitions

The terms and definitions defined in GB/T 41914.1 and the following terms and definitions apply to this document.

Liquids containing microbubbles.

[Source. GB/T 42843.1-2023, 3.1] 3.2 frequency the number of cycles per second.

Note: The unit is Hertz (Hz).

[Source. GB/T 12604.1-2020, 3.1.1] 3.3 Ultrasonic wave Sound waves with frequencies exceeding the range of human hearing (greater than 20kHz).

[Source. GB/T 12604.1-2020, 3.2.1]