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

GB/T 41914.3-2025

**Fine bubble technology - General principles for usage and
measurement of fine bubbles - Part 3: Methods for generating
fine bubbles**

微细气泡技术 微细气泡使用和测量通则 第3部分：微细气泡发生方法
(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 3 of GB/T 41914 "Microbubble Technology - General Rules for the Use and Measurement of Microbubbles". GB/T 41914 has been...

The following sections have been published.

---Part 1: Terminology;

---Part 2: Classification of Microbubble Properties;

---Part 3: Methods for generating microbubbles.

This document is modified to adopt ISO 20480-3:2021 "Microbubble technology - General rules for the use and measurement of microbubbles - Part 3: Microbubbles".

Bubble generation methods.

This document has undergone the following structural adjustments compared to ISO 20480-3:2021.

---4.1.1 and 4.1.2 of 4.1 correspond to 4.1 and 4.12 of ISO 20480-3:2021, respectively;

---4.2.1 and 4.2.2 of 4.2 correspond to 4.2 and 4.14 of ISO 20480-3:2021, respectively;

---4.5.1 and 4.5.2 of 4.5 correspond to 4.5 and 4.13 of ISO 20480-3:2021, respectively;

---4.12 corresponds to 4.15 in ISO 20480-3:2021;

---4.13 corresponds to 4.16 of ISO 20480-3:2021;

---4.16 corresponds to 4.17 of ISO 20480-3:2021.

The technical differences between this document and ISO 20480-3:2021, and the reasons therefor, are as follows.

---ISO 20480-1 and ISO 20480-2 have been replaced with the normatively referenced GB/T 41914.1 and GB/T 41914.2 (see section 3).

Chapter), to adapt to my country's national conditions;

---The term "critical micelles" has been removed; it is not used in this document.

---The term "critical micelle concentration" (see 3.7) has been added to improve the accuracy of what the term refers to;

---The content within the parentheses in the headings 4.1.1, 4.1.2, 4.2.1, 4.2.2, 4.5.1, and 4.5.2 has been removed to improve the accuracy of the information;

---The indexing description in Figure 2 has been changed to be consistent with the textual description of vortex system II (see 4.1.2);

---A microchannel reactor system (for generating monodisperse microbubbles) (see 4.14) has been added as a supplement to the microbubble generation method.

To adapt to my country's technological conditions and improve operability;

---An alcohol-water replacement/mixing system (see 4.15) has been added as a supplement to the microbubble generation method to adapt to my country's technical conditions.

Improve operability.

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

To date, there is no unified standard for the terminology, methods, and related techniques concerning the generation of microbubbles. The system for generating microbubbles...

Standardizing the terminology and related technologies is expected to have the following impacts on the market.

---The ease with which customers can purchase or use microbubble generation systems and technologies will be improved, which is expected to drive the microbubble industry.

develop;

---Terminology standardization will improve the universality of microbubble generation system performance; improvements in hardware and software performance are expected to drive the development of microbubble generation.

Market growth in the biological systems manufacturing industry;

The standardization of terminology will promote the development of the application market, create new business opportunities, and regulate the existing market.

In addition to existing microbubble technology standards, establishing "common clauses" that standardize the principles of microbubble generation will promote the development of microbubble generation systems.

The best application of the system, and the expected market expansion.

GB/T 41914, "General Rules for the Use and Measurement of Microbubbles in Microbubble Technology," aims to provide general guidelines for the application of microbubble technology in various fields.

The principles and requirements for standardization will be used, and it is proposed to consist of 5 parts.

---Part 1: Terminology. The purpose is to define the terminology and definitions used in the field of microbubble technology.

---Part 2: Classification of Microbubble Properties. The aim is to establish the mass of the liquid medium and the size and concentration of microbubbles.

Then and expression.

---Part 3: Methods for generating microbubbles. The purpose is to describe methods for generating microbubbles.

---Part 4: Microbubble Bed Terminology. The purpose is to define the relationship between microbubble beds and dissolved air flotation (DAF) bubble beds and their application in dissolved air flotation processes.

Terminology related to characteristics.

---Part 5: Terminology for Encapsulated Microbubbles. The aim is to establish a conceptual framework for encapsulated microbubbles.

Microbubble technology. General rules for the use and measurement of microbubbles Part 3: Methods for Generating Microbubbles

1 Scope

This document describes a method for generating microbubbles.

This document applies to the classification of microbubble generation methods.

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 41914.2 Microbubble Technology - General Rules for the Use and Measurement of Microbubbles - Part 2: Classification of Microbubble Properties (GB/T 41914.2-2022, ISO 20480-2:2018, MOD)