TECHNICAL SPECIFICATION

ISO/TS 24217-1

First edition
2023-07

Fine bubble technology — Guideline for indicating benefits —

Part 1: Requirements for systematic classification of effective functions of fine bubbles

Reference number
ISO/TS 24217-1:2023(E)

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Contents

Page

Foreword iv
Introduction v
1 Scope 1
2 Normative references 1
3 Terms and definitions 1
4 Effective functions of fine bubble technology 2
5 Application fields of fine bubble technology 4
6 Systematic classification of fine bubble technology from the viewpoints of application fields and the effective functions 5
7 Assignment of systematic classification in standards 6
8 Review and revision of standards 6
Annex A (informative) **Brief history of micro bubble technology** 7
Annex B (informative) **Brief history of ultrafine bubble technology** 8
Bibliography 10

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Foreword

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This document was prepared by Technical Committee ISO/TC 281, *Fine bubble technology*.

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Introduction

Fine bubble technologies have been developed and introduced from the early 20th century. Especially, microbubbles have been actually introduced in various application areas such as the froth flotation, ultrasonic imaging, purification of contaminated water and the enhancement of growth of living things in the ocean. One reason of microbubble application is due to the visible character of microbubbles. Fine bubble technologies has been investigated academically since the late 20th century. As for the application of the ultrafine bubbles, investigation into their many usages has made great advances since the year 2000.

There have been various kinds of application technology of fine bubbles recently. The application fields include engineering application, environmental application, agro-aqua and food application and medical, living and cosmetic application.

From the viewpoints of effective functions of fine bubble technology, there are various kinds of effective functions. They include cleaning effect, water treatment effect, sterilizing promotion effect, growth promotion effect, lubrication effect, control of chemical reaction, improvement in food quality and control of material processing.

If the systematic classification of fine bubble technology from the viewpoints of the application fields and the effective functions has been established, the identification of each fine bubble technology is possible to be made, and be classified in the matrix and furthermore, the extension of the other application are imagined.

Therefore, the International Standards are made for the systematic classification of fine bubble technology from the viewpoints of application fields and the effective functions.

This document provides a path for fine bubble suppliers to contribute properly to the various application fields. Furthermore, by showing to fine bubble users and potential customers, it will be able to help them to bring the effective functions to the other important applications.

In addition, this document bears a guideline for standards developers to judge when expressing the contents of application fields and the effective functions of fine bubble technology and is not subject to the conformity assessment.

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