



BSI Standards Publication

Fine bubble technology — Evaluation method for determining gas content in fine bubble dispersions in water

Part 1: Oxygen content

National foreword

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The UK participation in its preparation was entrusted to Technical Committee LBI/50, Fine Bubble Technology (FBT).

A list of organizations represented on this committee can be obtained on request to its committee manager.

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International
Standard

ISO 7383-1

**Fine bubble technology —
Evaluation method for determining
gas content in fine bubble
dispersions in water —**

**Part 1:
Oxygen content**

*Technologie des fines bulles — Méthode d'évaluation pour
déterminer la teneur en gaz dans les dispersions de fines bulles
dans l'eau —*

Partie 1: Teneur en oxygène

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Foreword

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

A list of all parts in the ISO 7383 series can be found on the ISO website.

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Introduction

Fine bubble dispersion in water has been used in various industries in recent years. Particularly in the fishery and food-processing industries, fine bubble technology is widely accepted as means for controlling dissolved oxygen level. For example, air fine bubbles are used to prevent oxygen depletion in the water of aquafarm and nitrogen fine bubbles are applied to reduce oxidization of fresh fish fillet.

The determination of the oxygen content in water is necessary to monitor the quality of object to be controlled by fine bubble dispersion in water. In the measurement of the oxygen content in fine bubble dispersion in water, however, attention should be paid to the possibility that the presence of fine bubbles themselves influences the measurement results.

In the case of air microbubble, air inside the bubbles is being dissolved during their slow floatation resulting in the increase in the oxygen content when oxygen is not oversaturated. In contrast, ultrafine bubbles (UFBs) have little influence on the oxygen content because the total amount of oxygen in UFBs is negligibly small compared to the intrinsic dissolved oxygen content in raw water. Furthermore, there is a possibility that the precipitation of visible bubbles on the surface of oxygen sensor, which is originated from dissolved gas, influences its measurement result.

Therefore, to evaluate the oxygen content of fine bubble dispersion in water, the state of bubbles in a sample water during the measurement is figured out.

This document is intended to specify the evaluation method of the oxygen content in fine bubble dispersion in water by three measurement methods: optical sensor, electrochemical probe and iodometric methods, which are widely accepted in industries. The standardized evaluation method for the oxygen content enables easy and solid comparison among fine bubble dispersion in various states.