



International
Standard

ISO 7428-1

Fine bubble technology — Domestic applications —

**Part 1:
Assessment of showerhead
devices by evaluating size and
concentration indices of generated
fine bubbles**

Technologie des fines bulles — Applications domestiques —

*Partie 1: Évaluation des dispositifs avec pommes de douche par
évaluation des indices de concentration et de la taille des fines
bulles générées*

**First edition
2024-05**



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Published in Switzerland

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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 7428 series can be found on the ISO website.

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Introduction

Fine bubble technology has recently seen growth in its application to markets such as cleaning, water treatment, agriculture, aquaculture and biomedical fields. To clarify the efficacy and the efficiency of fine bubbles, the characteristics of fine bubbles should be evaluated accurately. The most important characteristics of fine bubbles are the number or volume concentration and size indices of the fine bubbles produced by the fine bubble generating systems.

Above all, fine bubble showerhead devices have been extensively used as most popular fine bubble generating devices at home. Therefore, standardization of evaluation for fine bubble showerhead device should be accelerated to maintain the reputation of fine bubble technology as an advanced technology used for consumer products all over the world.

The evaluation method for size and concentration indices of fine bubbles is the basis for fair and appropriate business of fine bubble showerhead devices, which can introduce the dissemination of fine bubble products.

Fine bubble technology — Domestic applications —

Part 1:

Assessment of showerhead devices by evaluating size and concentration indices of generated fine bubbles

1 Scope

This document specifies the evaluation method for size and concentration indices of fine bubbles generated from the fine bubble showerhead device. It is only applicable to fine bubble dispersion in water generated from fine bubble showerhead devices using air. It describes the sampling method for fine bubble dispersion in water from the fine bubble showerhead devices into the retention container and the measurement procedure of size and concentration indices.

NOTE The discharging drive force for fine bubble showerhead devices is applied using a pump or water pressure. Therefore, the test of the subject device is performed under environmental conditions including such a practical environment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20480-1, *Fine bubble technology — General principles for usage and measurement of fine bubbles — Part 1: Terminology*

ISO 20298-1, *Fine bubble technology — Sampling and sample preparation for measurement — Part 1: Ultrafine bubble dispersion in water*

ISO 21910-1, *Fine bubble technology — Characterization of microbubbles — Part 1: Off-line evaluation of size index*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20480-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

fine bubble showerhead device

device driven by the outer water pressure and applied to discharge fine bubble dispersion in water into the air or water in the form of a spray or shower of water droplets