

TECHNICAL SPECIFICATION



Measurement of cavitation noise in ultrasonic baths and ultrasonic reactors

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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BATHS AND ULTRASONIC REACTORS****FOREWORD**

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Full information on the voting for the approval of this Technical Specification can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

Terms in **bold** in the text are defined in Clause 3.

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INTRODUCTION

Ultrasonically induced **cavitation** is used frequently for immersion cleaning in liquids. There are two general classes of ultrasonically induced cavitation. **Transient cavitation** is the rapid collapse of bubbles. **Stable cavitation** refers to persistent pulsation of bubbles as a result of stimulation by an ultrasonic field. Both **transient cavitation** and **stable cavitation** may create significant localized streaming effects that contribute to cleaning. **Transient cavitation** additionally causes a localized shock wave that may contribute to cleaning and/or damage of parts. Both types of cavitation create acoustic signals which may be detected and measured with a **hydrophone**. This document provides techniques to measure and evaluate the degree of cavitation in support of validation efforts for ultrasonic cleaning tanks and cleaning equipment, as used, for example, for the purposes of industrial process control or for hospital sterilization.

MEASUREMENT OF CAVITATION NOISE IN ULTRASONIC BATHS AND ULTRASONIC REACTORS

1 Scope

This document, which is a Technical Specification, provides a technique of measurement and evaluation of ultrasound in liquids for use in cleaning devices and equipment. It specifies

- the cavitation measurement at $2,25f_0$ in the frequency range 20 kHz to 150 kHz, and
- the cavitation measurement by extraction of broadband spectral components in the frequency range 10 kHz to 5 MHz.

This document covers the measurement and evaluation of the cavitation, but not its secondary effects (cleaning results, sonochemical effects, etc.).

2 Normative references

There are no normative references in this document.