



TECHNICAL SPECIFICATION



Measurement of cavitation noise in ultrasonic baths and ultrasonic reactors

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 List of symbols	11
5 Measurement equipment	11
5.1 Hydrophone	11
5.1.1 General	11
5.1.2 Calibration of hydrophone sensitivity	12
5.1.3 Hydrophone properties	12
5.1.4 Hydrophone compatibility with environment	12
5.2 Analyser	13
5.2.1 General considerations	13
5.2.2 Specific measurement method: transient cavitation spectrum at $f = 2,25f_0$	14
5.2.3 Specific measurement method: broadband transient and stable cavitation spectra	14
5.3 Requirements for equipment being characterized.....	14
5.3.1 Temperature and chemistry compatibility with the hydrophone.....	14
5.3.2 Electrical interference	14
6 Measurement procedure	14
6.1 Reference measurements	14
6.1.1 Control of environmental conditions for reference measurements	14
6.1.2 Measurement procedure for reference measurements	15
6.2 Measurement procedures for in-situ monitoring measurements	15
Annex A (informative) Background	16
A.1 Cavitation in ultrasonic cleaning.....	16
A.2 Practical considerations for measurements	18
A.3 Measurement procedure in the ultrasonic bath.....	19
A.4 Characterization methods that do not utilize the acoustic spectrum.....	20
Annex B (normative) Cavitation measurement at $2,25f_0$	21
B.1 General.....	21
B.2 Measurement method	21
Annex C (informative) Example of cavitation measurement at $2,25f_0$	24
Annex D (normative) Cavitation measurement by extraction of broadband spectral components.....	25
D.1 Compensation for extraneous noise	25
D.2 Features of the acoustic pressure spectrum	25
D.3 Identification of the operating frequency f_0 and direct field acoustic pressure	26
D.3.1 Identification of the operating frequency f_0	26
D.3.2 Fit to primary peak (direct field)	26
D.3.3 Determination of RMS direct field acoustic pressure	26
D.3.4 Validation	26
D.4 Identification of stable and transient cavitation component.....	26
D.4.1 Subtraction of direct field component of spectrum.....	26

D.4.2	Determination of stable cavitation component	26
D.4.3	Determination of transient cavitation component	26
D.4.4	Validation	27
Bibliography.....		28
Figure A.1	– Typical setup of an ultrasonic cleaning device	16
Figure A.2	– Spatial distribution of the acoustic pressure level in water in front of a 25 kHz transducer with reflections on all sides of the water bath (0,12 m × 0,3 m × 0,25 m)	17
Figure A.3	– Typical Fourier spectrum for sinusoidal ultrasound excitation above the cavitation threshold at an operating frequency of 35 kHz	17
Figure A.4	– Sketch of cavitation structure under the water surface at an operating frequency of 25 kHz	18
Figure A.5	– Typical rectangular ultrasound signal with a frequency of 25 kHz and 50 Hz double half wave modulation.....	19
Figure B.1	– Block diagram of the measuring method of the cavitation noise level L_{CN}	22
Figure C.1	– Power dependency of the cavitation noise level L_{CN}	24
Figure D.1	– Schematic representation of acoustic pressure spectrum $P_{RMS}(f)$	25

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MEASUREMENT OF CAVITATION NOISE IN ULTRASONIC BATHS AND ULTRASONIC REACTORS

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Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

Technical Specification IEC 63001 has been prepared by IEC technical committee 87: Ultrasonics.

The text of this Technical Specification is based on the following documents:

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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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- transformed into an International Standard,
- reconfirmed,
- withdrawn,
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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.