

STANDARD

10375

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**Non-destructive testing — Ultrasonic
inspection — Characterization of search
unit and sound field**

*Essais non destructifs — Contrôle par ultrasons — Caractérisation des
traducteurs et des champs acoustiques*



Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10375 was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 3, *Acoustical methods*.

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Introduction

In ultrasonic non-destructive testing, sound pulses are used for detecting and evaluating imperfections or flaws in a material. To obtain reproducible flaw information, the generation, production and reception of the ultrasonic pulses must be properly specified, controlled and characterized. To ensure the accuracy and repeatability of the ultrasonic examination, a knowledge of the characteristics of the search unit or probe (also known as the transducer), as well as the associated sound field and the testing procedures used, is required.

For a complete description or proper selection of an ultrasonic search unit or probe, a commonly accepted set of characteristics of the search unit must be specified. This standard establishes techniques to be used in the laboratory for characterizing ultrasonic search units with parameters such as centre frequency, bandwidth, near-field length, half-angle of beam spread, depth of field, beam diameter and focal length. This standard specifies means for measuring the characteristics of both immersion and contact search units used for the inspection of materials. This standard also provides guides for obtaining parameters measured in the free field and by pulse-echo measurement. Examples of calculations of these parameters are given.

This standard provides techniques and procedures to achieve the following objectives:

- a) to select and specify search unit or probe characteristics;
- b) to check and ensure consistency of search unit performance over its life span;
- c) to facilitate selection of identical search units or equivalent alternatives;
- d) to provide a base for the comparison of results obtained using different instruments, equipment settings, operators, operating times and periods.