



**International
Standard**

ISO 5577

**Non-destructive testing —
Ultrasonic testing — Vocabulary**

Essais non destructifs — Contrôle par ultrasons — Vocabulaire

**Third edition
2025-09**

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 3, *Ultrasonic testing*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 138, *Non-destructive testing*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 5577:2017), which has been technically revised.

<https://standards.iteh.ai/catalog/standards/iso/4fb9f233-841f-44d3-80ac-862d5d43b843/iso-5577-2025>
The main changes are as follows:

- terms pulse overshoot, main lobe, main beam, side lobe, diffraction, contact surface, echo amplitude, signal amplitude, and full screen height have been added;
- the term "plate wave" was replaced by "Lamb wave";
- some definitions and figures have been revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Non-destructive testing — Ultrasonic testing — Vocabulary

1 Scope

This document defines the terms used in ultrasonic non-destructive testing and forms a common basis for standards and general use.

This document does not cover specific terms used in ultrasonic testing with arrays.

NOTE Terms used in ultrasonic testing with arrays are defined in ISO 23243.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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/>

4 Terms related to frequencies, waves and pulses

4.1 Frequencies

4.1.1

frequency

number of cycles per second

Note 1 to entry: Expressed in Hertz (Hz).

4.1.2

nominal frequency

probe frequency

frequency (4.1.1) of the probe (6.2.1) as stated by the manufacturer

4.1.3

test frequency

effective ultrasonic frequency of a system used to test a material or object

4.1.4

amplitude spectrum

distribution of *amplitude (4.2.2)* in relation to *frequency (4.1.1)*

Note 1 to entry: See [Figure 1](#).

4.1.5

centre frequency

arithmetic mean of the upper and lower *cut-off frequencies (4.1.7)*

Note 1 to entry: See [Figure 1](#).

4.1.6

peak frequency

frequency (4.1.1) at which the maximum amplitude is observed

Note 1 to entry: See [Figure 1](#).

4.1.7

cut-off frequency

frequency (4.1.1) at which the *amplitude* (4.2.2) of the transmitted signal has dropped by a specified amount from the amplitude at *peak frequency* (4.1.6)

Note 1 to entry: See [Figure 1](#).

Note 2 to entry: The transmitted signal can drop e. g. by 3 dB.

4.1.8

bandwidth

width of the *amplitude spectrum* (4.1.4) between the upper and lower *cut-off frequency* (4.1.7)

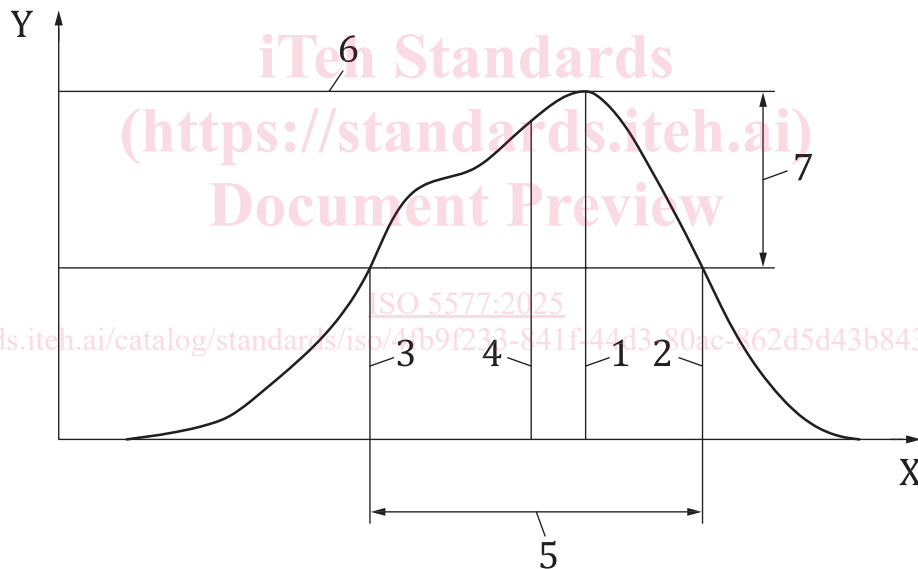
Note 1 to entry: See [Figure 1](#).

4.1.9

relative bandwidth

ratio of the *bandwidth* (4.1.8) to the *centre frequency* (4.1.5)

Note 1 to entry: The relative bandwidth is expressed in per cent.



Key

X	frequency
Y	amplitude
1	peak frequency
2	upper cut-off frequency
3	lower cut-off frequency
4	centre frequency
5	bandwidth at specified amplitude drop
6	peak amplitude
7	specified amplitude drop

Figure 1 — Amplitude spectrum and related terms

4.2 Waves and pulses

4.2.1

ultrasonic wave

any acoustic wave having a *frequency* (4.1.1) higher than the audible range of the human ear, generally taken as higher than 20 kHz

4.2.2

amplitude

absolute or relative measure of a sound wave's momentary magnitude

Note 1 to entry: The amplitude is not necessarily the maximum value, see *echo amplitude* (7.5.6).

4.2.3

phase

momentary condition of a vibration expressed as an arc measurement or an angle

4.2.4

wavelength

distance along the propagating direction between consecutive corresponding points of the same *phase* (4.2.3)

Note 1 to entry: See [Figure 3](#).

4.2.5

wavefront

continuous surface joining all the most forward points of an *ultrasonic wave* (4.2.1) that have the same *phase* (4.2.3)

4.2.6

time of flight

TOF

time it takes an ultrasonic pulse to travel from the transmitting transducer through the *test object* (7.2.1) to the receiving transducer, including the *delay path(s)* (6.2.9)

4.2.7

pulse

electrical or ultrasonic signal of short duration

4.2.8

pulse amplitude

maximum amplitude of a *pulse* (4.2.7)

Note 1 to entry: For rectified pulses (e. g. in an A-scan presentation), baseline-to-peak.

Note 2 to entry: For unrectified pulses, peak-to-peak.

4.2.9

pulse rise time

time taken for the amplitude of a *pulse* (4.2.7) to change from a specified lower level to a specified upper level

4.2.10

pulse duration

time interval between the leading and trailing edges of a *pulse* (4.2.7) measured at a specified level below the peak amplitude

4.2.11

pulse shape

diagramatic representation of the *amplitude* (4.2.2) of a *pulse* (4.2.7) as a function of time

4.2.12

pulse envelope

contour of a *pulse shape* (4.2.11) including all the peaks in terms of *amplitude* (4.2.2) and time