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Non-destructive testing – Ultrasonic testing – Vocabulary (ISO 5577:2017)



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Europastandarden EN ISO 5577:2017 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 5577:2017.

Denna standard ersätter SS-EN 1330-4:2010, utgåva 2.

The European Standard EN ISO 5577:2017 has the status of a Swedish Standard. This document contains the official version of EN ISO 5577:2017.

This standard supersedes the Swedish Standard SS-EN 1330-4:2010, edition 2.

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Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Oförstörande provning, SIS/TK 125.

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EUROPEAN STANDARD

EN ISO 5577

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2017

ICS 01.040.19; 19.100

Supersedes EN 1330-4:2010

English Version

Non-destructive testing - Ultrasonic testing - Vocabulary (ISO 5577:2017)

Essais non destructif - Contrôle par ultrasons -
Vocabulaire (ISO 5577:2017)

Zerstörungsfreie Prüfung - Ultraschallprüfung -
Terminologie (ISO 5577:2017)

This European Standard was approved by CEN on 28 December 2016.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN ISO 5577:2017) has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" in collaboration with Technical Committee CEN/TC 138 "Non-destructive testing" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2017, and conflicting national standards shall be withdrawn at the latest by August 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 5577:2017 has been approved by CEN as EN ISO 5577:2017 without any modification.

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 terms used in ultrasonic testing with phased arrays.

NOTE Terms for phased array ultrasonic testing are defined in EN 16018.

2 Normative references

There are no normative references in this document.

3 Terms related to frequencies, waves and pulses

For the purposes of this document, the terms and definitions given in this clause and those given in Clauses 4, 5 and 6 for sound, test equipment and ultrasonic testing apply.

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

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

3.1 Frequencies

3.1.1

frequency

number of cycles per second

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

3.1.2

nominal frequency

probe frequency

frequency (3.1.1) of the *probe* (5.2.1) as stated by the manufacturer

3.1.3

test frequency

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

3.1.4

frequency spectrum

distribution of *amplitude* (3.2.2) in relation to *frequency* (3.1.1)

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

3.1.5

centre frequency

arithmetic mean of the cut-off frequencies

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

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3.1.6

peak frequency

frequency (3.1.1) at which the maximum amplitude is observed

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

3.1.7

cut-off frequency

frequency (3.1.1) at which the amplitude (3.2.2) of transmitted signal has dropped by a specified amount from the amplitude at peak frequency (3.1.6), for example, by 3 dB

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

3.1.8

bandwidth

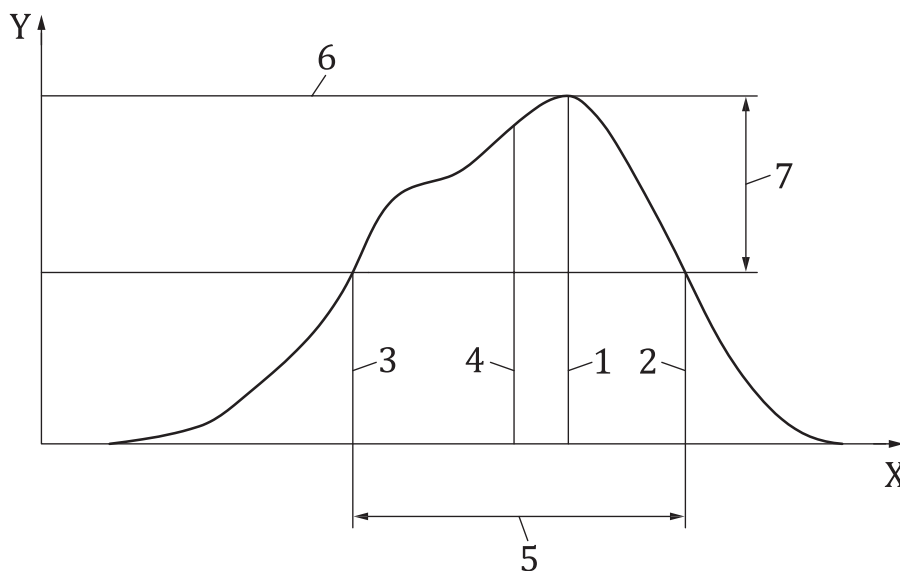
width of the frequency spectrum (3.1.4) between the upper and lower cut-off frequency

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

3.1.9

relative bandwidth

ratio of the bandwidth (3.1.8) to the centre frequency (3.1.5), in per cent



Key

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

Figure 1 — Terms related to frequency and bandwidth

3.2 Waves and pulses

3.2.1

ultrasonic wave

any acoustic wave having a frequency (3.1.1) higher than the audible range of the human ear, generally taken as higher than 20 kHz

3.2.2**amplitude**

absolute or relative measure of a sound wave's magnitude

3.2.3**phase**

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

3.2.4**wavelength**

distance between consecutive corresponding points of the same *phase* ([3.2.3](#))

Note 1 to entry: See [Figure 2](#).

3.2.5**wavefront**

continuous surface joining all the most forward points of a wave that have the same *phase* ([3.2.3](#))

3.2.6**time-of-flight****TOF**

time it takes an ultrasonic pulse to travel from the transmitter probe through the test object to the receiver probe

3.2.7**pulse**

electrical or ultrasonic signal of short duration

3.2.8**pulse amplitude**

maximum amplitude of a *pulse* ([3.2.7](#)) (peak-to-peak)

Note 1 to entry: For rectified pulses (A-scan), baseline-to-peak.

3.2.9**pulse rise time**

time taken for a *pulse amplitude* ([3.2.8](#)) to change between two defined levels

3.2.10**pulse duration**

time interval between the leading and trailing edges of a *pulse* ([3.2.7](#)) measured at a defined level below the peak amplitude

3.2.11**pulse shape**

diagrammatic representation of the *amplitude* ([3.2.2](#)) of a *pulse* ([3.2.7](#)) as a function of time

3.2.12**pulse envelope**

contour of a *pulse shape* ([3.2.11](#)) including all the peaks in terms of *amplitude* ([3.2.2](#)) and time

3.2.13**pulse energy**

total energy within a *pulse* ([3.2.7](#))

3.2.14**pulse reverberation**

undesirable vibration at the beginning and end of a *pulse* ([3.2.7](#)) above a defined level

3.2.15**broad-band pulse**

pulse ([3.2.7](#)) in which the *relative bandwidth* ([3.1.9](#)) is $\geq 65\%$