PD CEN ISO/TS 19397:2018

BSI Standards Publication

Determination of the film thickness of coatings using an ultrasonic gage (ISO/TS 19397:2015)

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The UK participation in its preparation was entrusted to Technical Committee STI/10, Test methods for paints.

A list of organizations represented on this committee can be obtained on request to its secretary.

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TECHNICAL SPECIFICATION

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English Version

Determination of the film thickness of coatings using an ultrasonic gage (ISO/TS 19397:2015)

Détermination de l'épaisseur du feuil de revêtement par mesurage ultrasons (ISO/TS 19397:2015)

Bestimmung der Schichtdicke von Beschichtungen mittels Ultraschallmessung (ISO/TS 19397:2015)

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Foreword

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The committee responsible for this document is ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

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TECHNICAL SPECIFICATION **ISO/TS 19397:2015**

Determination of the film thickness of coatings using an ultrasonic gage

1 Scope

This Technical Specification describes a method for determining the film thickness of coatings on metallic and non-metallic substrates using an ultrasonic gauge.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4618, *Paints and varnishes — Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and the following apply.

3.1
ultrasonic wave
acoustic wave having a frequency higher than the range of audibility of the human ear, generally taken as higher than 20 kHz

[SOURCE: EN 1330-4:2010, 3.1.1]

3.2
longitudinal wave
compressional wave
wave in which the particle motion in a material is in the same direction as the propagation of the wave

[SOURCE: EN 1330-4:2010, 2.3.1]

3.3
echo
ultrasonic pulse reflected to the probe

[SOURCE: EN 1330-4:2010, 5.5.2]

3.4
echo height
echo amplitude
height of an *echo* (3.3) indication on the screen

[SOURCE: EN 1330-4:2010, 5.5.5]

3.5
ultrasonic impulse
short-lived ultrasound signal

3.6
ultrasonic sensor
ultrasonic probe
device for sending and receiving *ultrasonic waves* (3.1), mostly based on piezoelectric materials

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3.7
acoustic impedance
Z
product of sound velocity and density of a material

3.8
reflection coefficient
ratio of total reflected sound pressure to incident sound pressure at a reflecting surface

[SOURCE: EN 1330-4:2010, 3.4.11]

Note 1 to entry: For a wave the reflection coefficient *R* is calculated from the *acoustic impedances* (3.7) Z_1 and Z_2 of the bordering media, for which 1 is the medium of the incoming sound:

$$R = \frac{Z_2 - Z_1}{Z_2 + Z_1}$$

For a negative reflection coefficient the *phase* (3.9) of the reflected signal is changed by 180°.

3.9
phase
fraction of a complete wave cycle, expressed as an angle

[SOURCE: EN 1330-4:2010, 2.2.5]

3.10
interface
boundary between two media, in acoustic contact, having different *acoustic impedances* (3.7)

[SOURCE: EN 1330-4:2010, 3.4.1]

3.11
sound path travel time
time needed for the sound path travel distance

[SOURCE: EN 1330-4:2010, 5.6.3]

3.12
couplant
coupling film
medium interposed between the probe and the object under examination to enable the passage of *ultrasonic waves* (3.1) between them

[SOURCE: EN 1330-4:2010, 5.3.2]

3.13
A-scan presentation
display of the ultrasonic signal in which the X-axis represents the time and the Y-axis the amplitude

[SOURCE: EN 1330-4:2010, 5.5.16]

Note 1 to entry: Ultrasonic film thickness measuring devices, besides the numerical values of the obtained film thicknesses, normally display A-scans for checking the echo forms and echo sequences on a screen as well.

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