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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 37361-2019

**Determination of the film thickness - Ultrasonic thickness
gauge method**

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1 --- spruce veneer plywood;	
2 --- polished spruce;	
3 --- eucalyptus veneer plywood;	
4 --- polished eucalyptus;	
1 --- aluminum;	
2 --- carbon fiber composite;	
3 ---PP (polypropylene);	
4 ---SMC (sheet molding compound);	
5 --- steel;	
1 --- aluminum;	
2 --- carbon fiber composite;	

- 3 ---PP (polypropylene);
- 4 ---SMC (sheet molding compound);
- 5 --- steel;

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method equivalent to ISO /T S19397.2015 "Using ultrasonic thickness gauge to determine the film thickness of the coating".

The documents of our country that have a consistent correspondence with the international documents referenced in this standard are as follows.

---GB/T 5206-2015 Terms and definitions of paints and varnishes (ISO 4618.2014, IDT).

This standard has made the following editorial changes.

--- In order to coordinate with the existing paint film thickness measurement standard, the name was changed to "measurement of film thickness ultrasonic thickness gauge method".

This standard was proposed by the China Petroleum and Chemical Industry Federation.

This standard is under the jurisdiction of the National Coatings and Pigments Standardization Technical Committee (SAC/TC5).

This standard was drafted. Jiangsu Lanling Polymer Materials Co., Ltd., Guangzhou Synthetic Materials Research Institute Co., Ltd.

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1 Scope

This standard specifies a method for determining the film thickness of coatings on metal and non-metal substrates using ultrasonic thickness gauges.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document.

For the undated references, the latest version (including all amendments) applies to this document.

ISO 4618 Paint and varnish terms and definitions
(Paintsandvarnishes-Termsanddefinitions)

3 Terms and definitions

The following terms and definitions defined by ISO 4618 apply to this document.

3.1

Ultrasonic ultrasonicwave

Sound waves with a frequency higher than the hearing range of the human ear, usually with a frequency higher than 20 kHz.

[EN1330-4.2010, definition 3.1.1]

3.2

Longitudinal wave

Compressed wave compressionalwave

The vibration direction of the medium particle is the same as the wave propagation direction.

[EN1330-4.2010, definition 2.3.1]

3.3

Echo echo

Ultrasonic pulse reflected to the probe.

[EN1330-4.2010, definition 5.5.2]

3.4

Echo height echoheight

Echo amplitude echoamplitude

The echo (3.3) height displayed on the screen.

[EN1330-4.2010, definition 5.5.5]

3.5

Ultrasound pulse ultrasonic impulse

Ultrasonic signal with short duration.

3.6

Ultrasonic sensor ultrasonic sensor

Ultrasonic probe ultrasonic probe

A device for transmitting and receiving ultrasonic waves (3.1), mainly using piezoelectric materials.

3.7

Acoustic impedance acoustic impedance

The product of the density of the material and the speed of sound.

3.8

Reflection coefficient

The ratio of the total reflected sound pressure to the incident sound pressure at the reflecting surface.

[EN1330-4:2010, definition 3.4.11]

Note. The reflection coefficient R of the wave is calculated by the acoustic impedance (3.7) Z_1 and the acoustic impedance (3.7) Z_2 of the boundary medium, where 1 is the medium of the incoming sound.

$R =$

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

If the reflection coefficient is negative, change the phase (3.9) of the reflected signal by 180° .

3.9

Phase phase

A position of a complete wave period, expressed as an angle.

[EN1330-4:2010, definition 2.2.5]

3.10

Interface