

ICS 19.100
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39241-2020

**Non-destructive testing. Ultrasonic testing. Transmission
technique**

Issued on: November 19, 2020

Implemented on: June 1, 2021

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

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

This standard uses the redrafting method to modify and adopt ISO 16823.2012 "Non-destructive testing ultrasonic testing penetration technology".

Compared with ISO 16823.2012, the main technical differences and their reasons are as follows.

---The description of the technical content focused on this standard has been added to facilitate the implementation of the standard (Chapter 1);

--- Regarding normative reference documents, this standard has made adjustments with technical differences to adapt to my country's technical conditions and adjustments.

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

* Replace ISO 5577 (see Chapter 3) with GB/T 12604.1 modified to adopt international standards;

* Deleted EN1330-4;

---The term "transmission attenuation technology" is added to clearly define the meaning of the term (Chapter 3);

---Based on theoretical derivation and verification, formula (1) is modified to facilitate the implementation of the standard;

---According to the current technology status, formula (3) has been added to facilitate the implementation of the standard.

This standard also made the following editorial changes.

--- Deleted the reference to the general standard of ultrasonic testing of industrial products

in the scope (Chapter 1);

---Adjusted the order of Table 1 and Table 2 according to the order in which the text is cited.

This standard was proposed and managed by the National Standardization Technical Committee for Nondestructive Testing (SAC/TC56).

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1 Scope

This standard specifies the general principles of ultrasonic testing penetration technology. Penetration technology is used for.

---Defect detection;

---Attenuation determination.

This standard applies to the detection of flat workpieces, such as flat plates and strips, and also applies to the detection of.

---The shape, size or direction is not conducive to the defects of the direct reflection method;

---High attenuation material;

---Thin workpieces.

The penetration technology specified in this standard focuses on the transmission attenuation technology based on the measurement of the signal attenuation after the ultrasonic penetrates the test piece.

2 Normative references

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

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

GB/T 12604.1 Non-destructive testing terminology Ultrasonic testing (GB/T 12604.1-2020, ISO 5577:2017, MOD)

3 Terms and definitions

The following terms and definitions defined in GB/T 12604.1 apply to this document.

3.1

Transmission attenuation technology

A detection technology based on measuring the attenuation of the signal after the ultrasonic penetrates the test piece.

Note. The measurement signal can be a bottom echo signal, a penetrating wave signal, or an echo signal reflected multiple times by the test piece.

4.1 Basic technology and typical configuration

There are two basic applications of transmission attenuation technology, one is the reflection detection technology using a single probe, the sound wave is from an object under the object

The surface or the bottom surface of the tested object reflects back, see Table 1a)~d). The other is the transmission attenuation technology using two probes, one probe is used for transmitting

Radio signal, another probe is used to receive the signal after penetrating the inspected part, see Table 1e)~h), straight probe or oblique probe can be used in this technique.

Transmission attenuation technology and its typical configuration are shown in Table 2.