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

GB/T 12604.1-2020

Replacing GB/T 12604.1-2005

Non-destructive testing - Terminology - Ultrasonic testing

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Foreword

GB/T 12604 "Terms of Non-destructive Testing" is divided into 11 parts:

- GB/T 12604:1 Non-destructive testing term Ultrasonic testing;
- GB/T 12604:2 Non-destructive testing term radiographic testing;
- GB/T 12604:3 Non-destructive testing terminology penetration testing;
- GB/T 12604:4 Nondestructive Testing Term Acoustic Emission Testing;
- GB/T 12604:5 Non-destructive testing terminology magnetic particle testing;
- GB/T 12604:6 Non-destructive testing term eddy current testing;
- GB/T 12604:7 Non-destructive testing term leak detection;
- GB/T 12604:8 Non-destructive testing term neutron testing;
- GB/T 12604:9 Non-destructive testing term infrared testing;

---GB/T 12604:10 Non-destructive testing terminology magnetic memory testing;

---GB/T 12604:11 Non-destructive testing term X-ray digital imaging testing:

This part is Part 1 of GB/T 12604:

This section was drafted in accordance with the rules given in GB/T 1:1-2009:

This part replaces GB/T 12604:1-2005 "Non-destructive Testing Terminology Ultrasonic Testing", compared with GB/T 12604:1-2005, the main

The main technical changes are as follows:

---Adjust the overall structure of the standard in accordance with ISO 5577:2017: The terms are divided into techniques related to "frequency", "wave" and "pulse":

There are four categories of language, terms related to "sound", terms related to "testing equipment", and terms related to "ultrasonic testing":

The medium is subdivided into subcategories, and each subcategory contains specific terms;

---Deleted some terms and definitions, see Appendix C for details;

---Added some new terms and definitions, see Appendix D for details;

---Modified some terms and definitions, see Appendix E for details:

This part uses the redrafting method to modify and adopt ISO 5577:2017 "Non-destructive Testing Ultrasonic Testing Terminology":

Compared with ISO 5577:2017, this part has many structural adjustments: Appendix A lists the chapters of this part and ISO 5577:2017:

Article number comparison list:

Compared with ISO 5577:2017, this part has technical differences: The clauses related to these differences have been passed on the outer margins:

The vertical single line (|) is marked, and Appendix B gives a list of the corresponding technical differences and reasons:

This section also made the following editorial changes:

---Modified the standard name to be consistent with the existing series of standards;

---The foreword of the international standard is deleted;

--- Increased the scope of standard application;

---Delete the suspension section under 6:6;

---Informative Appendix C has been added, which gives the deleted terms and definitions

compared with GB/T 12604:1-2005;

---Informative Appendix D has been added, giving new terms and definitions compared with GB/T 12604:1-2005;

---Informative appendix E is added, which gives modified terms and definitions compared with GB/T 12604:1-2005:

This part is proposed and managed by the National Standardization Technical Committee for Nondestructive Testing (SAC/TC56):

Drafting organizations of this section: China Aviation Development Beijing Institute of Aeronautical Materials, Shanghai Institute of Materials, Aynotec Testing Technology (Shanghai) Co., Ltd:

Co., Ltd., China Special Equipment Inspection and Research Institute, Wuhan Zhongke Innovation Technology Co., Ltd., Institute of Metal Research, Chinese Academy of Sciences,

Institute of Acoustics:

1 Scope

This part of GB/T 12604 specifies the terms used for ultrasonic testing methods as a common basis for standards and general use: Headquarters

The points do not include the terminology used in ultrasonic phased array testing:

This section applies to ultrasonic testing:

Note: Ultrasonic phased array detection terms are defined in EN16018:

2 Normative references

There are no normative references in this section:

3 Terms related to "frequency", "wave" and "pulse"

3:1 Frequency

3:1:1

Frequency

The number of cycles per second:

Note: Expressed in Hertz (Hz):

3:1:2

Nominal frequency

The probe (5:2:1) frequency (3:1:1) marked by the manufacturer:

3:1:3

Test frequency

The detection system detects the effective ultrasonic frequency of the material or test piece:

3:1:4

Frequency spectrum

The distribution of amplitude (3:2:2) with respect to frequency (3:1:1):

Note: See Figure 1:

3:1:5

Center frequency

The arithmetic average of the upper and lower cutoff frequencies:

Note: See Figure 1:

3:1:6

Peak frequency

The frequency (3:1:1) corresponding to the maximum amplitude in the frequency spectrum (3:1:4):

Note: See Figure 1:

3:1:7

Cut-off frequency

The frequency (3:1:1) corresponding to the amplitude (3:2:2) when the amplitude is lower than the peak frequency (3:1:6) to a certain extent (such as 3dB):

Note: See Figure 1: