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**NATIONAL STANDARD**  
**OF THE PEOPLE'S REPUBLIC OF CHINA**  
**中华人民共和国国家标准**

**GB/T 6519-2000**

**Replace GB/T 6519-1986**

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**Process for Ultrasonic Inspection of**  
**Wrought Aluminum Alloy Products**  
**变形铝合金产品超声波检验方法**

**Issued on: June 9, 2000**

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**Issued by**

**the State Bureau of Quality and Technical Supervision**

## Foreword

This standard is a revised edition for "Ultrasonic Testing Method for Products of Wrought Aluminum Alloy" (GB / T 6519-1986), which is not equivalent to ASTM B594: 1997 "Standard Practice for Ultrasonic Inspection of Aluminum-Alloy Wrought Products for Aerospace Applications" issued by American Society for Testing and Materials.

Some great changes exist in the following contents of the new edition:

- "Foreword" and three chapters of "Scope" and "Normative References" were added.

The testing specification was enlarged and the quality acceptance grade was upgraded.

- Technical terms comply with "Terminology for Nondestructive Testing-Ultrasonic Testing" (GB / T 12604-1); "Practice for Evaluating Performance Characteristics of A Scope Ultrasonic Pulse - Echo Testing Systems" (JB/T 9214-1999) was defined as the standard for instrument testing.

- Scanning velocity, scanning spacing and inspection was revised.

- The data and construction drawing of r cylindrical surface test block were added; the construction form of original surface test block was changed.

This standard will replace GB / T 6519-1986 since the implementation date.

This standard was proposed by the State Bureau of Nonferrous Metal Industry.

This standard is under the jurisdiction of China Institute of Weights and Measures Quality of Nonferrous Metal Industry.

Northeast Light Alloy Co., Ltd. is responsible for the drafting of this standard.

Chief drafting staffs of this standard: Chen Zhiqiang, Zhang Yuping, Tang Fengming, Zhang Xiaoshuang and Zhang Li.

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# 1 Scope

## 1.1 Subject contents

This standard specifies the method to inspect wrought aluminum alloy by ultrasonic pulse reflection technology. The contents include the requirements for inspectors and inspection devices, inspection procedures, acceptance quality grade, inspection record and report, etc.

## 1.2 Application scope

This standard is applicable to the Ultrasonic inspection of such wrought aluminum alloy products as the following plates, section bars, forgings, bars and their spare parts. It is not applicable to the Ultrasonic inspection of casts, welding parts and sandwich construction.

Plates- the sawed and trimmed rolling material in a thickness larger than or equal to 10mm and possessing a rectangular cross section.

Section bars - the variety except for sheets, thick plates, shaped rods and wire rods; wrought materials whose cross-sectional area is larger than or equal to 70cm<sup>2</sup>, wall thickness is larger than or equal to 10mm and the length is quite larger than the cross-sectional area line.

Forgings - a general term for die forgings, free forgings and ring forgings. The forgings whose wall thickness is larger than or equal to 10mm and the maximum thickness is less than 300mm.

Rods - a general term for squeezed circular, square and hexagonal rough rods or finished rods with the diameter of the incircle larger than or equal to 25.0 mm.

# 2 Normative References

The following standard contains provisions which, through reference in this text, constitute provisions of this standard. At time of publication, the editions indicated were valid. All standards are subject to revision, and all parties coming to an agreement according to this standard are encouraged to study whether the latest editions of these documents are applicable.

GB/T 12604.1-1990 Terminology for Nondestructive Testing-Ultrasonic Testing

GJB 1580-1993 Ultrasonic Inspection of Wrought Metal - Cylindrical Surface Inspection

JB/T 9214-1999 Practice for Evaluating Performance Characteristics of A Scope Ultrasonic Pulse - Echo Testing Systems

# 3 Principle

**3.1** The ultrasonic inspection is scan the inspected work piece with a bunch of longitudinal wave. If this longitudinal wave comes across the interface of different acoustical impedance medium, sound energy will be reflected back then the defect signal or interface signal will be displayed on the fluorescent screen of the inspection device to indicate its position and



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