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

XB/T 619-2015

**Chemical analysis methods of ion type rare earth ore -
Determination of total rare earth ion phase
(English Translation)**

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Foreword

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

This Standard replaces YB/T 4083-2000. Compared with YB/T 4083-2000, the main technical changes are as follows.

- Modified the "the eddy current flaw detector must get assay approval from relevant department" to be "the eddy current flaw detector shall be calibrated" (see 4.1);
- Added making requirements for the contrast samples of rotating steel pipe/flat coil eddy current flaw-detection systems (see 5.1);
- Added the test for circumferential sensitivity's difference (fluctuation of circumferential sensitivity) of rotating steel pipe/flat coil eddy current flaw-detection system (see 6.2);
- Added the stipulation for test report (see 7).

This Standard was proposed by China Iron and Steel Association.

This Standard shall be under the jurisdiction of the National Technical Committee of Steel Standardization (SAC/TC183).

Drafting organizations of this Standard. Central Iron & Steel Research Institute, EDDYSUN (Xiamen) Electronic Co., Ltd. AND China Metallurgical Information and Standardization Institute.

Main drafters of this Standard. Zhang Jianwei, Fan Hong, Zhang Ke, Lin Junming, Shen Haihong, Ma Guohua, Zhang Wenjie, Jia Huiming AND Dong Li.

This Standard replaces the previous standards as follows.

- YB/T 4083-1992, YB/T 4083-2000.

Measurement Method of Comprehensive

Properties for Automatic Eddy Current

Flaw Detection System for Steel Tubes

1 Scope

This Standard specifies the "test conditions, contrast samples, test items, test methods, and minimum standards for performance indicators that should be achieved for automatic eddy current flaw-detection system of steel tubes (it is generally composed by eddy current flaw detector, detection coil, magnetic saturation device AND mechanical transmission device)" AND content of test report.

This Standard applies to comprehensive performance's test of steel-tube-through-type OR rotating steel pipe/flat coil type automatic eddy current flaw-detection system. For comprehensive performance's test of steel rod automatic eddy current system, or magnetic flux leakage detection system, AND automatic eddy current flaw-detection system for steel tube and other magnetic flux leakage detection system for steel tube, this Standard can be used for reference during the usage.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 7735 Steel Tubes - The Inspection Method on Eddy Current Test

GB/T 12604.6 Non-destructive Testing - Terminology - Terms Used in Eddy Current Testing

YB/T 143 Measurement Method of the Error of Signal Amplitude for Eddy Current

Flaw Detectors

YB/T 145 Die Casting and Size Measurement Method of Artificial Defects on the Reference Sample Pipes
circumferential sensitivity)

6.2.1 Eddy current flaw-detection system for steel-tube-through type coil

Adjust the flaw-detection system to the normal flaw-detection state; according to the speed of the normal flaw-detection, adjust the sensitivity; use the contrast sample shown in Figure 1 to make the three artificial holes in the middle part just alarm, and record the dB value of the gainer or attenuator, at this time; adjust the sensitivity of the flaw-detection, and record the dB value when the 3 artificial holes begin not to alarm. The maximum difference between them is the difference of circumferential sensitivity. The absolute value of this difference shall not be greater than 3dB. For the steel tube whose outer diameter is greater than or equal to 100mm, this absolute value shall not be greater than 4dB. Perform the test for 3 times consecutively, and if the results of the

6.2.2 Eddy current flaw-detection system for rotating flat coil

For the flaw-detection system, whose probe is in rotating type and whose steel tube can move forward in straight line, use the contrast sample shown in Figure 2 to let the artificial defects in middle part go through the flaw-detection system repeatedly. Firstly, set 0° position for the sample at will; adjust the sensitivity of device's each channel; record gainer's or attenuator's dB value when the artificial defect just alarms. For the rotating sample, when it is at 120° and 240° position, use the same method to test and record the dB value when the artificial defect just alarms. The subtraction of the two dB values which differ by most is the difference of circumferential sensitivity. The absolute value of this difference shall not be greater than 3dB. For the steel tube whose outer diameter is greater than or equal to 100mm, this absolute value shall not be greater than 4dB. Perform the test for 3 times consecutively for each channel, and if the results of the 3 times are not the same, the worst value shall be taken.

6.2.3 Eddy current flaw-detection system for rotating steel tube

For the flaw-detection system, whose probe is fixed and whose steel tube can move forward in a spiral, AND for the flaw-detection system, whose probe can move forward along the axial direction of the steel tube and whose steel tube can spin on the spot, THEN, use the contrast sample shown in Figure 2 to let the artificial defect in middle part go through the flaw-detection system repeatedly. Perform the test for three times consecutively; when the 3 artificial defects in middle part just alarm, record gainer's or attenuator's dB value; adjust the sensitivity of flaw-detection; when the 3 artificial defects in middle part just not alarm, record gainer's or attenuator's dB value. The difference between them is the fluctuation of circumferential sensitivity. The absolute value of this difference shall not be greater than 3dB. For the steel tube whose outer diameter is greater than or equal to 100mm, this absolute value shall not be greater than 4dB. Perform the test for 3 times consecutively, and if the results of the 3 times are not the same, the worst value shall be taken.

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