



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

GB/T 9444-2019

Steel and iron castings - Magnetic particle inspection

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Foreword

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

This standard replaces GB/T 9444-2007 "Magnetic particle inspection for steel castings". Compared with GB/T 9444-2007, the main technical content changes of this standard are as follows, except for editorial modifications.

- MODIFY the scope of application of the standard (see Chapter 1);
- ADD the terms and definitions (see Chapter 3);
- ADD the inspection methods (see 4.3), materials and equipment (see 4.1.1), test blocks (see 4.1.3), verification methods (see 4.1.4);
- MODIFY the quality grade assessment (see Chapter 6; Chapter 7 of the 2007 edition);
- ADD the re-inspection (see Chapter 7), inspection records and reports (see Chapter 8);
- DELETE the original Appendix A and the original Appendix B; ADD the new Appendix B and Appendix C;
- DELETE the original Appendix D and the original Appendix E; ADD the new Appendix A and Appendix E.

This standard uses the redrafting method to adopt ISO 4986.2010 "Steel castings - Magnetic particle inspection". Compared with ISO 4986.2010, this standard has many structural adjustments. Appendix A lists the comparison of Article numbers between this standard and ISO 4986.2010. There are technical differences between this standard and ISO 4986.2010. Table A.2 in Appendix A gives a list of the corresponding technical differences and their causes.

This standard has also made the following editorial changes.

- MODIFY the standard names.

This standard was proposed by AND shall be under the jurisdiction of the National Casting Standardization Technical Committee (SAC/TC 54).

Drafting organizations of this standard. Shenyang Foundry Research Institute Co., Ltd., Lanzhou Lanshi Inspection Technology Co., Ltd., Anhui Yingliu Casting Co., Ltd., Shanghai Aerospace Precision Machinery Research Institute, China Railway Baoqiao Group Co., Ltd., Datang Boiler and Pressure Vessel Inspection Center Co., Ltd., Shared Cast Steel Co., Ltd., Lanzhou Lanshi Group Co., Ltd. Casting and Forging Branch, Anhui Provincial Institute of Mechanical Science, Shanghai Rail Transit Inspection Technology Co., Ltd., Shanghai Honggang Power Station Equipment Casting and Forging Co., Ltd., Zhejiang Yingluohua Equipment Manufacturing Co., Ltd., Qingdao Lianshan Casting Co., Ltd., China Datang Group Science and Technology Research Institute Co., Ltd. East China Electric Power Inspection Research Institute, China Guangdong Nuclear Power Engineering Co., Ltd., Shanghai Materials Research Institute, Gangyan Nak Inspection Technology Co., Ltd., Erzong (Deyang) Heavy Equipment Co., Ltd.

1 Scope

This standard specifies the general requirements, acceptance criteria, indicated grading and evaluation, re-inspection, inspection records and reports, etc., for magnetic particle inspection of steel and iron castings.

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) is applicable to this standard.

3 Terms and definitions

The terms and definitions as defined in GB/T 12604.5, as well as the following terms and definitions, apply to this document.

The indications where 2 linear indications are on one line AND the distance between them is less than the longest indication length.

4 General requirements

When conducting magnetic particle inspection, the supplier and the buyer shall clarify the following.

Observation conditions shall comply with the provisions of GB/T 5097. It shall be observed visually or with a 3X maximum magnification.

5 Acceptance criteria

The quality grade is determined in advance. Different quality grade acceptance can be selected, for the shape and size indication of different types of defects. The rectangular evaluation area is 105 mm x 148 mm.

6 Indication ratings and evaluations

When the defect indication level is better than or equal to the quality grade specified in the contract, it can be judged to be in compliance with this standard. When non-linear indications, linear indications, or aligned indications appear simultaneously in the same area of the casting, rate them according to Table 1 and Table 2, respectively.

7 Reinspection

Re-inspection is required when the following situations occur.

8 Inspection records and reports

Please refer to Appendix E for the recommended inspection report format in Chinese and English, which can be modified according to the actual situation.

Appendix A

(Informative)

Comparison of Article numbers and technical differences with the original standards when adopting international standards and their reasons

The comparison of Article numbers between this standard and ISO 4986.2010 is shown in Table A.1.

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