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Nondestructive testing of amusement equipment –

Part 1: General requirement

游乐设施无损检测

第 1 部分：总则

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Nondestructive testing of amusement equipment – Part 1: General requirement

1 Scope

This Part of GB/T 34370 specifies the general requirements and using principles for the nondestructive testing methods of amusement equipment, such as visual examination, magnetic particle testing, penetrant testing, ultrasonic testing, radiographic testing, eddy current testing, acoustic emission testing, magnetic flux leakage testing, magnetic memory testing and ultrasonic guided-wave testing.

This Part applies to the nondestructive testing of amusement equipment in manufacture and in use.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to this document.

GB/T 5616, *Nondestructive testing – Guidelines for application*

GB/T 12604.1, *Nondestructive testing – Terminology – Terms used in ultrasonic testing*

GB/T 12604.2, *Nondestructive testing – Terminology – Terms used in radiographic testing*

GB/T 12604.3, *Non-destructive testing – Terminology – Terms used in penetrant testing*

GB/T 12604.4, *Non-destructive testing – Terminology – Terms used in acoustic emission testing*

GB/T 12604.5, *Nondestructive testing – Terminology – Terms used in magnetic particle testing*

GB/T 12604.6, *Nondestructive testing – Terminology – Terms used in eddy current testing*

using the eddy current testing method; the internal defects are preferably tested using the ultrasonic or radiographic testing method; the active defects of structural members in use are preferably tested using the acoustic emission testing method; the corrosion of structural members in use and the damages of wire ropes are preferably tested using the magnetic flux leakage testing method; the stress damages of ferro magnetic materials are preferably tested using the magnetic memory testing method; the losses of cross section of the parts in use including ropes, rods, bars, pipes and plates, are preferably tested using the ultrasonic guided-wave testing method.

4.1.3 When two or more testing methods are used to carry out testing on the same location of amusement equipment, the test results shall be evaluated in accordance with their method.

4.1.4 When carrying out testing using the same testing method in accordance with different testing processes, the evaluation result giving the maximum risk shall prevail if the severity degrees of defects detected are different.

4.1.5 The use of this Standard shall comply with relevant laws, regulations and standards of China. The instruments, consumables, etc. used shall meet the requirements of the basic standards of nondestructive testing.

4.2 Visual examination

4.2.1 Visual examination applies to the testing of parts and welds of all materials. It can detect corrosion, crack, damage, abrasion, deformation and other macroscopic damages, abnormal matching, traces of overheating and leakage, macroscopic imperfection of welds, and so on.

4.2.2 The specific technical requirements for visual examination shall be as specified in GB/T 34370.2.

4.3 Magnetic particle testing

4.3.1 Magnetic particle testing applies to the testing of the surface and near-surface defects of plates, composite boards, pipes, bars, castings and forgings, etc., which are made of ferro magnetic materials; it also applies to the testing of the surface and near-surface defects of but welded joints, T-shaped welded joint, angle welded joint, etc., of ferro magnetic materials. Magnetic particle testing does not apply to the testing of non-ferro magnetic materials. It can determine the location, size and shape of surface and near-surface defects.

4.3.2 The specific technical requirements for magnetic particle testing shall be as specified in GB/T 34370.3.

4.4 Penetrant testing

laws and regulations of China.

6.2 The qualification levels of nondestructive testing personnel include level III (high), level II (medium) and level I (basic). The personnel who have obtained different qualification levels of nondestructive testing shall only carry out the nondestructive testing work corresponding to the method and their own qualification levels, and assume the corresponding technical responsibilities.

7 Testing apparatus and materials

7.1 The apparatus and materials for nondestructive testing shall be accompanied by the product quality compliance certificate.

7.2 The apparatus and materials for nondestructive testing shall comply with their corresponding product standards and their properties shall meet relevant requirements of GB/T 34370.2 ~ GB/T 34370.6.

7.3 For the apparatus and main materials for nondestructive testing which can be used repeatedly, in order to ensure their working properties continuously meet relevant requirements of all parts of this Standard, the testing organizations carrying out nondestructive testing shall use the methods for verification, calibration or examination and specifies in the general procedures as follows:

- a) verification: all nondestructive apparatus and materials included in the national compulsory verification list, shall be sent to a competent metrological verification body or an authorized metrological verification body for verification.
- b) calibration: the apparatus and materials for nondestructive testing which are not included in the national compulsory verification list and support metrological traceability, shall be calibrated regularly; the calibration bodies approved by China National Accreditation Service for Conformity Assessment can be resorted to for calibration; calibration can also be carried out independently by testing organizations.
- c) examination: for the apparatus and materials which are not included in the national compulsory verification list and do not support metrological traceability, shall be examined regularly, in order to verify whether the properties of the apparatus and materials meet relevant requirements of all parts of this Standard; examination is usually carried out independently by the testing organizations.
- d) interim examination: if necessary, the apparatus and main materials for nondestructive testing shall be subjected to interim examination within the cycles of verification, calibration or examination; the items, cycles and property indexes of examination shall meet relevant specifications.

8.3.1 The personnel carrying out nondestructive testing shall operate in accordance with the operation cards of nondestructive testing.

8.3.2 The operation cards of nondestructive testing shall be compiled in accordance with relevant technical documents, this Part and the methods specified in GB/T 34370.2 ~ GB/T 34370.6, relating to general procedures of nondestructive testing, product standards, product design and manufacture, etc. They usually include the content as follows:

- a) number of operation card;
- b) product name, product type, product number, number of manufacturing, installation or testing, and materials, dimensions, heat treatment conditions, surface conditions and welding type of parts to be tested;
- c) testing apparatus and materials: apparatus name, specifications, materials;
- d) test process: test method, test proportion, test location, standard test block or standard test sample (piece);
- e) standard implemented and acceptance level;
- f) test procedure;
- g) diagram of test location;
- h) signature and date of personnel of compilation (level) and examination (level).

8.3.3 The compilation and examination of the operation cards of nondestructive testing shall meet relevant laws, regulations or standards. The compilation of operation cards shall be carried out by the personnel having the qualifications of level II and above, in accordance with general technological procedures and examined by the director of nondestructive testing.

9 Record and report

Prepare record and report of nondestructive testing and implement as specified in GB/T 34370.2 ~ GB/T 34370.6.

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