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

GB/T 25390-2024

Replacing GB/T 25390-2010

**Wind energy generation systems - Spheroidal graphite cast iron
for wind turbines**

风能发电系统 风力发电机组球墨铸铁件

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Foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting: This document replaces GB/T 25390-2010 "Spheroidal graphite castings for wind turbine generator systems": In addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The definition of "ductile iron" has been changed (see 3:1, 3:1 of the:2010 edition);
- b) Deleted some terms (see 3:2~3:4 of the:2010 edition);
- c) Added the terms "side-by-side test blocks", "solid solution strengthening", "solid solution strengthening ferritic ductile iron" and "slag" (see 3:2 to 3:5);
- d) The content of the grades and classification methods in Chapter 4 has been changed (see Chapter 4, Chapter 4 of the:2010 edition);
- e) Changed the relevant contents of "Ordering Information" (see Chapter 5, Chapter 5 of the:2010 Edition);
- f) Added general provisions in technical requirements (see 6:1);
- g) The performance and requirements of "ductile iron for wind turbine generator sets" have been changed: (See 6:2, 6:1 of the:2010 edition);
- h) Changed the content of Table 1, added the tensile properties of QT400-18L-1, QT400-18L-2, QT450-1L, QT500-7, deleted Test block types and examples of applicable parts, elongation is changed to elongation after fracture (see Table 1, Table 1 of the:2010

edition);

i) Changed the content of Table 2 and deleted the requirements for test block type and thickness (see Table 2, Table 2 of the:2010 edition);

j) Deleted the content related to "high index mechanical property requirements" (see 6:1:3:2 of the:2010 edition);

k) Changed the requirements for "ferritic pearlite ductile iron castings for wind turbines" (see 6:2, 6:2 of the:2010 edition);

l) Added tensile properties, hardness and metallographic requirements for QT450-18, QT500-14 and QT600-10 (see Table 5 to Table 7);

m) Added the requirement of "defect repair" (see 6:5);

1 Scope

GB/T 25390-2024 is the Chinese material standard for the spheroidal graphite cast iron used in wind turbines: the hub, the main frame, the rotor shaft housing, the gearbox torque arms and the other large castings that carry the whole machine. They are among the heaviest castings made in series, several tonnes each, and they have a hard requirement combination, adequate strength with good low temperature impact toughness, because a turbine in northern China starts up at forty below and a brittle hub is not repairable at eighty metres. The standard sets the grades and their designation, the chemical composition, the mechanical properties in the as-cast and heat treated conditions including the impact energy at low temperature, the requirements on the metallographic structure and the nodularity, the internal and surface quality and the ultrasonic and magnetic particle examination with their acceptance criteria, the dimensional and geometric tolerances, the repair welding rules, the test methods, the sampling and inspection rules and the marking and quality certificate. The 2024 edition replaces GB/T 25390-2010.

This document specifies the grades and classifications, order information, technical requirements, test methods, inspection specifications, etc: of ductile iron castings for wind turbines: Rules, marking, preservation, packaging, transportation and storage: This document applies to the manufacture, inspection and acceptance of ductile iron castings used in wind turbines in wind power generation systems:

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document: For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document: GB/T 223:3~ GB/T 223:

74 Chemical analysis methods for steel and alloys GB/T 228:

3 Terms and definitions

The terms and definitions defined in GB/T 5611 and the following apply to this document: 3:

1 Cast iron with iron, carbon and silicon as basic elements, with carbon mainly in the form of spheroidal graphite: 3:

2 Side-by-side cast sample The same gating system is used as the casting, and the test block is cast side by side with the casting: 3:

3 The phenomenon that solute atoms dissolve into the metal matrix to form a solid solution, thereby increasing the strength and hardness of the metal: