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**High strength and toughness alloy structure steel bars for
deep sea oil field drilling and exploiting**

深海油田钻采用高强韧合金结构钢棒

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High strength and toughness alloy structure steel bars for deep sea oil field drilling and exploiting

1 Scope

This document specifies the classification and code, order content, size, shape, weight, technical requirements, test methods, inspection rules, packaging, marking and quality certificate of high strength and toughness alloy structure for deep sea oil field drilling and exploiting.

This document applies to the manufacture of forged steel bars (hereinafter referred to as steel bars), with a nominal diameter of 250 mm ~ 1200 mm, for deep sea oil field drilling and exploiting equipment.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 223.4, Iron, steel and alloy - Determination of manganese content - Potentiometric or visual titration method

GB/T 223.5, Steel and iron - Determination of acid-soluble silicon and total silicon content - Reduced molybdsilicate spectrophotometric method

GB/T 223.9, Iron, steel and alloy - Determination of aluminium content - Chrome azurol S photometric method

GB/T 223.11, Iron, steel and alloy - Determination of chromium content - Visual titration or potentiometric titration method

GB/T 223.13, Methods for chemical analysis of iron, steel and alloy — The ammonium ferrous sulfate titration method for the determination of vanadium content

GB/T 223.18, Methods for chemical analysis of iron steel and alloy. The sodium thiosulfate separation iodimetric method for the determination of copper content

GB/T 223.23, Iron, steel and alloy - Determination of nickel content - The dimethylglyoxime spectrophotometric method

GB/T 10561-2005, Steel - Determination of content of nonmetallic inclusions - Micrographic method using standards diagrams

GB/T 11261, Steel and iron - Determination of oxygen content - The pulse heating inert gas fusion-infra-red absorption method

GB/T 13298, Inspection methods of microstructure for metals

GB/T 13299, Steel - Determination of Microstructure

GB/T 15711, Inspection of non-metallic inclusions of steel - Etching test method of tower samples

GB/T 17505, Steel and steel products - General technical delivery requirements

GB/T 20066, Steel and iron - Sampling and preparation of samples for the determination of chemical composition

GB/T 20123, Steel and iron - Determination of total carbon and sulfur content Infrared absorption method after combustion in an induction furnace (routine method)

GB/T 34474.1, Determination of banded structure of steel - Part 1: Micrographic method using standards diagrams

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4 Classification and code

4.1 Steel bars, by surface types, are divided into:

- a) Pressure processing surface (code-named SPP);
- b) Polishing (code-named SP);
- c) Peeling (code-named SF).

4.2 Steel bars, by heat treatment states, are divided into:

- a) Annealing (code-named A);
- b) High temperature tempering (code-named T);
- c) Normalizing (code-named N);

- d) Normalizing + tempering (code-named N+T).

4.3 Steel bars, by use processing methods, are divided into:

- a) Steel for hot pressing (code-named UHP);
- b) Steel for machining (code-named UC).

5 Order content

The contract or order that place orders in accordance with this document shall include the following contents:

- a) document number;
- b) product name;
- c) designation;
- d) smelting method (see 7.2);
- e) delivery weight (or quantity);
- f) size and accuracy;
- g) use processing methods;
- h) delivery status;
- i) mechanical properties;
- j) macro-structure (7.5.2);
- k) special requirements.

6 Size, shape, weight

6.1 Size and allowable deviation

6.1.1 The size and allowable deviation of the pressure-processed steel bars shall comply with the requirements of Table 1 in GB/T 908-2019. The size allowable deviation of steel bars with a nominal diameter greater than 1 000 mm shall be determined through negotiation between the supplier and the buyer.

6.1.2 The size and allowable deviation of polished steel bars shall comply with the provisions of Table 3 in GB/T 908-2019; the size allowable deviation of steel bars with

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