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

GB/T 40089-2021

**Steel wire ropes for the petroleum and natural gas industries -
Minimum requirements and terms of acceptance**

石油和天然气工业用钢丝绳 最低要求和验收条件

(English Translation)

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References

1 Scope

This document specifies the requirements, test methods, quality certificates, packaging and marking of steel wire ropes for the oil and gas industry.

This document applies to steel wire ropes for the oil and gas industry, and mainly includes wire ropes for the following typical uses. casing hoisting ropes, pumping polish Rod suspension rope, sand bailing rope, well washing rope, cable hoist rope, cable armored rope, drilling rope, hoist rope, walking beam pumping unit donkey head rope, bottom hole blaster Ropes, derrick base hoisting ropes, guide rope tensioning ropes, riser tensioning ropes, anchoring ropes, hoisting slings and crane ropes.

This document can also be applied to logging wires and steel strands for underground operations.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated quotations Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to This document.

GB/T 228.1 Tensile test of metallic materials Part 1: Room temperature test method (GB/T 228.1-2010, ISO 6892-1. 2009, MOD)

GB/T 239.1 Metallic material wire Part 1: Unidirectional torsion test method (GB/T 239.1-2012, ISO 7800. 2003, MOD)

GB/T 1839 Steel product galvanized layer quality test method (GB/T 1839-2008, ISO 1460:1992, MOD)

GB/T 8706 Steel wire rope terminology, marking and classification (GB/T 8706-2017, ISO 17893:2004, MOD)

GB/T 15030 Sisal wire rope core

GB/T 16825.1 Inspection of static uniaxial testing machine Part 1: Inspection and calibration of force measurement system of tensile and (or) compression testing machine Standard (GB/T 16825.1-2008, ISO 7500-1:2004, IDT)

YB/T 081 Rounding off the numerical value of metallurgical technology standards and judging the value

YB/T 4613 Grease for steel wire rope

YB/T 5343 Round steel wire for rope making

ISO 2232:1990 General purpose non-alloy steel wire rope and round drawn steel wire specification for thick diameter steel wire rope (Round drawn wire for general purpose non-alloy steel wire ropes and for large diameter steel wire ropes-Specifications)

ISO 4345 Steel wire ropes-Fibre main cores-Specification

ISO 4346 Basic requirements for general purpose steel wire rope grease (Steel wire ropes for general purposes-Lubricants- Basic requirements)

3 Terms and definitions

The terms and definitions defined in GB/T 8706 apply to this document.

4.1.3 Grease

Grease requirements should meet the requirements of ISO 4346 or YB/T 4613.

4.2.1 General

4.2.1.1

In a strand of a multi-strand steel wire rope, the lay direction of the same layer of steel wires is the same. The lay length of strands of the same layer, structure and size in the rope should be Unanimous.

4.2.1.2

In addition to compacting (forging) wire ropes, when designing or selecting rope cores, under no-load conditions, ensure that there is a certain amount of space between the outer strands of the wire rope gap.

4.2.1.3

The end of the steel wire rope should be fixed to prevent it from falling apart.

4.2.2 Wire joint

4.2.2.1

When the steel wire with a diameter greater than 0.40mm is spliced, butt welding shall be used. The logging wire should be continuous and there should be no joints.

4.2.2.2

For multi-strand steel wire ropes, the spacing of the steel wire joints in the same strand should be greater than or equal to 18 times the diameter (D) of the steel wire rope.

4.2.2.3

For single-twist steel wire ropes, the joint spacing of steel wires in any layer shall be greater than or equal to 36 times the diameter of the layer.

4.2.2.4

Steel wires with a diameter less than or equal to 0.40mm may be connected by plug-in connection.

4.2.3 Pre-deformation and post-deformation

Unless otherwise specified by the buyer, the multi-strand steel wire rope should be pre-deformed or post-deformed, or both.

Note: Some parallel twisted dense wire ropes or anti-rotation wire ropes do not need to be pre-deformed.

4.2.4 Structure

4.2.4.1

The structure of the steel wire rope should adopt the structure in Appendix E, or it can be specified by the manufacturer.

4.2.4.2

Compacted strand steel wire rope, compacted (forged) steel wire rope, thick diameter (diameter greater than 60.0mm) multi-strand steel wire rope and single-twist steel wire rope The structure of (single-strand steel wire rope and fully sealed steel wire rope) shall be specified by the manufacturer.

4.2.4.3

When the purchaser only specifies the type of steel wire rope, the manufacturer shall specify the structure of the steel wire rope.