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GB/T 9944-2015

Replacing GB/T 9944-2002

Stainless Steel Wire Ropes

不锈钢丝绳

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Table of Contents

Foreword.....	3
1 Scope	4
2 Normative References.....	4
3 Terms and Definitions.....	4
4 Classification and Mark	4
5 Dimension and Weight	6
6 Technical Requirements	11
7 Test Methods	13
8 Inspection Rules.....	15
9 Package, Mark and Quality Certificate	15
Appendix A (Normative) Stainless Steel Wire Rope Structure Schematic Diagram	17

Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard replaced GB/T 9944-2002 *Stainless Steel Wire Rope*; compared with GB/T 9944-2002, this Standard has the major technical changes as follows:

- Add terms and definitions;
- Add marking method of steel wire rope;
- Expand the diameter range of steel wire rope;
- Increase stainless steel wire rope with Grade of 06Cr17Ni12Mo2;
- Improve the technical requirements for the elongation rate of steel wire rope for the airplane operation;
- Add the chemical composition analysis and test methods of major alloy elements;
- Specify the precision requirements for the measurement of steel wire rope diameter;
- Adjust the inspection range on the straightness of steel wire rope.

This Standard was proposed by China Iron and Steel Industry Association.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Steel (SAC/TC 183).

Drafting organizations of this Standard: Sinosteel Zhengzhou Research Institute of Steel Wire Products Co., Ltd., Jiangsu XiHu Special Steel Co., Ltd., Guizhou Steel Wire Co., Ltd., Jiangsu Fasten Group Co., Ltd. Stainless Steel Product Branch, Jiangsu Yasten Metal Products Co., Ltd., Jiangsu Xinglong Metal Products Co., Ltd., Guangdong Kinlong Hardware Products Co., Ltd., National Metal Products Quality Supervision & Inspection Center, and China Metallurgical Information and Standardization Institute.

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The historical editions replaced by this Standard are as follows:

- GB/T 9944-1988, GB/T 9944-2002.

Stainless Steel Wire Ropes

1 Scope

This Standard specifies the requirements for classification, dimension and weight, technical requirements, test methods, inspection rules, package, mark, and quality certificate of stainless steel wire rope.

This Standard is applicable to corrosion-resisting stainless steel wire rope (hereinafter referred to as steel wire rope) used for the instrument, mechanical transmission, inhaul cable, suspension cable, and vibration damping of the vibration damper.

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) are applicable to this document.

GB/T 2104 Steel Wire Ropes – Packing, Marking and Certificate – General Requirements

GB/T 4240 Stainless Steel Wires

GB/T 8358 Steel Wire Ropes – Determination of Measured Breaking Force

GB/T 8706 Steel Wire Ropes – Vocabulary, Designation and Classification

GB/T 12347-2008 Steel Wire Ropes – Bending Fatigue Testing

YB/T 4470 Standard Specification for Stainless Steel Wire Rope

3 Terms and Definitions

The terms and definition stipulated in GB/T 8706 are applicable to this document.

4 Classification and Mark

4.1 Classification

tolerance of it.

5.2.3 The steel wire rope length shall be indicated in the contract as per the purchaser demand; otherwise determined by the supplier; however, the length of single piece of steel wire rope shall be no shorter than 25m.

5.2.4 The steel wire rope shall be delivered as per the actual weight; while the steel wire rope weight per 100m can refer to Table 3 and Table 4.

6 Technical Requirements

6.1 Raw materials

6.1.1 Steel-wire for manufacturing rope

6.1.1.1 The steel-wire for manufacturing rope shall conform to the provisions of 12Cr18Ni9, 06Cr19Ni10, 06Cr17Ni12Mo2 austenitic stainless steel stipulated in GB/T 4240 and YB/T 4470.

6.1.1.2 The tensile strength of the steel-wire for manufacturing rope shall make the manufactured steel wire rope meet the requirements of minimum breaking force stipulated in this Standard.

6.1.1.3 When the steel-wire for manufacturing rope is performed wrapping test before the stranded rope, the steel-wire shall not break.

6.1.1.4 The surface of the steel-wire for manufacturing rope shall be free from the defects that may influence the use, such as cracks, ribbed bar, and burr.

6.1.2 Steel wire rope core

The steel wire rope core is the metal rope core, which can be Wire Stranded Core (WSC) or Independent Wire Rope Core (IWRC).

6.2 Twisting quality

6.2.1 Single-twist steel wire rope indicates twisting on the left; the twisting method for 1×19 upper layer and lower layer is opposite; the double-twist steel wire rope indicates mutual twisting on the right. The steel wire ropes with other twisting method can also be manufactured as per the purchaser demand.

6.2.2 The steel wire rope shall be twisted evenly, tightly, straightly, and non-loose; each strand and steel-wire within the strand shall be twisted tightly; there shall be free from the bump, fracture or staggering-cross of steel-wire.

6.2.3 Minimize the steel-wire joints in the steel wire rope, the distance between two

7.4 Diameter measurement

7.4.1 When the diameter of steel wire rope is less than or equal to 2mm, use the wide-mouthed measuring instrument with precision no less than 0.01mm to measure; when the diameter of steel wire rope is greater than 2mm, use the wide-mouthed measuring instrument with precision no less than 0.02mm to measure. Its jaw width shall be sufficient to cross the two adjacent strands, the measurement shall be performed in the straight part of the steel wire rope in the absence of tension; on the two cross-sections with distance of at least 1m, individually measure the diameter in the two perpendicular directions on the same cross-section; the average value of the four measurement results shall be regarded as the actually-measured diameter of the steel wire rope.

7.4.2 The measurement method of non-roundness is the same as the provision of 7.4.1. The difference between maximum and minimum values measured on the same cross-section shall conform to the provisions of 5.2.2

7.4.3 In the event of a dispute, the diameter measurement shall be performed in case of exerting the tension about 5% minimum breaking force to the steel wire rope.

7.5 Non-loose inspection

Untie one end of the steel wire rope, so that there are two opposite strands with the distance of two twist pitch; when the two strands are re-twisted into the steel wire rope, they shall restore to the original position; however, the diameter of the steel wire rope is allowed to be increased slightly.

7.6 Straightness inspection

If the diameter of steel wire rope is less than 6mm, it shall be performed straightness inspection. In the absence of tension, place the 6m-long steel wire rope (not cutting from the disk) on a plane located between two parallel straight lines with distance of 75mm; in addition to the 500mm-long end, the steel wire rope shall not be in contact with any of the two parallel lines.

7.7 Tensile test

7.7.1 The steel wire rope breaking force test shall be performed as per the provisions of GB/T 8358.

7.7.2 Elongation test: gradually loading specimen of steel wire rope to 60% minimum breaking force of it, keep for 1min; after that release to 2% minimum breaking force. Under the initial load, mark the length position of 250mm or no less than 100mm; then gradually loading to 60% minimum breaking force of steel wire rope, measure the mark length under such load; the ratio between the increased length of marking part and the length of initial mark shall be the elongation rate of the steel wire rope.

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