

Translated English of Chinese Standard: YB/T4575-2016  
[www.ChineseStandard.net](http://www.ChineseStandard.net) → Buy True-PDF → Auto-delivery.  
[Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

**YB**

FERROUS METALLURGY INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 77.140.65

H 49

**YB/T 4575-2016**

---

**Steel wire ropes for temporarily installed suspended access  
equipment**

高处作业吊篮用钢丝绳

**Issued on: October 22, 2016**

**Implemented on: April 01, 2017**

---

**Issued by: Ministry of Industry and Information Technology of PRC**

## Table of Contents

|                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------|----|
| Foreword .....                                                                                      | 3  |
| 1 Scope .....                                                                                       | 4  |
| 2 Normative references .....                                                                        | 4  |
| 3 Terms and definitions .....                                                                       | 5  |
| 4 Classification and marking.....                                                                   | 5  |
| 5 Order contents .....                                                                              | 5  |
| 6 Dimensions, shapes, tolerances .....                                                              | 6  |
| 7 Technical requirements.....                                                                       | 6  |
| 8 Inspections.....                                                                                  | 12 |
| 9 Tests .....                                                                                       | 13 |
| 10 Acceptance method .....                                                                          | 15 |
| 11 Packaging, quality guarantee period, storage, transportation, marking, quality certificate ..... | 15 |

# **Steel wire ropes for temporarily installed suspended access equipment**

## **1 Scope**

This standard specifies the terms, definitions, classifications, markings, ordering content, dimensions, technical requirements, inspection, testing, acceptance methods, packaging, quality assurance period, transportation, marking, quality certificate, safe use, maintenance requirements, for the steel wire ropes for temporarily installed suspended access equipment.

This standard applies to galvanized steel wire ropes for temporarily installed suspended access equipment (hereinafter referred to as steel wire rope). It is also applicable to steel wire ropes for other similar lifting mechanisms.

## **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) is applicable to this standard.

GB/T 228.1 Metallic materials - Tensile testing - Part 1: Method of test at room temperature

GB/T 239.1 Metallic materials - Wire - Part 1: Simple torsion test

GB/T 1839 Test method for gravimetric determination of the mass per unit area of galvanized coatings on steel products

GB/T 2104 Steel wire ropes - Packing, marking and certificate - General requirements

GB/T 8358 Steel wire ropes - Determination of measured breaking force

GB/T 8706 Steel wire ropes - Vocabulary, designation and classification

GB 19155 Temporarily installed suspended access equipment

GB/T 21965 Steel wire ropes - Vocabulary for acceptance and defect

GB/T 29086 Steel wire ropes - Safety - Use and maintenance

YB/T 081 Rule for rounding off of numerical values and judgement of testing values for technical standards of metallurgy

YB/T 4452 Fibre cores for steel wire ropes

YB/T 5343 Steel wire for ropes

### 3 Terms and definitions

The terms and definitions, which are established in GB/T 8706 and GB 19155, apply to this document.

#### 3.1

##### **Slightly untwisting of strands in rope**

When cutting off one end of the wire rope, loosen the outer strands, which are about 3 lay lengths long. Tap lightly; the strands will scatter downward slightly, but they can still be basically closed into the original shape after twisting hard.

### 4 Classification and marking

#### 4.1 Classification

**4.1.1** There are eight typical wire rope structures: 4X25Fi-FC, 4X31WS-FC, 6X19W-WSC, 6X19S-WSC, 6X31WS-FC, 6X31WS-WSC, 6X36WS-FC, 6X36WS-WSC. Steel wire ropes of other structures can also be supplied, upon negotiation between the supplier and the buyer.

**4.1.2** The nominal tensile strength of steel wire ropes is divided into six types: 1870MPa, 1960MPa, 2060MPa, 2160MPa, 2260MPa, 2360MPa.

**4.2** The marking code of the steel wire rope shall comply with the provisions of GB/T 8706.

### 5 Order contents

The contract for ordering, according to this standard, shall include the following main contents:

- a) Standard number;
- b) Product name;
- c) Wire rope structure;

steel wire, that is, 30d (g/m<sup>2</sup>).

**7.1.1.6** The surface of the steel wire shall be smooth and clean, without defects such as scratches, flattening or hard bending.

### **7.1.2 Fiber core**

**7.1.2.1** The fiber core shall comply with the provisions of YB/T 4452. It may adopt natural fiber core, synthetic fiber core or composite material core.

**7.1.2.2** The fiber core of the steel wire rope may contain a small amount of anti-rust lubricating oil.

**7.1.3** The lubricating oil applied on the surface of the wire rope shall be anti-friction, anti-corrosion, anti-rust lubricating oil. If it needs other types of oil products, please specify in the order contract.

## **7.2 Steel wire rope**

### **7.2.1 Laying quality**

**7.2.1.1** The laying method of the steel wire rope shall be right alternating lay (sZ). The lay direction of the center strand is opposite to that of the outer strands. The steel wire size of the strand core, in the steel wire rope, shall be able to ensure sufficient support, so that the steel wire wrapped in the outer layer can be twisted evenly. For strands and steel cores in ropes, which are made of steel wires of the same diameter, the nominal diameter of the central steel wire and the central strand shall be appropriately increased.

**7.2.1.2** Each strand in the steel wire rope and each steel wire in each strand shall be tightly laid together; the strands shall not collapse, protrude or loosen. There must be no fold marks, protrusions, broken, crushed and disorderly crossed steel wires in the strands. There shall be no defects such as scratches, flattening or hard bending on the surface of the steel wire.

**7.2.1.3** The joints of steel wires in the steel wire rope shall be reduced, as much as possible. When the wires have to be connected during twisting, the wires allow electrical connection. The spacing between joints of the same steel wire strand shall not be less than 20 m.

**7.2.1.4** The lay length of the strands in the wire rope and the lay length of the steel wires in the strands shall be uniform, throughout their length. The lay length of the steel wire rope shall not be greater than 6.7 times the rope diameter; the lay length of the outer layer of the strands shall not be greater than 9.5 times the strand diameter.

**7.2.1.5** Each strand of the outer layer of the steel wire rope shall be pre-deformed and tightly twisted around the rope core in a helical shape. It shall be slightly loose, with little residual torsion. The surface is flat and must not be wavy, when unfolded and

**8.2.2.2** The measurement shall be carried out, on the straight line of the wire rope under the condition of no tension. At two points 1 m away from the rope end, at least 0.5 m apart, measure a diameter value at each point, in a direction perpendicular to each other. The average value of the four measurements is taken as the actual diameter of the wire rope.

**8.2.2.3** The difference -- between the diameters measured in mutually perpendicular directions at the same point -- is the ellipticity value.

### **8.3 Inspection of wire rope flatness**

Touch the surface of the wire rope with your hands; it feels smooth; it is flat without any obvious fluctuations and hard bends.

### **8.4 Inspection of slightly untwisting of strands in rope**

When cutting off one end of the wire rope, remove the strands of outer layer, about 3 lay lengths long; tap lightly; each strand will spread out slightly downwards; but after twisting hard, they can still be basically surrounded into the original shape. In this case, the wire rope is in the state of slightly untwisting of strands.

### **8.5 Inspection of wire rope residual torsion**

Bend at an angle of approximately 90°, at approximately 50 mm from the end of the rope. Hold the bend tightly, to avoid rotation of the wire rope, when pulling out a 6 m long (not cut from the coil) sample. Then release the free segment of the wire rope and let it rotate freely without tension. The number of rotations shall not exceed 4 revolutions (r). In this case, the residual torsion of the wire rope is small.

### **8.6 Wire rope tightness inspection**

Hold the two ends of the 30 cm long rope tightly with both hands. Twist hard, in the direction of the opposite twist of the rope. There is no obvious loosening of the strands and no gap between the strands. OR it can touch the strands with fingernails; if the strands are not loose, the structure is considered tight. Otherwise, it is not tight.

## **9 Tests**

### **9.1 Test method and test quantity**

#### **9.1.1 Group-batch test of wire ropes**

**9.1.1.1** Group-batch rules: Each batch consists of steel wire ropes with the same structure, the same nominal diameter, the same strength grade.

**9.1.1.2** Take 1 disk out of every 10 disks or less than 10 disks. Cut 1 specimen from this disk to conduct minimum breaking force test of steel wire rope, mechanical properties

of steel wire, weight test of zinc layer.

**9.1.2** From the cut steel wire rope specimen, take one outer layer strand at random. Take one steel wire with different diameters in each of its different twisting layers, to do the zinc layer weight test (the central steel wire is not tested).

**9.1.3** From the cut steel wire rope specimen, take one outer layer strand at random. Take one steel wire with different diameters in each of its different twisting layers, to do the mechanical property test (the central steel wire is not tested).

## **9.2 Determination of knotting rate of steel wire**

Knotted tensile test of steel wire shall be in accordance with GB/T 228.1.

## **9.3 Determination of number of wire torsions**

The determination of the number of torsions of the steel wire shall comply with the provisions in GB/T 239.1.

## **9.4 Determination of zinc layer weight of steel wire**

Zinc layer weight test shall be in accordance with GB/T 1839. The gravimetric method shall be adopted in the arbitration test.

## **9.5 Determination of breaking force of steel wire rope**

The determination of the breaking force of the whole wire rope shall be in accordance with GB/T 8358.

## **9.6 Judgment rules and re-inspection**

**9.6.1** If all tests meet the requirements, the batch (or piece) of steel wire ropes is qualified.

**9.6.2** If one or more test items do not meet the specified requirements, re-sampling shall be carried out on the same steel wire rope, for re-inspection of the unqualified items. If the reinspection result meets the specified requirements, this batch (or piece) of steel wire ropes is still qualified. If one or more re-inspection results do not meet the specified requirements, the wire rope coil shall be judged as unqualified. The remaining steel wire ropes in this batch shall be sampled one by one for testing.

**9.6.3** When a steel wire rope is cut into several pieces for delivery, one of them shall be selected for sampling test; if it is qualified, the remaining pieces shall be exempted from the test; otherwise, samples shall be taken one by one for testing.

## **9.7 Arbitration test**

When there is any dispute between the supplier and the purchaser on any test result, the

**This is an excerpt of the PDF (Some pages are marked off intentionally)**

**Full-copy PDF can be purchased from 1 of 2 websites:**

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, [Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

**----- The End -----**