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NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA

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**GB/T 32795-2016**

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**Zinc or zinc alloy coated steel wire for armouring  
oceaneering cables**

海缆铠装用镀锌或锌合金钢丝

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## Foreword

This Standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard was proposed by China Iron and Steel Association.

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

Drafting organizations of this Standard: Jiangsu Fasten Group Co., Ltd., Zhongtian Technology Submarine Cables Co., Ltd., Jiangsu Hengtong Optic-Electric Co., Ltd., China Metallurgical Information and Standardization Institute, Jiangsu Hengtong Marine Cable System Co., Ltd.

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# **Zinc or zinc alloy coated steel wire for armouring oceanneering cables**

## **1 Scope**

This Standard specifies the terms and definitions, classification and designation, order content, dimensions, shape, weight, and tolerances, technical requirements, inspection methods, inspection rules, packing, marking, and quality certification of zinc or zinc alloy coated steel wire for armouring oceanneering cables.

This Standard is applicable to zinc or zinc alloy coated round carbon steel wire (hereinafter referred to as steel wire) for similar purposes such as armouring oceanneering optical cable, cable, photoelectric composite cable, umbilical cable.

## **2 Normative references**

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

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 341-2008 Steel wire - Classification and terminology

GB/T 470 Zinc ingots

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

GB/T 2103 General requirements for acceptance, packing, marking and quality certification of steel wire

GB/T 2972 Test method for uniformity of zinc coating on zinc-coated steel wire by the copper sulphate dip

GB/T 2976 Metallic materials - Wire - Wrapping test

GB/T 4354 Hot rolled quality carbon steel wire rods

GB/T 24242.2 Non-alloy steel wire rods for conversion to wire - Part 2: Specific requirements for general purpose wire rod

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

YB/T 5357-2009 Non-ferrous metallic coatings on steel wire - Zinc or zinc-5% aluminum alloy coating

YS/T 310-2008 Zinc alloy ingot for hot dip galvanizing

### 3 Terms and definitions

The terms and definitions defined in GB/T 341-2008 and the following apply to this document.

#### 3.1 Diameter of free ring

Measured outer diameter of steel wire ring when placing a ring of steel wire on a smooth horizontal plane.

#### 3.2 Tip rise

The height at which the wire tip rises when placing a ring of steel wire on a smooth horizontal plane.

### 4 Classification and designation

**4.1** Steel wire, according to coating category, is divided into two categories: One is zinc-coated; the other is zinc alloy-coated. The coating category shall be indicated in the contract. If not specified, it shall be zinc-coated.

#### 4.2 Designation examples:

**Example 1:** Zinc coated steel wire for armouring oceaneering cables with a diameter of 2.24 mm and a strength grade of 850 is designated as:

2.24-850-Zn-GB/T 32795-2016

**Example 2:** Zinc-5% aluminum-mixed mischmetal alloy-coated steel wire for armouring oceaneering cables with a diameter of 5.00 mm and a strength grade of 1250 is designated as:

5.00-1250-ZnAl5RE-GB/T 32795-2016

**Table 2 -- Diameter of free ring of steel wire** (in millimeters)

| Nominal diameter $d$ of steel wire | Diameter of free ring |
|------------------------------------|-----------------------|
| $d < 3.0$                          | $\geq 600$            |
| $d \geq 3.0$                       | $\geq 800$            |

### 6.3 Shape

The steel wire shall be delivered in coils. The steel wire shall not have a disordered wire ring or in a “∞” shape. The inner diameter of the coil shall be 400 mm~700 mm.

### 6.4 Coil weight

Each coil shall consist of one steel wire. The weight of each coil shall be no less than 400 kg. Through negotiation between the supplier and the purchaser, it may also be supplied according to the agreed weight.

## 7 Technical requirements

### 7.1 Material

**7.1.1** The steel wire shall be made of carbon steel wire rods conforming to GB/T 4354, GB/T 24242.2 or those of equivalent quality of other standards. When the purchaser has requirements on the designation, it shall be indicated in the contract, otherwise it will be determined by the supplier.

**7.1.2** Zinc ingots for steel wire galvanizing shall comply with the provisions of GB/T 470. The designation of zinc ingots shall be Zn99.995 or Zn99.99.

**7.1.3** Zinc alloy ingots for steel wire zinc coated alloys shall comply with the requirements of YS/T 310-2008. The selected designation shall be RZnAl5RE or RZnAl10, which shall be indicated by the purchaser in the contract.

### 7.2 Joint

For steel wires with strength grades of 340 and 650, after drawing and before hot dip galvanizing, one joint per coil is allowed; but the joint position shall be at least above 100 m from the tip. For steel wires with strength grades of 850, 1050, 1250, 1450, and 1650, after drawing, no joints are allowed.

### 7.3 Mechanical properties and process properties

#### 7.3.1 Tensile strength

The nominal tensile strength of steel wire is divided into seven grades of 340,

Unless otherwise agreed by the supplier and the purchaser, the steel wire shall be accepted in lots. Each lot shall consist of steel wires of the same nominal diameter, the same strength grade, and the same coating category.

### **9.3 Sampling position and quantities**

SAMPLE from the tip of the steel wire being inspected. The sampling quantities shall be in accordance with the provisions of Table 8. SAMPLE according to the number of coils, but not less than one coil.

### **9.4 Re-inspection and judgement rules**

When the initial test fails, double samples shall be taken, to re-inspect the unqualified items. If the re-inspection is still unqualified, the test shall be carried out on a coil-by-coil basis; the qualified ones shall be delivered.

### **9.5 Rounding-off of test results**

The test results shall be rounded-off according to the provisions of YB/T 081.

## **10 Storage and transportation**

The storage and transportation of steel wire shall be in accordance with GB/T 2103.

## **11 Packing, marking, and quality certification**

**11.1** When there is no agreement between the supplier and the purchaser, the packing method of steel wire shall comply with the provisions of GB/T 2103.

**11.2** The marking and quality certification of steel wire shall be in accordance with GB/T 2103. The quality certification shall provide the chemical composition (heat analysis) of the steel.

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