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

YB/T 5189-2022

**Determination of the volatile matter content in carbon materials
(English Translation)**

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Foreword

This Standard is drafted according to the rules provided in GB/T 1.1-2009.

This Standard replaces YB/T 5343-2009 "Steel Wire for Ropes"; compared with YB/T 5343-2009, the main changes are as follows.

- The standard name "Steel Wire for Ropes" is revised as "Steel Wire for Ropes".
- It is specified that this Standard is applicable to smooth and coated steel wires with circular cross sections for all kinds of steel wire ropes (excluding steel wire ropes for elevator).
- The classification is according to the surface state, use, nominal diameter and nominal tensile strength of the steel wire.
- The nominal diameter range of the steel wire is expanded to $0.08\text{mm} \leq d \leq 6.00\text{mm}$ from the original $0.15\text{mm} \leq d < 4.4\text{mm}$.
- $0.08\text{mm} \leq d < 0.20\text{mm}$ and tolerance $\pm 0.005\text{mm}$ are added in the nominal diameter column of Table 1 Diameter Tolerance; the original $0.15\text{mm} \leq d < 0.30\text{mm}$ and $0.30\text{mm} \leq d < 0.60\text{mm}$ are modified to be $0.20\text{mm} \leq d < 0.40\text{mm}$ and $0.40\text{mm} \leq d < 0.60\text{mm}$; $d < 0.40\text{mm}$ Level A coating tolerance is deleted.
- The nominal tensile strength given by use in Table 2 is modified to be by surface

state, nominal diameter of the steel wire and use purpose (important use in Table 2, general use in Table 3). For important use smooth and Level B's nominal tensile strength $< 4.0\text{mm}$, 2160MPa is added; the nominal tensile strength of 1960MPa is increased from $\leq 4.4\text{mm}$ to $< 5.4\text{mm}$. For the nominal tensile strength $< 0.2\text{mm}$ of general use smooth and Level B coated steel wire. 2000MPa, 2500MPa, 3000MPa, 3500MPa are added. 1180MPa of nominal tensile strength for general use is added. The nominal tensile strength corresponds to the nominal diameter of the steel wire; different steel wire diameters correspond to different nominal tensile strengths.

- For steel wires with diameter less than 0.2mm, the tolerance of the nominal tensile strength shall be negotiated by both parties.
- The minimum number of torsion and the minimum number of repeated bending for the expanded steel wire diameter and the increased nominal tensile strength in Table 5 ~ Table 8 are given. The number of repeated bending of the steel wire with diameter greater than 5.0mm shall be negotiated by both parties.
- 5.6 "Other requirements" is canceled, the contents of this clause are revised to "Note. The number of repeated bending and the number of torsion of other nominal tensile strengths shall be negotiated by both parties" and are included in the corresponding Table 5 ~ Table 8.
- 5.7 "Quality of zinc coating" is revised to be "Coating quality".
- 6 "Test method" is revised to be "Inspection and test".
- 6.1 Test items, methods and sampling positions are divided into 6.1 Inspection and 6.2 Test; the test items are divided into 3 items - diameter, ellipticity, shape; the surface quality is included into Table 11, and the inspection methods and quantity are given. 6.2 Test items, methods and sampling positions are included into Table 12.
- 6.3 Sampling quantity is listed in a single row. It is stipulated that the number of samples shall be taken according to the number of each batch of steel wires; the

sampling quantity and determination rules are given in Table 13. The calculation method of the number of each batch of steel wires is given in Annex A.

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

This Standard shall be under the jurisdiction of National Steel Standardization Technical Committee (SAC/TC183).

Drafting organizations of this Standard. Ansteel Wire Rope Co., Ltd., Guizhou Wire Rope Incorporated Company, Hubei Fuxing Science and Technology Co., Ltd., China Metallurgical Information and Standardization Institute.

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The previous versions replaced by this Standard are as follows.

- YB/T 5343-2006, YB/T 5343-2009.

Steel Wire for Ropes

1 Scope

This Standard specifies the classification, dimension, shape, and tolerance, technical requirements, inspection and test methods, packaging, marking and quality certificate of steel wires for ropes.

This Standard is applicable to the smooth and coated steel wires for steel wire ropes (excluding steel wire ropes for elevator).

2 Normative reference

The following documents are essential for the application of this document. For all dated reference documents, only the dated versions are applicable to this document.

While for all undated reference documents, the latest versions (including all modifications) are applicable to this document.

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

GB/T 238 Metallic materials - Wire - Reverse bend test

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

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

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

GB/T 2976 Metallic materials - Wire - Wrapping test

GB/T 4354 Hot-rolled quality carbon steel wire rods

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

3.1 Classification by surface state of steel wires. smooth and coated. Coated steel

wire is divided into three levels. Level B, Level AB and Level A.

4.1.1 Nominal diameter

It means the nominal diameter in millimeters, which is used for the inspection and acceptance of all technical indicators.

4.1.4 Ellipticity

Ellipticity refers to the difference between the maximum and minimum diameter of the same cross section of the steel wire, which shall not be more than half of the tolerance of the nominal diameter of the steel wire.

4.2 Shape

Steel wire coils shall be regular, when the coil is opened, the wire shall not be scattered, twisted or "infinity" shaped. Spool rolls shall be flat.

5.1 Raw material

Raw materials shall be steel wire rods conforming to provisions of GB/T 4354, the steel grades shall be selected by manufacturers. Other steel grades can be selected according to the need.