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

GB/T 12753-2020

Replacing GB/T 12753-2008

Steel wire ropes for conveyer belts

输送带用钢丝绳

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009. This Standard replaces GB/T 12753-2008 "Steel wire ropes for conveyer belts". Compared with GB/T 12753-2008, in addition to editorial modifications, the main technical changes in this Standard are as follows: - modified the provisions on wire rod; added the provisions on technology agreement (see

5.1.1 of this Edition,

7.1.1 of Edition 2008); - added the provisions on zinc ingot material (see

5.1.2 of this Edition); - modified "steel wire in wire rope" to "stranded steel wire" (see

5.2 of this Edition,

7.1 of Edition 2008); - modified the provisions on the allowable deviation and out-of-roundness of stranded steel wire (see

5.2.1 of this Edition,

6.1 of Edition 2008); - added and adjusted the level of steel wire ropes; modified to level I, level II, level III and level IV (see

5.2.2 of this Edition,

5.2 of Edition 2008); - adjusted the nominal tensile strength of steel wire to 2260MPa, 2360MPa, 2460MPa and 2560MPa (see

5.2.2 of this Edition,

7.1.2 of Edition 2008); - deleted level H of zinc layer weight; changed the symbol of the minimum zinc layer heavyweight to 30δ as level M, 60δ as level N (see

5.2.5 of this Edition,

5.3 of Edition 2008); - modified the requirements for appearance quality (see 5.2.6,

1 Scope

GB/T 12753-2020 is the Chinese national standard on steel wire ropes for conveyer belts, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 21 July 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 February 2021. Classification: ICS 77.140.65, CCS H49. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies order content, requirements, test methods, inspection rules, packaging, quality guarantee period, transportation, storage, marks and quality certificate of steel wire ropes for conveyer belts. This Standard is applicable to galvanized steel wire ropes for steel wire rope core conveyor belt skeleton reinforcement material (hereinafter referred to as "steel wire ropes").

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 470, Zinc ingots

GB/T 1839, Test method for gravimetric determination of mass per unit area of galvanized coatings 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/T 24242.2, Non-alloy steel wire rod 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 The surface of steel wire rope shall be free of oil, water, dirt and other impurities.

5.3.2 Steel wire connector Single-strand connectors are not allowed in the steel wire rope. The steel wire connectors shall also be minimized. When steel wires have to be connected during twisting, steel wires with a nominal diameter of less than 0.40mm shall have plug-in connectors; steel wires with a nominal diameter greater than or equal to 0.40mm may use butt welding connectors or plug-in connectors. The plugged wire ends shall be sealed inside the strands. They shall not be exposed. The wire at the splice is allowed to have partial crossing. The distance between steel wire connectors in the same steel wire strand shall be greater than 100m.

5.3.3 Pre-deformation Steel wire ropes shall be pre-deformed, without looseness, with small residual torsion, and no spring loops, waves, hard bends and other defects.

5.3.4 Structure The steel wire rope shall be an open structure. According to its structure, it is divided into three types: 6x7-WSC, 6x19-WSC and 6x19W-WSC, as shown in Annex A. After negotiation between the supplier and the purchaser, steel wire ropes of other structures can also be supplied.

5.3.5 Level of steel wire ropes The steel wire ropes are divided into level I, level II, level III and level IV, as shown in Table 2.

5.3.6 Twisting direction and type of steel wire ropes Steel wire ropes are divided into right twist (Z) and left twist (S) according to the twist direction. In general, the left twist and right twist shall be half and half at the time of delivery. It can also be adjusted according to user order requirements. The twisting method of steel wire rope is alternating twist.

5.4 Marks and classification of steel wire ropes The marks and classification of steel wire ropes shall meet the requirements of GB/T 8706.

5.5 Size of steel wire ropes

5.5.1 Diameter The nominal diameter D and allowable deviation of steel wire ropes shall twist speed during the arbitration test is 1r/s.

6.1.4 The knotted tensile test is carried out in accordance with the provisions of GB/T 228.1.

6.1.5 The zinc layer weight test shall be carried out according to the provisions of GB/T 1839.

6.1.6 Use hand feeling and visual inspection to check the appearance quality.

6.2 Tests of steel wire ropes

6.2.1 Use hand feeling and visual inspection to check the appearance quality of steel wire ropes.

6.2.2 Untie the two opposite strands at either end of the steel wire rope, about two lay lengths. When the two strands are restored to their original positions and all constraints are lifted, the steel wires and strands in the steel wire rope remain in their original positions. When they do not unravel on their own, the steel wire ropes are not loose.

6.2.3 After removing the rope end by 1m~2m, bend into an angle of about 90° at about 50mm from the rope end. Pinch this elbow tightly to avoid the steel wire rope spinning when pulling out a 6m long sample (not cut from the coil). Then, release the free section of the steel wire rope. Let it spin freely without tension. The number of rotations shall not exceed 3 revolutions (r), which means that the residual torsion of the wire rope is small.

6.2.4 The diameter of the steel wire rope shall be measured with a wide jaw Vernier caliper. The width of the jaw shall be sufficient to span two adjacent strands, as shown in Figure 1. The minimum resolution value of the Vernier caliper shall not exceed 0.02mm. The measurement shall be performed on a straight line 1m away from the end of the steel wire rope without tension. Measure a diameter on two cross-sections at least 1m apart and in the direction perpendicular to each other on the same cross-section. The average of the four measurements is used as the measured diameter of the steel wire rope. The measured diameter should comply with the allowable deviation specified in Annex A. Figure 1 -- Measurement method for steel wire rope diameter

- a) A sample is used for the actual breaking tensile test of the steel wire rope;
- b) Remove any 3 strands from another sample. 1 strand is for measurement of stranded steel wire diameter and tensile test. 1 strand is for twist test or knotted tensile test. 1 strand is for zinc layer weight test. The center steel wire and outer strand center wire are not tested for mechanical properties.

7.3.4 When a wire rope is cut into several pieces for delivery, several of them are also tested according to

7.3.3 as a coil.

7.4 Determination and reinspection rules

7.4.1 If all the tests meet the requirements, the batch (or strip) of steel wire ropes is accepted.

7.4.2 If one or more test items do not meet the specified requirements, then re-sample on the same steel wire rope for re-inspection of failed items. If the re-inspection result meets the specified requirements, the batch (or) of steel wire ropes is still accepted. If one or more re-inspection results do not meet the specified requirements, this coil of steel wire ropes shall be rejected. The remaining wire ropes of this batch shall be sampled one by one for