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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 17119-2025

Replacing GB/T 17119-1997

Continuous mechanical handling equipment - Belt conveyors with carrying idlers - Calculation of operating power and tensile forces

连续搬运设备 带承载托辊的带式输送机 运行功率和张力的计算

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. This document supersedes GB/T 17119-1997 "Continuous conveying equipment - Operating power and tension of belt conveyors with load-bearing idlers". Compared with GB/T 17119-1997, the main technical changes in "Computing" are as follows, apart from structural adjustments and editorial modifications.

a) The range of special resistance was changed, increasing the frictional resistance between the trough skirt and the conveyor belt, and increasing the frictional resistance

between the buffer bed and... The frictional resistance of the conveyor belt increases the turning resistance of the belt conveyor and the rigidity resistance of the circular tube belt conveyor. The forming resistance of the circular tube belt conveyor is described in section 5.4, section

4.5 of the.1997 edition.

b) The applicable conditions and range of values for the simulated friction coefficient reference value have been changed (see 6.1.3.1,

5.1.3 of the.1997 edition);

c) A method for quantitatively calculating the simulated friction coefficient has been added (see 6.1.3.2);

d) The calculation formula for the frictional resistance between the conveyed material in the acceleration section and the side plate of the guide chute has been modified (see Table 6, Table 2 in the.1997 edition);

e) Expanded the applicable range of the trough coefficient in the formula for calculating the forward tilting friction resistance of the idler rollers, and changed the relationship between the conveyed material and the guide roller in the non-acceleration section. The calculation formula for the frictional resistance between the side plates of the trough has been revised, and the calculation formula for the frictional resistance of the guide trough skirt plate has been added. The conveyor belt cleaning process has also been modified. The calculation formula for device resistance has been revised, the range of values for the resistance coefficient of the plow-type unloader has been changed, and the calculation of the frictional resistance of the buffer bed has been added. The formulas have been expanded to include calculation formulas for the turning resistance of belt conveyors and for the rigid resistance of circular tube belt conveyors. The formula has been expanded to include a calculation formula for the pipe forming resistance of the circular tube belt conveyor (see Table 7, Table 3 in the.1997 edition);

f) Modified the voltage drop coefficient, multi-motor drive imbalance coefficient, and the influence coefficients of ambient temperature and altitude on the motor's heat capacity, and increased... The calculation method for transmission efficiency has been added (see 6.2,

5.2 of the.1997 edition);

g) The maximum permissible sag during the stable operation and start-up/braking processes of belt conveyors has been modified (see 6.3.3,

5.3.3 of the.1997 edition);

h) A method for calculating inertial forces has been added (see 6.3.4);

1 Scope

GB/T 17119-2025 is the Chinese national standard on continuous mechanical handling equipment - belt conveyors with carrying idlers - calculation of operating power and tensile forces, in the field of materials handling equipment. 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 31 October 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2026. Classification: ICS 53.040.01, CCS J81. 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 document specifies the calculation methods for the required operating power on the drive drum of a belt conveyor and the tension acting on the conveyor belt. This document applies to general-purpose belt conveyors with load-bearing idlers, using fabric-core or wire rope-core conveyor belts as both load-bearing and traction components. Horizontal turning belt conveyors and circular tube belt conveyors; other types of belt conveyors shall be implemented in accordance with the same procedure.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 14521 Terminology for Continuous Handling Machinery

GB/T 35017-2018 Classification, Symbols, Performance and Test Methods for Bulk Materials in Continuous Handling Equipment

GB 50231 General Specification for Construction and Acceptance of Mechanical Equipment Installation Engineering

GB 50270 Construction and Acceptance Specification for Installation Engineering of Conveying Equipment

3 Terms and Definitions

The terms and definitions defined in GB/T 14521 and GB/T 35017-2018, as well as the

following terms and definitions, apply to this document.

3.1 dynamic charge angle Running stacking angle The angle between the tangent at the intersection of the material's cross-sectional profile and the moving conveyor belt and the horizontal plane.

Note. The unit is degrees (°).

3.2 Angle of repose Natural angle of accumulation The maximum slope angle (i.e., natural slope) of the cone-shaped material pile that can be stably maintained when the material falls freely and uniformly from a specified height. (The angle between the plane and the horizontal plane).

Note. The unit is degrees (°).

4.Symbols and Units Symbols and units shall conform to the provisions of Appendix A.