

Test methods for mechanical joints in conveyor belting

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- British Rubber Manufacturers' Association Ltd.*
- Department of Trade and Industry*
- Institution of the Rubber Industry
- Ministry of Aviation Supply
- Natural Rubber Producers' Research Association
- Rubber and Plastics Research Association of Gt. Britain*
- Rubber Growers' Association
- Society of Motor Manufacturers and Traders Ltd.
- Tyre Manufacturers' Conference

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- Association of Solid Woven Belting Manufacturers
- British Association of Balata Belting Manufacturers
- British Man-made Fibres Federation
- British Plastics Federation
- Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales
- Engineering Equipment Users' Association
- Federation of Associations of Mining Equipment Manufacturers
- Institution of Mechanical Engineers
- Mechanical Handling Engineers' Association
- National Coal Board

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Foreword

This British Standard has been prepared under the authority of the Rubber Industry Standards Committee. The methods described are those in use at the Mining Research and Development Establishment of the National Coal Board, Methods C and D having been devised by that Establishment.

With the exception of certain points of detail, Methods A and B are based on those given in ISO/R 1120, "*Strength of mechanical fastenings for conveyor belts (Static test method)*", prepared by TC 41, "Pulleys and belts (including vee-belts)" of the International Organization for Standardization (ISO).

Method C is intended specifically for high strength joints and is designed to overcome the problem of gripping the test pieces at high tension.

Method D is intended to enable laboratory comparisons to be made of the joint life in service; it employs 250 mm diameter pulleys that subject the test joint to very severe flexing. It is not suitable for use with belting of the highest strength as the flexing is too severe for a realistic assessment of joint life. A modified method for use under these circumstances is under development and will be published later.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 General

1.1 Scope

This British Standard describes static and dynamic methods of test for the evaluation of the strength of joints made in conveyor belting using mechanical fasteners.

NOTE The titles of the British Standards and ISO Recommendation referred to in this standard are given on the page 10.

1.2 Definitions

1.2.1

pitch

the nominal distance between a point on a fastener unit and the corresponding point on the next fastener unit (see Figure 1)

1.2.2

fastened width

the number of fastener units inserted in one end of a test piece multiplied by the pitch (see Figure 1)

1.2.3

test tension

the tension force in the belt divided by the fastened width

2 Static tensile strength of joints made with mechanical fasteners

2.1 Method A. Method for joints that can be disconnected

2.1.1 Field of application. This method is suitable for determining the static tensile strength of joints in conveyor belting made with mechanical fastenings. The method is restricted to joints that can be disconnected. The method is suitable for most types of belting having tensile strengths in the range covered by BS 490 and should be used whenever possible in preference to Method C.

2.1.2 Apparatus

2.1.2.1 A suitable tensile testing machine complying with the following requirements shall be used.

- 1) The accuracy of the machine shall be within the limits specified in BS 1610 for Grade A machines.
- 2) The range of the machine shall be so chosen that the loads to be measured fall within the upper 90 % of the full-scale deflection.
- 3) The machine shall have either an autographic force recorder or a maximum force indicator.
- 4) The rate of traverse of the driven grip shall be 100 ± 5 mm/min. The power shall be sufficient to maintain the rate substantially constant up to the maximum capacity of the machine.
- 5) The method of holding the test piece shall be such as to ensure proper alignment of the test pieces in the machine grips, eliminating slip or damage during testing. The use of transverse serrated grips such as are illustrated in Figure 2 has been found to be suitable. For very thick belts, double compartment grips such as are illustrated in Figure 3 have been found to be suitable.

The grips shall be free to move without undue friction and in correct alignment.

2.1.2.2 A steel adaptor plate suited to the dimensions of the type of fastener under test. The adaptor plate shall be such that a half joint can be coupled to it by means of a solid steel rod of suitable diameter (see Figure 1).

2.1.3 Preparation of test pieces

2.1.3.1 The test pieces shall be prepared not less than five days after the date of manufacture of the belting.

2.1.3.2 No test piece shall be cut with its longitudinal edge less than 25 mm from the edge of the belting sample.

2.1.3.3 Three rectangular test pieces shall be prepared from the full thickness of belting. The length of the test piece shall be 150 ± 10 mm plus the gripped length and shall be parallel to the longitudinal direction of the belting. The width of the test piece shall be 25 mm plus the fastened width (see 2.1.3.4) and shall be parallel to the transverse direction of the belt.