



**International
Standard**

ISO 18573

**Conveyor belts — Test atmospheres
and conditioning periods**

*Courroies transporteuses — Atmosphères d'essai et durées de
conditionnement*

**Third edition
2024-09**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 41 *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*.

This third edition cancels and replaces the second edition (ISO 18573:2012), of which it constitutes a minor revision. The changes are as follows:

- Clause 2 and the Bibliography have been updated.
- Clause 3 has been updated.
- Content in parentheses in [Clause 5](#) c), d) and e) has been deleted.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The conditioning of test pieces prior to testing is commonly accepted as an essential practice in most, but not necessarily all, methods of test. Its purpose is to provide a common ground base for the commencement of the test and to remove an unnecessary variable in the search for the optimum precision for the particular test.

In order to meet these objectives, it is essential to standardize as many of the variables as possible.

Conveyor belts, other than steel cord conveyor belts, contain a textile element. This can be highly hydrophobic or somewhat more hydrophilic. Similarly, the polymer layer or cover can be thermoplastic or subject to thermal ageing. Each of these factors can have a significant effect on the property of the conveyor belt. These factors need to be taken into account when making a decision as to whether conditioning is necessary and, if so, what the most appropriate conditions would be. The provisions given in ISO139,^[1] ISO23529^[2] and ISO2231^[3] have been taken into account in the preparation of this document.

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Conveyor belts — Test atmospheres and conditioning periods

1 Scope

This document specifies the temperature, humidity and time conditions used for the conditioning and testing of all types of conveyor belt, irrespective of whether they have plastics or rubber covers. It also specifies the requirements for the time interval to be observed between production and testing of conveyor belt test pieces.

Special conditions applicable to a particular test or material or simulating a particular climatic environment are not included.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 standard atmosphere

specified temperature and humidity in which samples are conditioned and tested

Note 1 to entry: See [Clause 5](#).

3.2 moisture equilibrium

condition reached by a conveyor belt test piece when, after free exposure to air in motion, there is no appreciable change in mass

3.3 conditioning

exposure of a test piece to a standard atmosphere for a stipulated period of time immediately before testing, in order to improve the reproducibility of test results

3.4 temperature equilibrium

condition reached by a conveyor belt test piece when it is at a uniform temperature throughout its mass and is within 1 °C of the temperature of its environment

4 Preconditioning

If the textile element of the conveyor belt is of a highly hygroscopic material or if the method of test is highly sensitive to differences in the moisture content of the test piece, it is highly desirable that moisture equilibrium be approached from the dry side of the moisture hysteresis curve. This shall be achieved by

preconditioning the test pieces in an atmosphere having a relative humidity of no greater than 10 % and a temperature of between 60 °C and 70 °C.

NOTE Air at 65 % relative humidity and 20 °C, when heated at constant pressure to between 60 °C and 70 °C, has a relative humidity of approximately 5 %. Higher temperatures can lead to changes in the properties of some polymers.

5 Standard atmospheres for conditioning and testing

The conditioning treatment required for each individual test should be stated in the relevant test method.

The use of one of the following atmospheres shall be fixed by the particular standard or specification for each test. The choice of one of these alternatives will depend on the prevalent usage in individual countries and the variant used shall be reported in the test report.

a) Atmosphere A

- temperature 20 °C ± 2 °C
- relative humidity 65 % ± 5 %

b) Atmosphere B

- temperature 23 °C ± 2 °C
- relative humidity 50 % ± 5 %

c) Atmosphere C

- temperature 27 °C ± 2 °C
- relative humidity 65 % ± 5 %

d) Atmosphere D

- temperature 23 °C ± 2 °C or 20 °C ± 2 °C

e) Atmosphere E

- temperature 27 °C ± 2 °C

6 Time interval between production and commencement of testing

For all test purposes, the time between completion of production and the commencement of testing shall be no less than 24 h; this period is to include the conditioning periods given in [Clause 7](#). For light conveyor belts (as specified in ISO 21183-1^[4]) this period shall be extended to 5 days (120 h).

Whenever possible, the maximum time between production and commencement of testing shall not exceed 3 months.

NOTE Test results obtained on a product where the tests are conducted more than 3 months apart, can exhibit higher variations in repeatability and reproducibility than duplicate tests conducted within this timescale.

7 Conditioning

7.1 Temperature and humidity control

If both the temperature and humidity need to be controlled (Atmospheres A, B or C; see [Clause 5](#)), the conditioning period shall be no less than 16 h immediately before testing. For light conveyor belts (as specified in ISO 21183-1^[4]), this conditioning period shall be extended to no less than 48 h. In the event of dispute, these conditioning periods shall be extended to no less than 72 h.

7.2 Temperature control only

If only the temperature needs to be controlled (Atmospheres D and E; see [Clause 5](#)), the conditioning period shall be no less than 3 h immediately before testing. In the event of dispute, this conditioning period shall be extended to no less than 72 h.

7.3 Temperatures greater than or less than the standard laboratory test temperature

If a temperature other than the standard laboratory temperature is specified without the need to control the humidity, the conditioning time shall be a period sufficient for the test piece to reach temperature equilibrium with the environment, or a period required by the specification covering the material or product being tested.

Guidance on the selection of conditioning times, which will ensure that equilibrium is reached, is given in ISO 23529.^[2]

7.4 Position of test pieces during conditioning

During the conditioning period, the test pieces shall be positioned in such a manner that, as far as possible, the whole surface of the test piece is exposed without imposing any stress or strain on the test piece, and, unless otherwise specified in the method of test, the test pieces shall be conditioned in the absence of light or ionizing radiation.

8 Testing

Unless otherwise specified, testing shall be carried out at the same temperature and humidity at which the conditioning was performed.

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