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## Conveyor belts — Heat resistance —

### Part 1: Test method

iTeh STANDARD PREVIEW

*Courroies transporteuses — Résistance à la chaleur —*  
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*Partie 1: Méthode d'essai*

ISO 4195-1:1987

<https://standards.iteh.ai/catalog/standards/sist/fbead283-1a6c-4467-82be-49c5261009c0/iso-4195-1-1987>

Reference number  
ISO 4195-1:1987 (E)

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4195-1 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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# Conveyor belts — Heat resistance —

## Part 1: Test method

### 1 Scope and field of application

This part of ISO 4195 specifies a test method for determining the relative level of heat resistance of conveyor belts.

Because of the procedure requirements set, the tests can be carried out only if the cover thickness is equal to or greater than 4 mm.

### 2 References

ISO 37, *Rubber, vulcanized — Determination of tensile stress-strain properties.*

ISO 48, *Vulcanized rubbers — Determination of hardness (hardness of between 30 and 85 IRHD).*

ISO 188, *Rubber, vulcanized — Accelerated ageing or heat-resistance tests.*

ISO 471, *Rubber — Standard temperatures, humidities and times for the conditioning and testing of test pieces.*

ISO 4661-1, *Rubber, vulcanized — Determination of temperature rise and resistance to fatigue in flexometer testing — Part 1: Basic principles.*

### 3 Principle

Measurement of basic technological properties before and after exposure to heat under suitable defined conditions and consideration of the variation in these properties after exposure.

The temperatures selected for the tests are not generally the same as the temperature of the product which is to be transported; they generally have to be lower, to take account of

- a) the possibility of the belt cooling;
- b) the fact that contact does not produce temperature equality between the product and the belt.

### 4 Classification

Belts may be classified according to the three classes defined below; however, these classes do not correspond to the temperature of the product transported as mentioned above, and, depending on the use for which the belt is intended, the manufacturer should specify the belt class to be used.

- Class 1: Resistant to test temperatures of up to 100 °C.
- Class 2: Resistant to test temperatures of up to 125 °C.
- Class 3: Resistant to test temperatures of up to 150 °C.

### 5 Basic technological properties

The properties used in this evaluation are as follows.

- 5.1 IRHD hardness of the covers, in accordance with ISO 48.
- 5.2 Tensile strength and elongation at break of the covers in accordance with ISO 37.

### 6 Procedure

#### 6.1 Exposure to heat

Cut a sample of belt of full thickness measuring 400 mm × 400 mm from the centre of the belt at a distance of at least 100 mm from the edges. Place it in an air oven complying with the requirements of ISO 188, for 7 days at the temperature selected in accordance with the classification defined in clause 4 (100 °C, 125 °C or 150 °C).

After exposure to heat, remove the belt sample from the air oven and leave it to cool.

## 6.2 Preparation of test pieces for evaluating properties, in accordance with ISO 4661-1

After cooling and without further mechanical strain, cut away the covers from the belt samples treated according to 6.1 and bring them to a thickness of 2 mm by cutting on both faces and finishing off by a light buffing.

NOTE — The following procedure is suitable. Begin by slitting off a layer of thickness  $A$  from the cover upper side and throw it away. For a cover thickness  $e_1$  take  $A \approx 0,5 (e_1 - 2)$ . Prepare the necessary sheet for test pieces from the cover layer immediately underneath by cutting a layer of approximately 2,5 mm thickness and bring it to the final thickness of 2 mm, for example by light buffing on both faces.

Prepare the standardized test pieces required for tests 5.1 and 5.2 from the sheet thus obtained and condition them for 24 h at a temperature of  $23 \pm 2$  °C and a relative humidity of  $(50 \pm 5)$  %.

### NOTES

1 In the case of belts with a textile carcass, the test results of which can be affected by the humidity, a temperature of  $20 \pm 2$  °C and a relative humidity of  $(65 \pm 5)$  % may be selected, by agreement between the parties concerned, provided that this is clearly indicated in the test report.

2 In the special case of tropical conditions, refer to ISO 471 [ $27 \pm 2$  °C,  $(65 \pm 5)$  %].

## 6.3 Evaluation of the variations in properties after exposure to heat

The tests shall be carried out on test pieces prepared as specified in 6.2 and in accordance with the methods specified

in clause 5. The variations shall be evaluated by comparison with the results of the same tests carried out on a sample from the same belt which has not been exposed to heat.

## 7 Expression of results

The results shall permit the deterioration of the belts after exposure to heat under the set conditions to be evaluated.

They shall be expressed as variations by comparison with the measured initial values.

The values measured after exposure to heat shall be checked against the maximum values or changes permitted by the specification.

## 8 Test report

The test report shall include the following information:

- a) reference to this part of ISO 4195;
- b) identification of the product tested;
- c) the conditions of exposure to heat;
- d) the results obtained after heat exposure, expressed according to clause 7;
- e) an indication of the belt class.