

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 284

ELECTRICAL CONDUCTIVITY OF CONVEYOR BELTS
SPECIFICATION AND METHOD OF TEST

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BRIEF HISTORY

The ISO Recommendation R 284, *Electrical Conductivity of Conveyor Belts – Specification and Method of Test*, was drawn up by Technical Committee ISO/TC 41, *Pulleys and Belts (including Vee-Belts)*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1958 and led, in 1960, to the adoption of a Draft ISO Recommendation.

In March 1961, this Draft ISO Recommendation (No. 443) was circulated to all the ISO Member Bodies for enquiry. It was approved by the following Member Bodies:

Australia	France	New Zealand
Austria	Germany	Portugal
Belgium	Greece	Spain
Brazil	India	Sweden
Chile	Iran	Turkey
Colombia	Israel	United Kingdom
Czechoslovakia	Italy	U.S.A.
Denmark	Mexico	U.S.S.R.
		Yugoslavia

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1962, to accept it as an ISO RECOMMENDATION.

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ELECTRICAL CONDUCTIVITY OF CONVEYOR BELTS

SPECIFICATION AND METHOD OF TEST

1. SCOPE

The purpose of this ISO Recommendation is to specify the maximum electrical resistance of a conveyor belt and the corresponding method of measurement.

The test is intended to ensure that the belt is sufficiently conductive to drain off charges of electricity which may form on it in service.

2. SPECIFICATION

The electrical resistance should not exceed 3×10^8 ohms (300 megohms).

3. METHOD OF TEST

3.1 Principle

An electrical current of specified voltage is passed through electrodes of a suitably prepared test piece taken from the belt.

3.2 Apparatus

The apparatus consists of the following:

- 3.2.1 *Sheet of insulating material* a little larger than the test piece.
- 3.2.2 *Two cylindrical and coaxial brass electrodes*, the base of one being circular and the other annular. The dimensions and masses are given in Figure 2. The bases of these electrodes should be machined flat and polished. A flexible insulated wire is connected to each electrode.
- 3.2.3 *Resistance-measuring instrument* capable of giving readings between 10^5 and 10^{10} ohms to \pm within 5 per cent.
- 3.2.4 *Source of direct current* at 1000 V maximum.

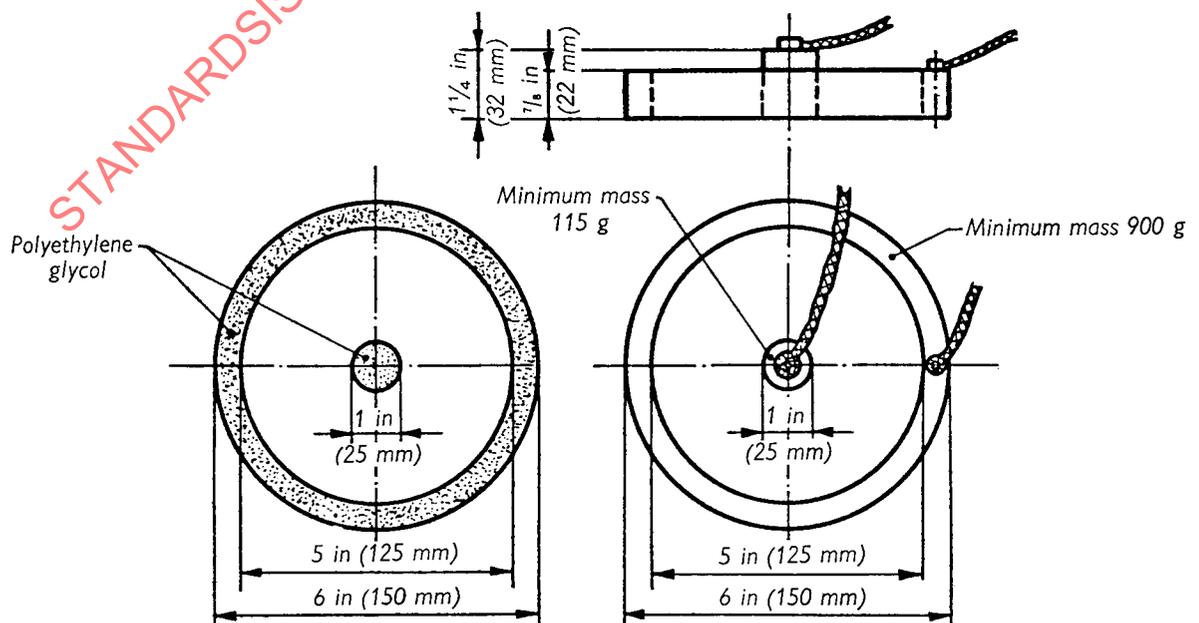


FIG. 1. - Design to be painted on the test piece

FIG. 2. - Electrodes

3.3 Test pieces

3.3.1 *Shape and dimensions.* The square test piece should be cut from the complete thickness of the belt, including covers.

Length of side: 12 in (300 mm) minimum.

Thickness: the thickness of the belt.

3.3.2 *Number.* Two test pieces should be used.

3.3.3 *Preparation.* The preparation of the test piece consists in the following:

(a) Both surfaces of the test piece are cleaned by rubbing with fuller's earth, for example, using a clean cloth. After all traces of the powder have been cleaned away, the surface is wiped with a clean cloth moistened with distilled water and then dried with a clean cloth.

(b) On one of the surfaces of the test piece a solution of polyethylene-glycol (or other conducting liquid having at least the same electrical conductivity) is applied to two areas, as shown in Figure 1, which correspond to the dimensions of the bases of the electrodes.

Great care should be taken to ensure the accuracy of the dimensions of the areas, but the symmetry of the centre is not critical.

(c) The solution is made up as follows:
 800 parts, by mass, of anhydrous polyethylene-glycol of molecular weight 600;
 200 parts, by mass, of water;
 one part, by mass, of soft soap.

3.4 Conditioning of test piece

Immediately before the test, the test piece should be conditioned for at least 2 hours at a temperature of $20 \pm 2^\circ\text{C}$ and at a relative humidity of 65 ± 5 per cent.

3.5 Test conditions*

The test conditions should be as follows:

temperature	$20 \pm 2^\circ\text{C}$,
relative humidity	65 ± 5 per cent.

* The electrical resistance decreases with increase of both temperature and humidity. A successful test therefore proves compliance, but an unsuccessful test does not necessarily prove non compliance, which can only be established by retesting at the higher specified limit of temperature and humidity.