
Polimerni materiali - Določevanje gorljivosti in hitrosti gorenja polimernih materialov v obliki polimernih folij

Plastics -- Determination of flammability and burning rate of plastics in the form of film

Matières plastiques -- Détermination de l'inflammabilité et de la vitesse de combustion des matières plastiques sous forme de feuilles minces

Ta slovenski standard je istoveten z: ISO/R 1326:1970

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83.080.01	Polimerni materiali na splošno	Plastics in general

SIST ISO/R 1326:1996**en**

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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1326

PLASTICS

iTeh STANDARD PREVIEW**DETERMINATION OF FLAMMABILITY AND BURNING RATE**
(standards.iteh.ai)**OF PLASTICS IN THE FORM OF FILM**SIST ISO/R 1326:1996

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BRIEF HISTORY

The ISO Recommendation R 1326, *Plastics – Determination of flammability and burning rate of plastics in the form of film*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the American National Standards Institute (ANSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1326, which was circulated to all the ISO Member Bodies for enquiry in November 1967. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Iran	South Africa, Rep. of
Canada	Israel	Spain
Chile	Italy	Switzerland
Czechoslovakia	Japan	Turkey
France	Korea, Rep. of	United Kingdom
Germany	Netherlands	U.S.A.
Greece	New Zealand	U.S.S.R.
Hungary	Poland	Yugoslavia
India	Romania	

The following Member Bodies opposed the approval of the Draft :

Austria
Belgium
Sweden

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

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ISO Recommendation

R 1326

June 1970

PLASTICS

DETERMINATION OF FLAMMABILITY AND BURNING RATE
OF PLASTICS IN THE FORM OF FILM

1. SCOPE

This ISO Recommendation describes a method for determining the relative flammability and the burning rate of plastics in the form of sheets or films of thickness between 1.5 mm (0.06 in) and 0.05 mm (0.002 in).

2. PRINCIPLE OF METHOD

A strip of film is clamped at one end and allowed to hang down vertically. The flammability and burning rate of the film are assessed after an attempt has been made to ignite the lower end of the film with a gas flame.

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3. SIGNIFICANCE OF THE TEST

This method provides a means of comparing the flammability of plastics in sheet or film form. Test data should be compared with data for a control material of known performance and of comparable thickness, as it is generally observed that burning rate increases markedly as film thickness is reduced. Correlation with flammability under actual use conditions is not necessarily implied. Excessive shrinkage of specimens may invalidate the test.

4. APPARATUS

- 4.1 *Shield*, constructed from sheet metal or other fire-resistant material, having inside dimensions 300 mm (12 in) in width by 300 mm (12 in) in depth, by 760 mm (30 in) in height, and open at the top (see Figure, page 8). The shield is constructed so as to provide a ventilating opening approximately 25 mm (1 in) in height around the bottom and a viewing window in one side of sufficient size and in such a position that the entire length of the specimen under test may be observed. Because of danger due to breaking glass, it may be necessary to use heat-resistant glass for the viewing window. One side of the shield is hinged (or some other suitable form of construction used) so that the shield may be readily opened and closed to facilitate the mounting and ignition of the test specimen.
- 4.2 *Clamp*, suitable for holding the test specimen in a vertical position. The clamp is attached rigidly to the shield in such a manner that when the specimen is clamped therein it is centred within the shield facing the viewing window.
- 4.3 *Bunsen burner* (nominal diameter 9.5 mm) and gas supply (see Note 1 following section 7).
- 4.4 *Timing device*. Stop-watch or other timer, reading in seconds.
- 4.5 *Micrometer* without a locking device, constructed to read to 0.0025 mm (0.0001 in) and with anvil and spindle surfaces of about 6.5 mm (0.250 in) diameter.

5. TEST SPECIMENS

- 5.1 At least three test specimens 25 mm (1 in) in width by 450 mm (18 in) in length should be cut in both machine and transverse directions from each of the materials being tested. The thickness of each specimen should be determined as a mean of five micrometer readings taken along its length, care being taken when closing the micrometer to avoid appreciable distortion of the specimen. The edges of the specimens should be so cut as to be straight, parallel and free from imperfections.
- 5.2 Gauge marks should be drawn across the specimens about 75 mm (3 in) from each end, defining a 300 mm (12 in) gauge length over which the burning rate is to be measured.

6. CONDITIONING

Materials should be conditioned prior to test according to ISO Recommendation R 291, *Plastics – Standard atmospheres for conditioning and testing*, in any standard laboratory atmosphere. Tests should be made in the standard laboratory atmosphere or immediately after removal therefrom.

7. PROCEDURE

- 7.1 Clamp the specimen vertically so that 430 mm (17 in) of it is exposed below the clamp. Place the shield in a draught-free enclosure, with the ventilating fan turned off at the time of test. Adjust the Bunsen burner to provide a flame about 25 mm (1 in) in total height with closed air ports (see Note 1 below).
- 7.2 Apply the top of the flame to the end of the specimen in the opened shield until it is ignited, but not for longer than 15 seconds. The flame may be momentarily withdrawn as needed to establish that the specimen is ignited. In no case must the flame be moved upwards to follow the free end of a shrinking specimen.
- 7.3 If the specimen ignites, close the shield. Start the timer when the charred edge reaches the lower gauge mark, and stop it when the charred edge reaches the upper gauge mark. Record the elapsed time (see Notes below).
- 7.4 If the flame is extinguished before reaching the upper gauge mark, stop the timer. The apparent cause of extinction, such as melting and dripping, smothering, etc., should also be noted.

NOTES

1. It has been found that for a wide range of materials the character of the flame, i.e. luminous or non-luminous, using common gases, does not affect the result obtained by this test method.
2. Continued testing of highly flammable materials causes the holding clamp (4.2) to become heated. It is recommended that after each determination the holding clamp be cooled to room temperature by means of a cloth soaked in cool tap water.
3. It should be noted that for some materials the products of burning are toxic, and care should be taken to guard the operator from these toxic gases. The ventilating fan in the hood under which the test is performed should be turned on immediately after the test is completed in order to remove any irritating products of the test.

8. EXPRESSION OF RESULTS

- 8.1 The burning rate should be calculated in square millimetres (or square inches) per minute by dividing the area above the lower gauge mark which is burned, charred or melted off, by the time in minutes as determined in clause 7.3 or 7.4. This area is the product of the width of the specimen and the distance between the first gauge mark and the second gauge mark or the most distant flame-damaged point on the specimen.

8.2 The material should be classified in one of the following three categories :

- ISO/R 1326/Category 3 : if the specimen burns, melts off, or is charred up to the upper gauge mark;
- ISO/R 1326/Category 2 : if the flame is extinguished before reaching the upper gauge mark;
- ISO/R 1326/Category 1 : if the material does not ignite after 15 seconds of application of the flame.

9. TEST REPORT

The test report should include the following information :

- (a) complete identification of the sample, including type, source and manufacturer's code number;
- (b) the thickness of the test specimen;
- (c) category, in accordance with clause 8.2 :
 - if category 3, report the burning rate;
 - if category 2, report the apparent cause of flame extinction such as melting or smothering, and where the specimen burns beyond the lower gauge mark without reaching the upper gauge mark, report the burning rate;
 - if category 1, and if ignition is apparently prevented by shrinkage of the test specimen, report that “the test is not applicable because of shrinkage”;
- (d) the condition of any material which drops from the specimen.

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