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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1210

PLASTICS

DETERMINATION OF FLAMMABILITY OF PLASTICS IN THE FORM OF BARS

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1210, *Plastics – Determination of flammability of plastics in the form of bars,* 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. 1000 which was circulated to all the ISO Member Bodies for enquiry in July 1966. It was approved, subject to a few modifications of an editoral nature, by the following Member Bodies :

Argentina	Hungary	Spain
Australia	India	Sweden
Austria	Iran	Switzerland
Belgium	Italy	Turkey
Brazil	Japan	U.A.R.
Canada	Korea, Rep. of	U.S.A.
Chile	Netherlands	U.S.S.R.
Czechoslovakia	Poland	Yougoslavia
Finland	Romania	
France	South Africa, Rep. of	

The following Member Bodies opposed the approval of the Draft :

Germany
United Kingdom

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

ISO Recommendation | R 1210 | June 1970

PLASTICS

DETERMINATION OF FLAMMABILITY OF PLASTICS IN THE FORM OF BARS

1. SCOPE

This ISO Recommendation describes a method for determining the relative flammability of plastics in the form of bars of 3 to 5 mm thickness.

2. PRINCIPLE OF METHOD

A test specimen is supported horizontally by one end. The flammability of the bar is assessed after a gas flame has been applied to the free end for a fixed period of time.

3. SIGNIFICANCE OF THE TEST

Tests made on material under conditions described in this ISO Recommendation can be of considerable value in comparing the flammability characteristics of different materials, in checking manufacturing processes, or as a measure of the deterioration or change in flammability rating prior to or during use. The test does not give reliable information on the fire hazard of fabricated plastics structures.

4. APPARATUS

4.1 *Test chamber.* A draught-free enclosure which permits observation is required. For safety and convenience it is desirable that this enclosure be fitted with a device, such as an exhaust fan, to remove products of combustion which may be toxic. However, it is important to note that the device is turned off during the actual test.

4.2 *Bunsen burner* (nominal diameter 9.5 mm) and gas supply (see Note 1 following section 6).

4.3 *Installation* to fix the test specimen and the Bunsen burner in the positions specified in section 6.

4.4 *Stop-watch.*

5. TEST SPECIMEN

5.1 Five test specimens, exposed length 80 mm or more, width 10 to 15 mm and thickness 3 to 5 mm, should be tested.

5.2 The specimens should normally be tested in the as-received condition. However, it is known that for certain materials the presence of absorbed water can influence the results obtained by this test. Therefore, special preconditioning may be agreed between the purchaser and the supplier.

6. PROCEDURE

6.1 Clamp the specimen horizontally by one end so that the width dimension is in the horizontal plane and the free length is at least 80 mm. Adjust the Bunsen burner, with closed air ports (see Note 1 below), while in the vertical position, to produce a flame approximately 100 mm long.

6.2 Whenever it is desired to ignite the specimen, the burner should be fixed at an angle of 45° from the horizontal and directed towards the unclamped end of the specimen so that the top edge of the burner is 30 mm below the bottom edge and 5 mm away from the end of the specimen (see Figure, page 7). It should not be moved if the specimen burns away (see Note 2 below). After 60 seconds, turn off the burner. Check the burning time with the aid of the stop-watch from the moment at which the flame is turned off.

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. It is clear that the test cannot be performed if, during the 60 second ignition period, the specimen distorts away from and out of reach of the flame.

7. EXPRESSION OF RESULTS

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

ISO/R 1210/Category 3 : if, at the end of 15 seconds from the time that the flame is removed, the test specimen has burnt completely or remains burning;

ISO/R 1210/Category 2 : if, after removing the flame, the test specimen burns for less than 15 seconds, some of it remaining unburnt;

ISO/R 1210/Category 1 : if, after removing the flame, the test specimen does not burn.

8. 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*) a description of the method of specimen preparation, and specimen dimensions;

(*c*) category in accordance with section 7. It is possible that the five test specimens may not fall in the same category. If so, the final result should be expressed according to the most flammable category observed. e.g. 1, 1, 2, 1, 1 : will be reported as category 2;

(*d*) burning time in seconds (shortest and longest);

(*e*) particular observations during the test (way of igniting, formation of smoke and colour, etc.).

Dimensions in millimetres

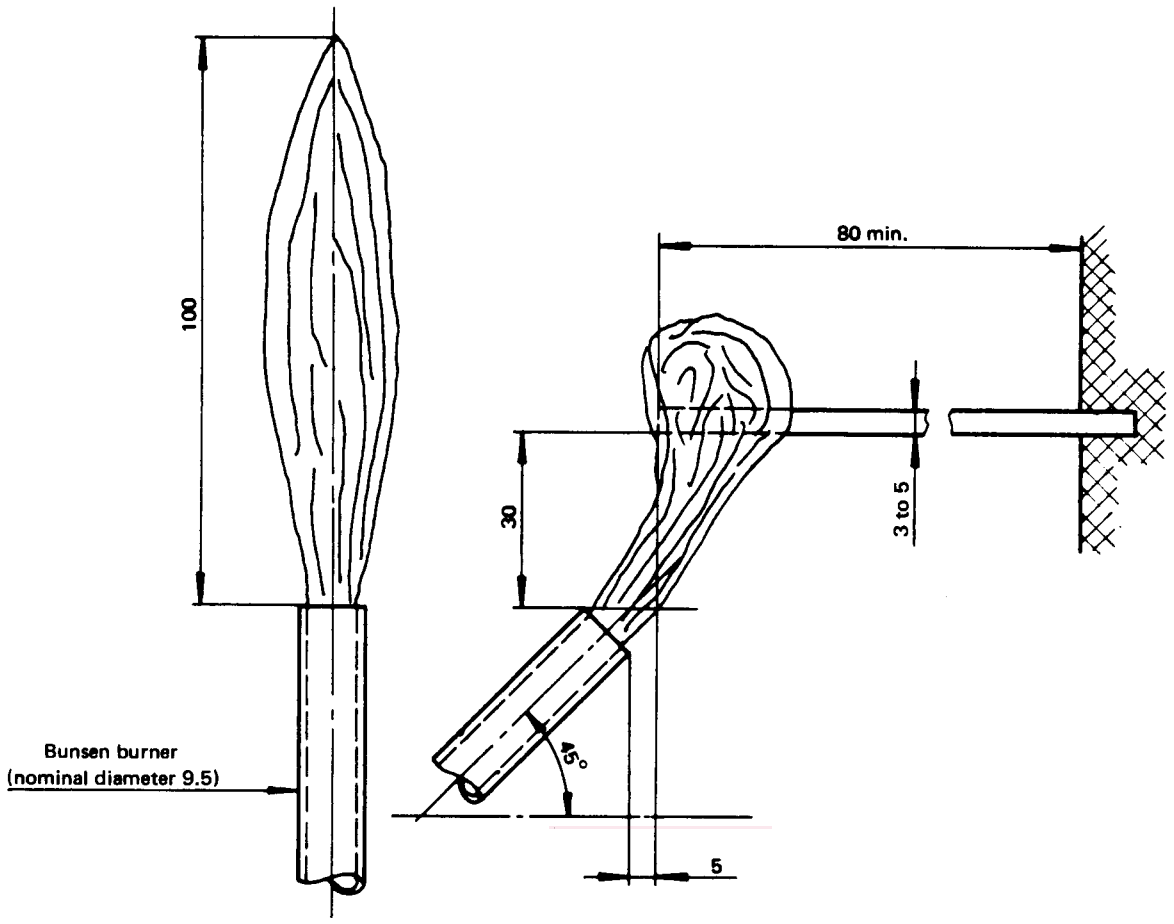

FIGURE – **Adjustment and positioning of Bunsen burner**