
INTERNATIONAL STANDARD



4080

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Rubber products — Hoses — Determination of gas permeance

Produits en caoutchouc — Tuyaux — Détermination de la perméance

First edition — 1978-09-15

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UDC 678.06 : 621.643 : 620.165 : 539.217.5

Ref. No. ISO 4080-1978 (E)

Descriptors : rubber products, hoses, tests.

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 4080 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the member bodies in December 1976.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Spain
Austria	India	Sri Lanka
Belgium	Italy	Sweden
Brazil	Netherlands	Thailand
Bulgaria	Philippines	Turkey
Canada	Poland	U.S.A.
Czechoslovakia	Romania	U.S.S.R.
Germany	South Africa, Rep. of	Yugoslavia

The member bodies of the following countries expressed disapproval of the document on technical grounds :

France
United Kingdom

Rubber products — Hoses — Determination of gas permeance

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the volume of gas diffusing through the wall of a rubber hose in a specified period.

This method is applicable only to gases relatively insoluble in water, such as olefins, paraffins and freons.

2 APPARATUS

2.1 Water bath, capable of being maintained at a specified temperature and long enough to accommodate the test piece.

2.2 Gas supply, provided with a suitable pressure gauge.

2.3 Gas collecting apparatus, such as an inverted trough and a measuring cylinder graduated at 0,1 cm³ intervals.

For a schematic diagram of the test arrangement, see the figure.

3 TEST PIECE

The test piece shall be a suitable length of hose.

4 TEST PRESSURE

Unless otherwise specified, the test pressure shall be 1 MPa (10 bar).

5 PROCEDURE

Seal one end of the test piece and connect the other end to the specified gas supply (2.2) in such a manner that a 1 m free length of hose may be tested. Adjust the temperature

of the water bath (2.1) to the specified value. Apply the specified gas pressure and maintain this pressure and the bath temperature for 72 h.

Then arrange the gas collecting apparatus (see the figure) and note the time for the apparatus to collect 3,0 cm³ of gas. Repeat the measurement twice. Alternatively, measure the volume of gas collected in 24 h.

If it is desired to determine the gas permeance at different pressures, the test at the lowest pressure should be made first and then measurements of each pressure made at both ascending and descending pressure stages.

6 EXPRESSION OF RESULTS

From the results of the three measurements calculate the average time for 1 cm³ of gas to collect. From this value calculate the gas permeance of the hose, expressed as cubic centimetres of gas per metre of hose per 24 h.

7 TEST REPORT

The test report shall contain the following particulars :

- a) a full description of the hose tested;
- b) the gas used;
- c) the test pressure;
- d) the test temperature;
- e) the ambient temperature;
- f) the gas permeance expressed as cubic centimetres per metre per 24 h;
- g) any special observations.