International Standard

ISO 8009/5

Reusable rubber contraceptive diaphragms — Part 5 : Determination of tensile properties

Diaphragmes contraceptifs réutilisables en caoutchouc — Partie 5 : Détermination des propriétés de résistance à la traction

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Foreword

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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 8009/5 was prepared by Technical Committee ISO/TC 157, *Mechanical contraceptives.*

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.

Reusable rubber contraceptive diaphragms — Part 5 : Determination of tensile properties

1 Scope and field of application

This part of ISO 8009 specifies a method for determining the tensile properties of the dome of reusable rubber contraceptive diaphragms.

2 Reference

ISO 8009/3, *Reusable rubber contraceptive diaphragms — Part 3 : Determination of dome thickness.*

3 Principle

Cutting of a test piece from the dome of a diaphragm and stretching it until it breaks. Measurement of the tensile force and elongation.

4 Apparatus

4.1 Cutting dies for rings having an internal circumference of 100 ± 0,5 mm and a radial width of 2 ± 0,02 mm.

4.2 Dial gauge, as specified in ISO 8009/3.

4.3 Tensile testing machine, capable of a substantially constant rate of traverse and complying with the following requirements :

a) a force range from 0 to 50 N;

b) having roller test specimen holders; the diameters of the rollers should be approximately 15 mm;

c) a roller separation speed of 8,5 ± 0,8 mm/s (500 ± 50 mm/min).

5 Preparation of test piece

From one dome a test piece shall be cut using the ring cutting die (4.1).

The test piece shall be obtained by cutting with one stroke of the press. Only test pieces which have been completely separated at the first attempt shall be used.

6 Procedure

6.1 Measure, to the nearest 0,01 mm, the thickness of the test piece in accordance with ISO 8009/3.

6.2 Place the test piece over the rollers and stretch it until it breaks.

6.3 At break, measure the force to the nearest 0,1 N and the separation distance (between the centres of the rollers) to the nearest millimetre.

7 Expression of results

7.1 The tensile strength, T, expressed in megapascals, of each test piece, is given by the formula

$$\frac{F}{2\,wt}$$

where

F is the breaking force, in newtons;

w is the width of the test piece (i.e. 2 mm);

t is the thickness of the test piece, in millimetres.

The result shall be rounded to the nearest megapascal.

7.2 The elongation at break, E, expressed as a percentage of each test piece, is given by the formula

$$\frac{2D + G - C}{C} \times 100$$

where

C is the internal circumference of the ring (i.e. 100 mm);

D is the final distance between the centres of the rollers, in millimetres;

G is the circumference of the roller, in millimetres.

The result shall be rounded to the nearest 10 %.