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**INTERNATIONAL STANDARD**



**2960**

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

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## **Textiles – Determination of bursting strength and bursting distension – Diaphragm method**

*Textiles – Détermination de la force d'éclatement et de la déformation à l'éclatement – Méthode à l'éclatomètre à membrane*

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**Descriptors :** textiles, tests, fabrics, woven fabrics, mechanical tests, burst 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 2960 was drawn up by Technical Committee ISO/TC 38, *Textiles*, and circulated to the Member Bodies in November 1972.

It has been approved by the Member Bodies of the following countries :

Belgium	Ireland	Sweden
Canada	Israel	Switzerland
Czechoslovakia	Japan	Thailand
Denmark	New Zealand	Turkey
Egypt, Arab Rep. of	Norway	United Kingdom
Finland	Poland	U.S.A.
Hungary	Portugal	U.S.S.R.
India	Romania	
Iran	South Africa, Rep. of	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

France  
Germany  
Italy

# Textiles – Determination of bursting strength and bursting distension – Diaphragm method

## 0 INTRODUCTION

The test for tensile strength may be unsuitable for certain fabrics such as knitted materials and lace, and for these textiles the measurement of bursting strength provides an alternative criterion of strength. The test may also be suitable for woven fabrics that will be subjected to bursting pressures in use, for example, pump diaphragms, filter fabrics, etc.

In this test, the specimen breaks across the direction having the least breaking extension, but the bursting strength of the cloth cannot readily be calculated from its tensile strength in this direction, since it is influenced by other aspects of the response of the fabric to biaxial stressing.

This test method permits specimens of either of two sizes to be tested. It is found that larger specimens burst at lower pressures than smaller specimens, and for any cloth the product  $PD^\alpha$  is fairly constant (where  $P$  is the bursting strength of the cloth,  $D$  is the diameter of the specimen, and  $\alpha$  has a value of about 1,1 to 1,3). Thus, if  $P_1$  is the bursting strength of cloth for specimens of 30 mm diameter and  $P_2$  that for specimens of 113 mm diameter,  $P_1$  is approximately equal to  $5P_2$ .

The diameter of 30 mm has been chosen because it is very close to the diameter of 1.2 in which has been in use for a considerable time: the diameter of 113 mm (area 10 000 mm<sup>2</sup>) is in use in some countries using the metric system and permits a more precise measurement of bursting distension.

It is considered undesirable that there should be two possible sizes of specimen and it is hoped that it will eventually be found possible to exclude the smaller specimen size from this International Standard.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the bursting strength and bursting distension of fabrics. It is applicable to textile fabrics produced by weaving, knitting or felting, and may be suitable for fabrics produced by other techniques. It is not applicable to textile fabrics which have been impregnated or coated with sizing or stiffening materials, rubber, plastics, etc.

## 2 REFERENCE

ISO 139, *Textiles – Standard atmospheres for conditioning and testing.*

## 3 DEFINITIONS

For the purposes of this International Standard the following definitions apply:

**3.1 bursting strength:** The maximum fluid pressure applied to a circular specimen in distending it to rupture. It is expressed in kilonewtons per square metre (kN/m<sup>2</sup>).

**3.2 bursting distension:** The distension of a specimen at the bursting pressure. It is the maximum height of the centre of the upper surface of the specimen during the test, expressed in millimetres.

## 4 PRINCIPLE

The area of the sample of the fabric to be tested is clamped over an elastic diaphragm by means of a flat annular clamping ring, and an increasing fluid pressure is applied to the underside of the diaphragm until the specimen bursts.

The operating fluid may be either a liquid or a gas.

## 5 APPARATUS

### 5.1 For specimens of 113 mm diameter

The bursting tester shall have a flat base plate of diameter at least 140 mm, covered by a flat diaphragm of rubber or similar material. A central hole in the base plate shall allow a controlled increase in fluid pressure to be applied to the underside of the diaphragm, so that the specimen can be burst in  $30 \pm 10$  s. The rate of flow of fluid through the hole in the base plate shall not vary more than  $\pm 20$  % throughout the test.

A clamping ring shall be provided, of internal diameter 113 mm and of external diameter at least 140 mm, with a flat lower surface to hold the specimen firmly against the diaphragm at all points.

The lower face of the clamping ring may be lined with a thin layer of cork or other compressible material suitable for the fabric under test, but if the face is unlined its inner edge shall have a radius of 0,5 mm.

Means shall be provided for applying the clamping ring with sufficient pressure to prevent the fabric specimen from slipping during the test. The specimen must not be damaged by the action of the clamping ring.