INTERNATIONAL STANDARD

ISO 2739

Sintered metal bushes — Determination of radial crushing strength

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Descriptors : sintered products, bushings, rings, tests, mechanical tests, compression 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 2739 was drawn up by Technical Committee ISO/TC 119, *Powder metallurgical materials and products*, and circulated to the Member Bodies in July 1972.

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

Australia	Germany	South Africa, Rep. of
Austria	Italy	Spain
Canada	Japan	Sweden
Czechoslovakia	Mexico	Thailand
Egypt, Arab Rep. of	Portugal	United Kingdom
France	Romania	U.S.A.

No Member Body expressed disapproval of the document.

Sintered metal bushes — Determination of radial crushing strength

1 SCOPE

This International Standard specifies a method of measuring the radial crushing strength of sintered metal parts in the form of hollow cylinders commonly known as bushes.

2 FIELD OF APPLICATION

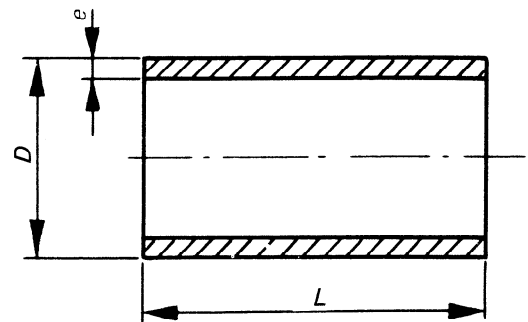This method is applicable to sintered bushes composed of pure or alloyed metal powders.

FIGURE 1 — Test piece

3 PRINCIPLE

A hollow cylinder is submitted to a continuously increasing radial load until breakage occurs, provided that the deformation does not exceed 10 % of the diameter. The maximum load observed is used to calculate a value in relation to the dimensions of the hollow cylinder known as "radial crushing strength".

4 APPARATUS

4.1 Pressing apparatus which enables a radial load to be applied to a hollow cylinder.

4.2 Load-measuring device capable of giving the reading of the maximum value attained.

5 TEST PIECE

The test piece (see figure 1) is to be in the form of a sintered hollow cylinder (which may or may not be oil-impregnated), without flanges, notches, grooves, pronounced chamfers, drilled holes, oilways or keyways. If necessary, the cylinder may be machined but, in this case, results obtained may differ from those obtained with a cylinder which has not been machined.

6 PROCEDURE

Place the test piece between the plates of the pressing apparatus, the axis of the test piece being parallel to the planes of the plates (see figure 2).
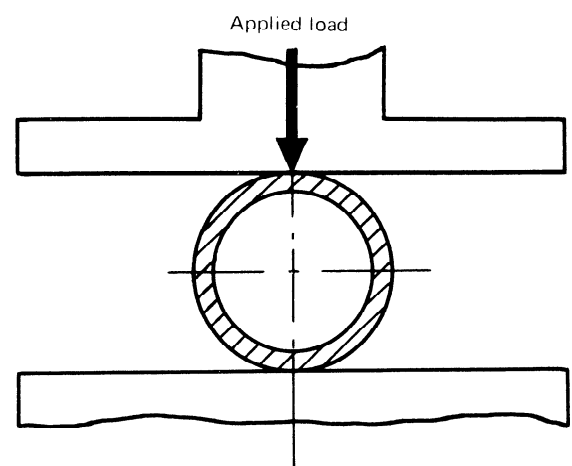

FIGURE 2 — Test arrangement

Apply the load progressively, without shock, so that coefficient K (see clause 7) increases at a rate between 2 and 20 N/mm² per second and that the test time is greater than 10 s.

7 EXPRESSION OF RESULTS

The radial crushing strength of the bush, K, in newtons per square millimetre, is given by the following formula :

$$K = \frac{F\,(D - e)}{L\,e^2}$$

where

F is the maximum load, in newtons, incurring fracture;

L is the length, in millimetres, of the hollow cylinder;

D is the external diameter, in millimetres, of the hollow cylinder;

e is the thickness, in millimetres, of the cylinder wall.

This formula is valid only if the ratio e/D is less than 1/3*.

8 TEST REPORT

The test report shall include the following information :

a) reference to this International Standard;

b) all details necessary for identification of the specimen;

c) whether the specimen is as sintered or sized;

d) whether the specimen has been machined or not, and if so a drawing showing how the specimen has been taken from the part;

e) whether the specimen has been oil impregnated or not;

f) the result obtained;

g) all operations not specified in this International Standard, or regarded as optional;

h) details of any occurrence which may have affected the result.

If necessary, the data required for the identification of the test piece shall be agreed between manufacturer and user.

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* In this case, the tensile strength is approximately equal to 0,5 K.