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International Standard 6311

Road vehicles — Brake linings — Internal shear strength of lining material — Test procedure

Véhicules routiers — Garnitures de freins — Résistance au cisaillement interne du matériau de garniture — Méthode d'essai

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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.

International Standard ISO 6311 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in November 1978

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

Austria	Ireland	Spain
Belgium	Italy	Sweden
Brazil	Japan	Switzerland
Bulgaria	Korea, Dem P Rep of	Turkey
Czechoslovakia	Mexico	United Kingdom
Denmark	Netherlands	USA
France	Poland	USSR
Germany, F R.	Romania	Yugoslavia
India	South Africa, Rep. of	

No member body expressed disapproval of the document

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Road vehicles — Brake linings — Internal shear strength of lining material — Test procedure

0 Introduction

While braking under normal service conditions, a shear stress is generated in the disc brake pad lining material

In the case of drum brake linings the shear stress is increased by geometric effects. The value of the most stressed brake shoe is to be taken as a basis

1 Scope and field of application

This International Standard specifies a method of measuring the internal shear strength (stress) of brake lining materials

This International Standard applies to friction materials for disc brake pads and drum brake linings to be used on road vehicle brakes

2 Reference

ISO 611, *Braking of motor vehicles and their trailers — Terminology.*

3 Symbols and units

Designation	Symbol	Unit
Shear strength	τ	N/mm^2
Shear force	F	N
Area under stress	A	mm^2

4 Definitions

4.1 internal shear strength . For the purposes of this International Standard, the ratio of the shear force to the stressed area

4.2 shear force . The force vertical to the lining or pad, which causes the shearing (see figure, clause 6)

For general definitions, see ISO 611.

5 Sampling and conditioning

Samples (at least five) shall be taken from stock, and the test specimen chosen so that it will shear in a plane parallel to the plane or surface of stress at normal service conditions.

Dimensions of test specimen (the specimen shall be flat).

Length : 20 ± 0,1 mm

Width : 20 ± 0,1 mm

Thickness 5 ± 0,1 or 10 ± 0,1 mm

6 Apparatus

The apparatus comprises a tensile or compression test machine which is equipped with the fixture and can apply the required load in the prescribed manner. The test machine shall be provided with equipment to register the load at shear, for example maximum indicator pointer or print-out recording of load.

The rate of load application shall be controlled in such a way that the load increases with an average rate of
4 500 ± 500 N/s

It is further recommended that the unit controlling the rate of load functions in such a way that instantaneous rate is within the limits of 4 500 ± 2 250 N/s, when the shear force is above 5 000 N.

NOTE — In the case of hydraulically operated tensile or compression test machines this specification can be met by setting the unloaded movement of the piston The rate of speed, in millimetres per second, depends on the type of machine

The fixture (see the figure) shall consist of two blocks, which slide with as little friction as possible against one another, with a maximum movement of 0,1 mm The friction between the block and the guide shall be minimal or capable of being recorded so that an allowance can be made in calculating the applied load. The blocks shall be grooved to receive the specimen The specimen shall fill the grooves completely to prevent tilt under load.

It is essential that the shear force is applied through the centre

of fixture and specimen, and parallel to the guide within 0,1 mm at a length of 100 mm.

7 Test method

Place the specimen in the fixture and apply the continuously increasing load in a direction parallel to the direction of stress at normal service conditions.

The load must not be applied in shocks and the rate of increase shall be as specified in clause 6.

NOTE — The test shall be carried out to breakage of the lining material

8 Test report

State in the test report (as an average of at least five measurements) the maximum load applied, in newtons, and the sheared area in square millimetres.

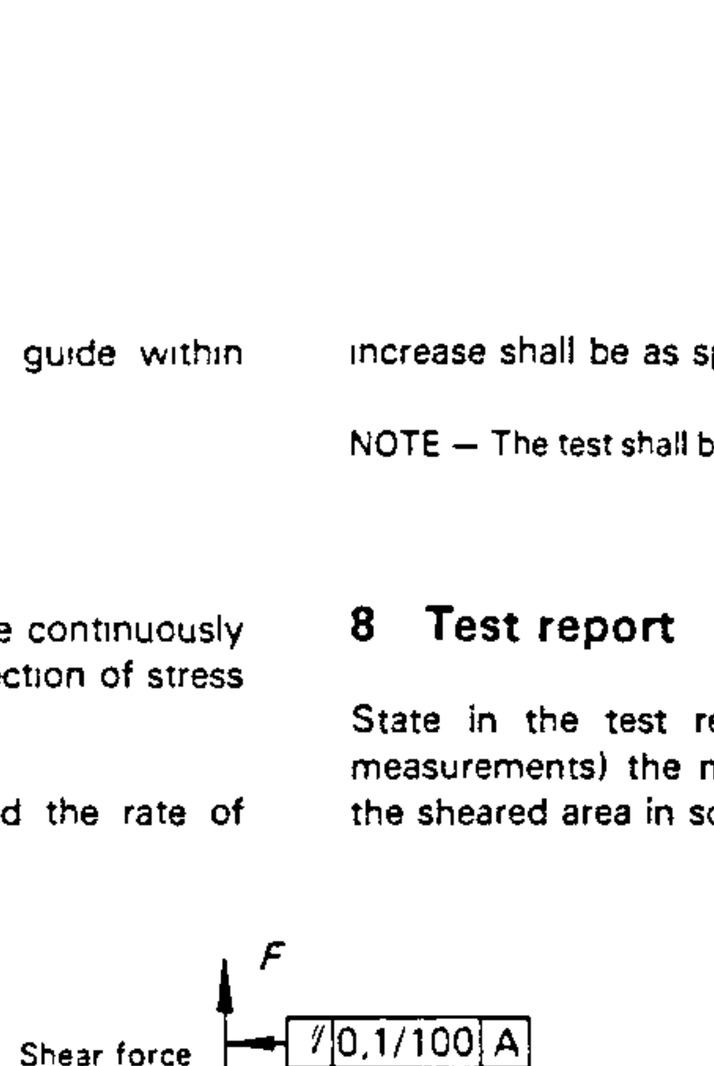

Figure — Principle of the test rig