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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 1747

DETERMINATION OF ADHESION OF VULCANIZED RUBBERS
TO RIGID PLATES IN SHEAR
(QUADRUPLE SHEAR TEST)

1st EDITION

January 1971

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Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 1747, *Determination of adhesion of vulcanized rubbers to rigid plates in shear (Quadruple shear test)*, was drawn up by Technical Committee ISO/TC 45, *Rubber*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1747, which was circulated to all the ISO Member Bodies for enquiry in December 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Iran	Spain
Austria	Israel	Sweden
Belgium	Italy	Switzerland
Brazil	Korea, Dem. P. Rep. of	Thailand
Ceylon	Korea, Rep. of	Turkey
Czechoslovakia	Netherlands	U.A.R.
France	New Zealand	United Kingdom
Greece	Peru	U.S.S.R.
Hungary	Poland	
India	South Africa, Rep. of	

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

**DETERMINATION OF ADHESION OF VULCANIZED RUBBERS
TO RIGID PLATES IN SHEAR
(QUADRUPLE SHEAR TEST)**

1. SCOPE

This ISO Recommendation describes a procedure for testing the strength of bonds of rubber to metal or other rigid plates where the rubber is assembled between four parallel rigid plates.

It is designed primarily to apply to test pieces prepared in the laboratory under standard conditions such as may be used to provide data for the development and control of rubber compounds and methods of manufacture of bonded shear units.

2. PRINCIPLE

The test consists in measuring the force required to cause the rupture of a unit of standard dimensions comprising four parallelepipeds of rubber symmetrically disposed and bonded to four parallel rigid plates, the force being parallel to the bonding surfaces.

3. ADHESION FAILURE TERMINOLOGY

The following terminology for adhesion failure should be adopted :

- R indicates that the failure is in the rubber.
- RC indicates that the failure is at the interface between the rubber and the cover cement.
- CP indicates that the failure is at the interface between the cover cement and the prime cement.
- M indicates that the failure is at the interface between the rigid plates and the prime cement.

4. APPARATUS

- 4.1** *Testing machine*, conforming to the requirements of national standards for verification of testing machines. It should be capable of accurately registering the applied forces during the test while maintaining the specified constant rate of separation of the jaws of 50 ± 5 mm per minute.

NOTE. – Inertia (pendulum) type dynamometers are apt to give results which differ because of frictional and inertial effects. An inertialess (for example electronic or optical transducer) type dynamometer gives results which are free from these effects and is therefore to be preferred.

- 4.2** *Fixtures*, for holding the test pieces in the grips, provided with a universal joint to permit accurate centering of the line of action of the applied force.