

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION R 132

DETERMINATION OF RESISTANCE TO FLEX CRACKING  
OF VULCANIZED NATURAL OR SYNTHETIC RUBBER  
(DE MATTIA TYPE MACHINE)

1st EDITION

September 1959

COPYRIGHT RESERVED

The copyright of ISO Recommendations and ISO Standards belongs to ISO Member Bodies. Reproduction of these documents, in any country, may be authorized therefore only by the national standards organization of that country, being a member of ISO.

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

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

## BRIEF HISTORY

The ISO Recommendation R 132, *Determination of Resistance to Flex Cracking of Vulcanized Natural or Synthetic Rubber (De Mattia type machine)*, was drawn up by Technical Committee ISO/TC 45, *Rubber*, the Secretariat of which is held by the British Standards Institution (B.S.I.).

Work on the preparation of this method was authorized at the first meeting of the Technical Committee held in London, in June 1948, and was entrusted to the Working Group on "Flex Cracking and Cut-Growth".

It was agreed by the Working Group that the method should be based on that used in the United Kingdom.

The method was considered by the Working Group and by the Technical Committee at the meetings held in The Hague (September 1949), in Akron (October 1950), in Oxford (October 1951), in Paris (June 1953) and was finally approved, as a Draft ISO Recommendation, at the Dusseldorf meeting, in September 1955.

On 17 July 1957, the Draft ISO Recommendation (No. 172) was distributed to all the ISO Member Bodies and was approved, subject to some modifications, by the following 26 (out of a total of 39) Member Bodies:

|                |             |                       |
|----------------|-------------|-----------------------|
| *Australia     | *Greece     | Portugal              |
| Austria        | Hungary     | Romania               |
| Burma          | India       | Spain                 |
| *Canada        | *Ireland    | Sweden                |
| Czechoslovakia | Italy       | Switzerland           |
| *Denmark       | Japan       | Union of South Africa |
| Finland        | New Zealand | United Kingdom        |
| France         | Pakistan    | U.S.A.                |
| Germany        | Poland      |                       |

One Member Body opposed the approval of the Draft: U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in September 1959, to accept it as an ISO RECOMMENDATION.

---

\* These Member Bodies stated that they had no objection to the Draft being approved.

## **DETERMINATION OF RESISTANCE TO FLEX CRACKING OF VULCANIZED NATURAL OR SYNTHETIC RUBBER**

**(DE MATTIA TYPE MACHINE)**

### **FOREWORD**

Repeated bending or flexing of a rubber vulcanizate causes cracks to develop in that part of the surface where tension stress is set up during flexing or, if this part of the surface contains a crack, causes this crack to extend in a direction perpendicular to the stress. Certain soft vulcanizates, notably those prepared from styrene butadiene rubber show marked resistance to crack initiation, but it is possible for these sample compounds to have a low resistance to crack growth.

It is important therefore to measure both the resistance to crack initiation by flexing and the resistance to crack growth. A method for determining the resistance to crack growth is given in ISO Recommendation R 133, *Determination of Resistance to Crack Growth of Vulcanized Natural or Synthetic Rubber (De Mattia Type Machine)*.

The test described below is intended for use in comparing the resistance of rubbers to the formation and growth of cracks, when subjected to repeated flexing on the De Mattia type machine.