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# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION



## ISO RECOMMENDATION

## R 33 withdrawn 1970

# DU PONT CONSTANT LOAD METHOD OF MEASURING ABRASION RESISTANCE OF VULCANIZED NATURAL AND SYNTHETIC RUBBERS

1st EDITION





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 33, *Du Pont Constant Load Method of Measuring Abrasion Resistance of Vulcanized Natural and Synthetic Rubbers*, was drawn up by the Technical Committee ISO/TC 45, *Rubber*, the Secretariat of which is held by the British Standards Institution (B.S.I.).

The draft proposal put forward by the Secretariat was considered and amended at the meetings held in London (1948), the Hague (1949), Akron (1950), Oxford (1951) and Paris (1953).

On 28 August 1954, the Draft ISO Recommendation proposed by the Technical Committee ISO/TC 45 was submitted to all ISO Member Bodies and approved, subject to certain editorial amendments, by the following 20 (out of a total of 34) Member Bodies:

| | |
|---|---|
| Austria | Netherlands |
| *Canada | *New Zealand |
| Denmark | Pakistan |
| Finland | Portugal |
| India | Spain |
| *Ireland | Sweden |
| Israel | Union of South Africa |
| Italy | United Kingdom |
| Japan | *U.S.S.R. |
| *Mexico | Yugoslavia |

One Member Body opposed the Draft:

U.S.A.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in March 1957, to accept it as an ISO RECOMMENDATION.

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

**Date of the first edition: April 1957.**

ISO Recommendation R 33 March 1957

# DU PONT CONSTANT LOAD METHOD OF MEASURING ABRASION RESISTANCE OF VULCANIZED NATURAL AND SYNTHETIC RUBBERS



## FOREWORD

The world-wide use of the *du Pont* constant load method of measuring abrasion resistance and the absence of a recognized method whose results correlate with wear in service justify the standardization of those features of the *du Pont* method on which agreement has been reached in the last three years.

Some improved methods, now used experimentally, may be internationally agreed upon in a few years' time. Meanwhile, there is much to be gained by standardizing the *du Pont* method as far as possible. Close relation between the test results and service performance is not, however, necessarily implied.

An alternative method of test, using very similar apparatus and procedure, but imposing constant torque on the sample-holder instead of constant load, will be considered for recommendation when further experimental evidence has been received.

## 1. STANDARD COMPARISON RUBBERS

According to the type of rubber to be tested, one of the following two standard rubber compounds is selected for comparison: either the high quality tyre tread type or the footwear sole and heel type.

A high standard of mixing technique should be employed in the preparation of these compounds, to ensure proper dispersion of the ingredients.

The compounds are:

*"A" tyre tread type standard compound*

| | |
|---|---|
| Natural rubber first-grade smoked sheet | 100 |
| Zinc oxide | 5 |
| Stearic acid | 3 |
| E.P.C. black | 50 |
| Benzothiazyl disulphide | 1 |
| Sulphur | 3 |
| Phenyl-beta-naphthylamine | 1 |

*Vulcanization:* 40 minutes at 144 °C.