



MALAYSIAN STANDARD

MS ISO 48:2009

**RUBBER, VULCANIZED OR
THERMOPLASTIC - DETERMINATION OF
HARDNESS (HARDNESS BETWEEN 10 IRHD
AND 100 IRHD)
(FIRST REVISION)
(ISO 48:2007, IDT)**

ICS: 83.060

Descriptors: vulcanized rubber, thermoplastic, determination, test, hardness

© Copyright 2009

DEPARTMENT OF STANDARDS MALAYSIA

DEVELOPMENT OF MALAYSIAN STANDARDS

The **Department of Standards Malaysia (STANDARDS MALAYSIA)** is the national standardisation and accreditation body.

The main function of the Department is to foster and promote standards, standardisation and accreditation as a means of advancing the national economy, promoting industrial efficiency and development, benefiting the health and safety of the public, protecting the consumers, facilitating domestic and international trade and furthering international cooperation in relation to standards and standardisation.

Malaysian Standards are developed through consensus by committees which comprise of balanced representation of producers, users, consumers and others with relevant interests, as may be appropriate to the subject in hand. To the greatest extent possible, Malaysian Standards are aligned to or are adoption of international standards. Approval of a standard as a Malaysian Standard is governed by the Standards of Malaysia Act 1996 (Act 549). Malaysian Standards are reviewed periodically. The use of Malaysian Standards is voluntary except in so far as they are made mandatory by regulatory authorities by means of regulations, local by-laws or any other similar ways.

The Department of Standards appoints **SIRIM Berhad** as the agent to develop Malaysian Standards. The Department also appoints SIRIM Berhad as the agent for distribution and sale of Malaysian Standards.

For further information on Malaysian Standards, please contact:

Department of Standards Malaysia
Century Square, Level 1 & 2
Blok 2300, Jalan Usahawan
63000 Cyberjaya
Selangor D.E.
MALAYSIA

Tel: 60 3 8318 0002
Fax: 60 3 8319 3131

<http://www.standardsmalaysia.gov.my>

E-mail: central@standardsmalaysia.gov.my

OR **SIRIM Berhad**
(Company No. 367474 - V)
1, Persiaran Dato' Menteri
P.O. Box 7035, Section 2
40911 Shah Alam
Selangor D.E.

Tel: 60 3 5544 6000
Fax: 60 3 5510 8095

<http://www.sirim.my>

CONTENTS

	Page
Committee representation.....	ii
National foreword.....	iii
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
1.1 General.....	1
1.2 Standard-hardness methods.....	1
1.3 Apparent-hardness methods.....	2
2 Normative references.....	2
3 Terms and definitions.....	3
4 Principle.....	3
5 Apparatus.....	3
5.1 General.....	3
5.2 Methods N, H, L and M.....	4
5.3 Methods CN, CH, CL and CM.....	5
6 Test pieces.....	5
6.1 General.....	5
6.2 Methods N, H, L and M.....	6
6.3 Methods CN, CH, CL and CM.....	7
7 Time-interval between vulcanization and testing.....	7
8 Conditioning of test pieces.....	7
9 Temperature of test.....	7
10 Procedure.....	8
11 Number of readings.....	8
12 Expression of results.....	8
13 Precision.....	8
14 Test report.....	11
Annex A Empirical relationship between indentation and hardness.....	12
Annex B Precision.....	14
Annex C Guidance for using precision results.....	18
Bibliography.....	19

MS ISO 48:2009

Committee representation

The Industry Standards Committee on Rubber and Rubber Products (ISC N) under whose authority this Malaysian Standard was adopted, comprises representatives from the following organisations:

Association of Malaysian Medical Industries
Department of Standards Malaysia
Malaysian Association of Tyre Retreaders and Dealers Society
Malaysian Latex and Rubber Thread Manufacturers' Association
Malaysian Rubber Board
Malaysian Rubber Export Promotion Council
Malaysian Rubber Glove Manufacturers' Association
Malaysian Rubber Products Manufacturers' Association
Ministry of Health Malaysia
Ministry of International Trade and Industry
Plastics and Rubber Institute of Malaysia
SIRIM Berhad (Secretariat)
Universiti Kebangsaan Malaysia
Universiti Sains Malaysia

The Technical Committee on Physical Tests which recommended the adoption of the ISO Standard is managed by the Malaysian Rubber Board in its capacity as an authorised Standards-Writing Organisation and consists of representatives from the following organisations:

Linatex Rubber Sdn Bhd
Malaysian Rubber Board (Secretariat)
Plastics and Rubber Institute of Malaysia
Sime Continental Sdn Bhd
SIRIM Berhad
Universiti Teknologi MARA

NATIONAL FOREWORD

The adoption of the ISO Standard as a Malaysian Standard was recommended by the Technical Committee on Physical Tests under the authority of the Industry Standards Committee on Rubber and Rubber Products. Development of this standard was carried out by the Malaysian Rubber Board which is the Standards-Writing Organisation (SWO) appointed by SIRIM Berhad to develop standards for rubber and rubber products.

This Malaysian Standard is the first revision of MS ISO 48, *Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)*.

This Malaysian Standard is identical with ISO 48:2007, *Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)*, published by the International Organization for Standardization (ISO). However, for the purposes of this Malaysian Standard, the following apply:

- a) in the source text, "this International Standard" should read "this Malaysian Standard";
and
- b) the comma which is used as a decimal sign (if any), to read as a point.

This standard cancels and replaces MS ISO 48:2002.

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

NOTE. IDT on the front cover indicates an identical standard i.e. a standard where the technical content, structure, and wording (or is an identical translation) of a Malaysian Standard is exactly the same as in an International Standard or is identical in technical content and structure although it may contain the minimal editorial changes specified in clause 4.2 of ISO/IEC Guide 21-1.