

JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS K 6251 : 2017

(JRMA/JSA)

**Rubber, vulcanized or
thermoplastic—Determination of
tensile stress-strain properties**

ICS 83.060

Reference number : JIS K 6251 : 2017 (E)

Date of Establishment: 1993-02-01

Date of Revision: 2017-04-20

Date of Public Notice in Official Gazette: 2017-04-20

Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

Technical Committee on Chemical Products and

Analytical Methods

JIS K 6251:2017, First English edition published in 2017-09

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2017

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

NH/AT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Principle	4
5 General	4
6 Test pieces	5
6.1 Selection of test pieces	5
6.2 Dumb-bell test pieces	6
6.3 Ring test pieces	8
7 Apparatus	8
7.1 Punching dies and cutters	8
7.2 Thickness gauge	10
7.3 Cone gauge (internal diameter gauge)	10
7.4 Tensile-testing machine	10
7.5 Test rig for ring test pieces	11
8 Number of test pieces	12
9 Sampling and preparation of test pieces	12
9.1 Dumb-bell test pieces	12
9.2 Ring test pieces	12
9.3 Selection of test pieces	13
10 Conditioning of samples and test pieces	13
10.1 Period from vulcanization or curing to testing	13
10.2 Protection of samples and test pieces	13
10.3 Conditioning of samples	13
10.4 Conditioning of test pieces	13
11 Marking of dumb-bell test pieces	13
12 Measurement of test pieces	14
12.1 Dumb-bell test pieces	14
12.2 Ring test pieces	14
12.3 Median thickness	14
13 Procedure	14
13.1 Dumb-bell test pieces	14

13.2	Ring test pieces	15
13.3	Measurement for determination of tensile strength, tensile strength at break and elongation at break	15
13.4	Measurement for determination of tensile stress at a given elongation	15
13.5	Measurement for determination of tensile stress at yield and elongation at yield	15
14	Temperature of test	16
15	Calculation of results	16
15.1	Dumb-bell test pieces	16
15.2	Ring test pieces	17
16	Expression of results	19
17	Precision	19
18	Test report	19
Annex A (informative)	Precision	20
Annex B (informative)	Analysis of ITP data and dumb-bell shape	24
Annex JA (informative)	Comparison table between JIS and corresponding International Standard	29

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Rubber Manufacturers Association (JRMA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS K 6251:2010** is replaced with this Standard.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

Rubber, vulcanized or thermoplastic— Determination of tensile stress-strain properties

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 37**:2011, Edition 5, with some modifications of the technical contents.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanation is given in Annex JA.

1 Scope

This Standard specifies the determination method for the tensile stress-strain properties of vulcanized rubbers and thermoplastic rubbers.

The properties to be determined shall be the tensile strength, elongation at break, stress at a given elongation, elongation at a given stress, tensile stress at yield and elongation at yield. The measurement of the tensile stress at yield and the elongation at yield applies only to vulcanized rubbers and thermoplastic rubbers having a yield point.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 37:2011 *Rubber, vulcanized or thermoplastic—Determination of tensile stress-strain properties* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

WARNING 1 Persons using this Standard should be familiar with normal laboratory practice. This Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this Standard to establish appropriate safety and health practices.

WARNING 2 Certain procedures specified in this Standard might involve the use or generation of substances, or the generation of waste, that could constitute a local environmental hazard. Reference should be made to relevant laws and regulations on safe handling and disposal after use.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.