



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS D 4103 : 2015

(JSAE)

**Automobile parts—Wheels—
Performance requirements and
marking**

ICS 43.040.50

Reference number : JIS D 4103 : 2015 (E)

PROTECTED BY COPYRIGHT

Date of Establishment: 1984-04-01

Date of Revision: 2015-07-21

Date of Public Notice in Official Gazette: 2015-07-21

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area

JIS D 4103:2015, First English edition published in 2016-05

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 2016

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

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction.....	1
1 Scope.....	1
2 Normative references	1
3 Terms and definitions	2
4 Performances.....	2
4.1 General.....	2
4.2 Resistance to dynamic cornering fatigue	2
4.3 Resistance to dynamic radial fatigue	3
4.4 Impact resistance for passenger car	3
4.5 Impact resistance for commercial car	3
5 Dimensions	3
5.1 Contours of rims	3
5.2 Fastening methods and dimensions	3
6 Test methods	3
6.1 Dynamic cornering fatigue test	3
6.2 Dynamic radial fatigue test	6
6.3 Impact test for passenger car (13° loading method)	7
6.4 Impact test for commercial car (30° loading method).....	9
7 Marking.....	11
Annex JA (informative) Comparison table between JIS and corresponding International Standards	13

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 Society of Automotive Engineers of Japan, Inc. (JSAE) 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 D 4103**:1998 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.

Automobile parts—Wheels— Performance requirements and marking

Introduction

This Japanese Industrial Standard has been prepared based on the fourth edition of **ISO 3006** published in 2005, the third edition of **ISO 3894** published in 2005, and the third edition of **ISO 7141** published in 2005 with some modifications of the technical contents.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies wheels made of steel and light alloy used on automobiles (hereafter referred to as “wheels”). However, this Standard does not apply to wheels used for emergency tyres, two-wheeled vehicles, industrial vehicles, construction vehicles and agricultural machines.

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

ISO 3006:2005 *Road vehicles—Passenger car wheels for road use—Test methods*

ISO 3894:2005 *Road vehicles—Wheels/rims for commercial vehicles—Test methods*

ISO 7141:2005 *Road vehicles—Light alloy wheels—Impact test* (overall evaluation: 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**.

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.

JIS D 0101 *Glossary of terms relating to kinds of automobiles*

NOTE : Corresponding International standard: **ISO 3833** *Road vehicles—Types—Terms and definitions* (MOD)

JIS D 4102 *Wheels and rims for pneumatic tyres—Vocabulary, designation and marking*

NOTE : Corresponding International standard: **ISO 3911** *Wheels and rims for pneumatic tyres—Vocabulary, designation and marking* (IDT)

JIS D 4202 *Automobile tyres—Designation and dimensions*

JIS D 4220 *Automobile parts—Wheels—Fastening methods and dimensions*

JIS D 4230 *Automobile tyres*

JIS Z 2300 *Terms and definitions of nondestructive testing*

JIS Z 2343-1 *Non-destructive testing—Penetrant testing—Part 1: General principles—Method for liquid penetrant testing and classification of the penetrant indication*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS D 4102**, and the following apply. The terms and definitions of blowhole, porosity and shrinkage cavity shall be as given in **JIS Z 2300**.

3.1 wheel bolt

bolt which is screwed into a hub, used to tighten a wheel

3.2 hub bolt

bolt which can be attached to a hub, used to tighten a wheel by using a wheel nut

3.3 passenger car

passenger car defined in **JIS D 0101**

3.4 commercial car

motor lorry, bus, full trailer tractor, etc. defined in **JIS D 0101**

3.5 light alloy wheel

wheel whose rim and/or disc is made of light alloy

4 Performances

4.1 General

General performances of wheels shall be as follows.

- a) The mating surface of tyre and the periphery of valve aperture shall be free from such shape or surface condition that are detrimental to functions of tyre, tube and tyre valve.
- b) The tip of the rim flange of wheels shall be free from burrs harmful to mounting and dismounting of tyre.
- c) Wheels shall be free from defects against strength, e.g. flaw, blowhole, porosity, shrinkage cavity, inclusion and crack.

4.2 Resistance to dynamic cornering fatigue

When tested according **6.1**, wheels shall be free from cracks caused by the test (to be inspected by visible dye penetrant test specified in **JIS Z 2343-1**), noticeable deformation, and irregular loosening of wheel nuts or bolts.

4.3 Resistance to dynamic radial fatigue

When tested according to **6.2**, wheels shall be free from cracks caused by the test (to be inspected by visible dye penetrant test specified in **JIS Z 2343-1**), noticeable deformation, and irregular loosening of wheel nuts or bolts.

4.4 Impact resistance for passenger car

When tested according to **6.3**, wheels shall be free from fracture penetrate (to be inspected by visible dye penetrant test specified in **JIS Z 2343-1**), separation of rim and disc, and air pressure loss ¹⁾. The wheel is not considered to have failed the test by deformation of the wheel assembly or by fractures in the area of the rim section struck by the face plate of the striker.

This performance applies exclusively to light alloy wheels for passenger car.

Note ¹⁾ This means the case where the inner pressure of a tyre set in **6.3.3** falls by 100 % within 60 s after completion of the test.

4.5 Impact resistance for commercial car

When tested according to **6.4**, wheels shall be free from cracks caused by the test (to be inspected by visible dye penetrant test specified in **JIS Z 2343-1**) and rapid air pressure loss ²⁾. The wheel is not considered to have failed the test by fractures in the area of the rim section struck the striker.

This performance applies exclusively to the light alloy wheel for commercial vehicles.

Note ²⁾ This means the case where the inner pressure of a tyre set in **6.4.3** falls by 50 % within 30 s after completion of the test.

5 Dimensions

5.1 Contours of rims

The contour dimensions of rims shall be agreed between the parties concerned with delivery.

NOTE : The agreement between the parties concerned with delivery, if any, should be based on relevant standards of Japan Automobile Tyre Manufacturers Association.

5.2 Fastening methods and dimensions

The fastening methods and dimensions of wheels shall be in accordance with **JIS D 4220**.

6 Test methods

6.1 Dynamic cornering fatigue test

6.1.1 Test equipment

The test equipment shall be either of the following.

- The test equipment shall have a driven rotatable device whereby the wheel rotates at a constant speed under the influence of a stationary bending moment (see Figure 1).