

JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS G 4051 : 2016

(JISF)

**Carbon steels for machine structural
use**

ICS 77.140.10

Reference number : **JIS G 4051 : 2016 (E)**

Date of Establishment: 1965-07-01

Date of Revision: 2016-11-21

Date of Public Notice in Official Gazette: 2016-11-21

Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

Technical Committee on Metal and Inorganic

Materials

JIS G 4051:2016, First English edition published in 2017-03

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

KK/AT

Contents

	Page
Introduction.....	1
1 Scope.....	1
2 Normative references.....	1
3 Classification and symbols.....	2
4 Manufacturing method.....	2
5 Chemical composition.....	2
6 Appearance, shape, dimensions and dimensional tolerances.....	4
6.1 Hot-rolled steel bars and wire rods.....	4
6.2 Hot-rolled steel plates, sheets and strips.....	8
6.3 Hot-rolled flat steels.....	9
6.4 Hot-extruded sections.....	10
6.5 Other steel products.....	10
7 Tests.....	10
8 Inspection.....	10
9 Marking.....	11
10 Report.....	11
Annex JA (normative) Manufacturing method and quality requirements for hot-extruded sections.....	12
Annex JB (normative) Symbols of grades and chemical compositions only applicable to steel plates, sheets and strips.....	14
Annex JC (normative) Quality requirements for cold-rolled carbon steel plates, sheets and strips.....	15
Annex JD (informative) Comparison table between JIS and corresponding International Standards.....	17

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 Iron and Steel Federation (JISF) 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 G 4051**:2009 is replaced with this Standard.

However, **JIS G 4051**:2009 may be applied in the **JIS** mark certification based on the relevant provisions of Article 19 Clause 1, etc. of the Industrial Standardization Law until November 20, 2017.

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.

Carbon steels for machine structural use

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 683-1** published in 2012 and the first edition of **ISO 683-3** published in 2014 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 JD.

1 Scope

This Standard specifies carbon steels for machine structural use (hereafter referred to as steel products) which are manufactured by hot rolling, hot forging and hot extruding. This Standard applies to steel products with a uniform cross-section, which are generally supplied for use after further processes of forging, cutting and heat treatment. This Standard is not applicable to steel tubes¹⁾.

The manufacturing method and quality requirements for hot-extruded sections are given in Annex JA.

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

ISO 683-1:2012 *Heat-treatable steel, alloy steels and free-cutting steels—Part 1: Non-alloy steels for quenching and tempering*

ISO 683-3:2014 *Heat-treatable steels, alloy steels and free-cutting steels—Part 3: Case-hardening steels* (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**.

Note ¹⁾ Steel tubes are covered in **JIS G 3478** (Carbon steel tubes for general machine structural purposes).

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 G 0320 *Standard test method for heat analysis of steel products*

JIS G 0321 *Product analysis and its tolerance for wrought steel*

JIS G 0404 *Steel and steel products—General technical delivery requirements*

JIS G 0415 *Steel and steel products—Inspection documents*

JIS G 3191 *Dimensions, mass and permissible variations of hot rolled steel bars and bar in coil*