

Translated and Published by Japanese Standards Association

$JIS \; G \; 4311^{\,:\, 2019}$

(JSSA/JSA)

Heat-resistant steel bars and wire rods

ICS 77.140.10; 77.140.20; 77.140.60 Reference number : JIS G 4311 : 2019 (E)

Date of Establishment: 1964-09-01 Date of Revision: 2019-03-20 Date of Public Notice in Official Gazette: 2019-03-20 Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

JIS G 4311 : 2019, First English edition published in 2019-09

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 2019

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

Contents

Page

Introduction		
1	Scope	
2	Normative references ······1	
3	Symbol of grade ·····2	
4	Manufacturing method ····································	
$5 \\ 5.1 \\ 5.2$	Chemical composition 4 Heat analysis values 4 Product analysis values 4	
$\begin{array}{c} 6 \\ 6.1 \\ 6.2 \\ 6.3 \\ 6.4 \\ 6.5 \\ 6.6 \end{array}$	Mechanical properties7General requirements7Mechanical properties of austenitic series7Mechanical properties of ferritic series9Mechanical properties of martensitic series10Mechanical properties of precipitation hardening series12Mechanical properties of bars as cold drawn14	
7 7.1 7.2	Shapes, dimensions and tolerances ····································	
8	Appearance ·····17	
9	Depth of flaw of wire rods ·····17	
10	Mass	
11 11.1 11.2 11.3 11.4	Tests19Chemical analysis19Mechanical tests19Flaw detection test of wire rods20Optional tests20	
12	Inspection ······20	
13 13.1 13.2	Marking ······20 Marking of bars ·····20 Marking of wire rods ····21	
14	Report ······21	
Annex JA (informative) Heat treatment conditions for heat-resistant steel bars		

G 4311 : 2019

Annex JB (informative)	Comparison table between JIS and corresponding
	International Standards24

Foreword

This Japanese Industrial Standard has been 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 Japan Stainless Steel Association (JSSA)/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 G 4311**:2011 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.

Blank

Heat-resistant steel bars and wire rods

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 4955** : 2016, Edition 4, and **ISO 683-15** : 1992, Edition 2, with some modifications of the technical contents.

The vertical lines on both sides indicate changes from the corresponding International Standards. A list of modifications with the explanations is given in Annex JB.

1 Scope

This Japanese Industrial Standard specifies requirements for heat-resistant steel bars (hereafter referred to as bars as a general term for heat-resistant steel round bars, square bars, hexagonal bars and flat bars) and heat-resistant steel wire rods (hereafter referred to as wire rods).

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

ISO 4955: 2016 Heat-resistant steels

ISO 683-15 : 1992 Heat-treatable steels, alloy steels and free-cutting steels — Part 15 : Valve steels for internal combustion engines (overall evaluation : MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards 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 B 0401-2	101-2 Geometrical product specifications (GPS) — ISO code system for tol-	
	erances on linear sizes — Part 2 : Tables of standard tolerance clas-	
	ses and limit deviations for holes and shafts	
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 0567 Method of elevated temperature tensile test for steels and heat-resisting alloys