



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS G 3454 : 2017

(JISF)

**Carbon steel pipes for pressure
service**

ICS 23.040.10;77.140.75

Reference number : JIS G 3454 : 2017 (E)

PROTECTED BY COPYRIGHT

Date of Establishment: 1962-03-01

Date of Revision: 2017-08-21

Date of Public Notice in Official Gazette: 2017-08-21

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area
Technical Committee on Metal and Inorganic
Materials

JIS G 3454:2017, First English edition published in 2017-10

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

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Classification and symbols	2
4 Manufacturing process	2
5 Chemical composition	3
6 Mechanical properties	3
6.1 Tensile strength, yield point or proof stress, and elongation	3
6.2 Flattening resistance	4
6.3 Bendability	5
7 Zinc-coating test characteristics	5
8 Hydraulic test characteristics and nondestructive test characteristics	5
9 Dimensions, mass and dimensional tolerances	6
9.1 Dimensions and unit mass	6
9.2 Dimensional tolerances	6
10 Appearance	8
11 Supplementary quality requirements	8
12 Tests	9
12.1 Chemical analysis	9
12.2 Mechanical tests	9
12.3 Zinc-coating test	11
12.4 Hydraulic test and nondestructive test	11
13 Inspection and reinspection	12
13.1 Inspection	12
13.2 Reinspection	12
14 Marking	12
15 Report	13
Annex JA (normative) Supplementary quality requirements	14
Annex JB (informative) Comparison table between JIS and corresponding International Standards	15

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 3454:2012** is replaced with this Standard.

However, **JIS G 3454:2012** 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 August 20, 2018.

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 steel pipes for pressure service

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 9329-1**:1989, Edition 1, **ISO 9330-1**:1990, Edition 1, 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 explanations is given in Annex JB.

1 Scope

This Standard specifies the carbon steel pipes (hereafter referred to as pipes) used for pressure service at temperatures up to about 350 °C. It is not applicable to pipes for high pressure service¹⁾. The pipes covered by this Standard are those of outside diameters 10.5 mm (nominal diameter 6A or 1/8B) to 660.4 mm (nominal diameter 650A or 26B).

Supplementary quality requirements that can be specified by the purchaser upon agreement with the manufacturer are provided in Annex JA.

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

ISO 9329-1:1989 *Seamless steel tubes for pressure purposes—Technical delivery conditions—Part 1: Unalloyed steels with specified room temperature properties*

ISO 9330-1:1990 *Welded steel tubes for pressure purposes—Technical delivery conditions—Part 1: Unalloyed steel tubes with specified room temperature properties* (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⁾ Pipes for high pressure service are specified in **JIS G 3455**.

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

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

JIS G 0582 *Automated ultrasonic examination of steel pipes and tubes*

JIS G 0583 *Automated eddy current examination of steel pipes and tubes*

JIS H 0401 Test methods for hot dip galvanized coatings

JIS H 2107 Zinc ingots

JIS H 8641 Hot dip galvanized coatings

JIS Z 2241 Metallic materials—Tensile testing—Method of test at room temperature

3 Classification and symbols

The pipes shall be classified into two grades, and symbols of grade, symbol representing manufacturing process and classification of zinc-coating shall be as given in Table 1.

Table 1 Symbols of grade, symbols representing manufacturing process and classification of zinc-coating

Symbols of grade	Symbols representing manufacturing process			Classification of zinc-coating
	Welding process	Finishing process	Marking	
STPG370	Seamless: S	Hot finished: H Cold finished: C	As given in 14 b) .	Black pipes: pipes that are not zinc-coated
STPG410	Electric resistance welded: E	As electric resistance welded: G		White pipes ^{a)} : zinc-coated pipes
Note ^{a)} Where it is necessary that white pipes be identifiable in the drawing, document, etc., the symbol -ZN shall be attached after the symbol of grade. However, it shall not apply to the marking on the product.				

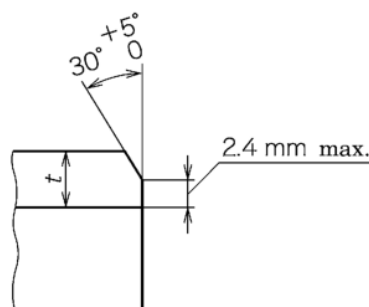
4 Manufacturing process

The manufacturing process of the pipes shall be as follows.

- The pipes shall be manufactured by combination of the welding process and the finishing process which are indicated in Table 1.
- In principle, the pipes shall be delivered as manufactured. However, the cold-finished pipes shall be annealed after manufacturing.

The purchaser may specify the heat treatment for the weld of the electric resistance welded steel tubes of STPG410, as necessary.

- The pipes shall be plain-ended unless otherwise specified. If the purchaser has requested bevelled end, the shape of the bevelled end shall be as agreed between the purchaser and the manufacturer. For pipes 22 mm or under in wall thickness, in the absence of a specific request of the shape by the purchaser, the bevelled end as shown in Figure 1 shall be applied.



t : wall thickness 22 mm or under

Figure 1 Shape of bevelled end

- d) If the pipe is electric resistance welded, the weld bead on the external and internal surfaces of the pipe shall be removed so as to obtain a weld joint smooth along the contour of the pipe unless otherwise specified. If impracticable, the removal of the weld bead on the internal surface need not be performed.
- e) In the case of white pipes, the surface of black pipes accepted in the inspection shall be hot dip zinc-coated after cleaning by sandblasting or acid pickling. Zinc used for hot dip zinc-coating shall be distilled zinc ingot Class 1 specified in **JIS H 2107** or any zinc with quality equivalent or superior to this.
- f) Other general requirements for zinc coating are specified in **JIS H 8641**.

5 Chemical composition

The pipes shall be subjected to the chemical analysis specified in **12.1**, and the obtained heat analysis values shall satisfy the requirements in Table 2.

Table 2 Chemical composition

Unit: %

Symbol of grade	C	Si	Mn	P	S
STPG370	0.25 max.	0.35 max.	0.30 to 0.90	0.040 max.	0.040 max.
STPG410	0.30 max.	0.35 max.	0.30 to 1.00	0.040 max.	0.040 max.
Other alloy elements than those given in this table may be added as required.					

6 Mechanical properties

6.1 Tensile strength, yield point or proof stress, and elongation

The pipes shall be subjected to the test specified in **12.2.3**, and their tensile strength, yield point or proof stress, and elongation shall satisfy the requirements given in Table 3. For tensile test of pipes under 8 mm in thickness performed using a Test piece No. 12 or No. 5, the elongation requirement shall be as given in Table 4.