

JIS G3465 Seamless Steel Tubes for Drilling

1. Scope

This Japanese Industrial Standard specifies the seamless steel tubes, hereinafter referred to as the "tubes", used for casing tube, core tube and drill rod in drilling Remark.

1. The units and numerical values given in { } in this Standard are based on the International System of Units (SI) and are appended for informative reference.

Further, the traditional units accompanied by numerical values in this Standard shall be converted to the SI units and numerical values on Jan. 1, 1992.

2. Grade and Designation

The tubes shall be classified into 6 grades, and their designations shall be as given in Table 1.

Table 1 Designation of Grade

New units	(For reference) Traditional units	Application
STM-C 540 STM-C 640	STM-C 55 STM-C 65	Casing tube, core tube
STM-R 590 STM-R 690 STM-R 780 STM-R 830	STM-R 60 STM-R 70 STM-R 80 STM-R 85	Drill rod

World Standard Conferens Table

	KS		JIS		API
Grade number	E 3114		G 3465		5 CT
Designation of Grade	Traditional symbol	symbol	Traditional symbol	symbol	-
	STMC55	STMC540	STM-C55	STM-C540	J-55
	STMC65	STMC640	STM-C65	STM-C640	-
	STMR65	STMR590	STM-R65	STM-R590	-
	STMR70	STMR690	STM-R70	STM-R690	N-80
	STMR80	STMR780	STM-R80	STM-R780	-
	STMR85	STMR830	STM-R85	STM-R830	-
	-	-	-	-	H-40 K-55

3. Chemical Composition

The tubes shall be tested in accordance with 8.1 and the resulting ladle analysis values shall conform to Table 2.

Table 2 Chemical Composition

Unit:

%

P	S
0.040 max.	0.040 max.

4. Mechanical Properties

The tubes shall be tested in accordance with 8.1 and the resulting tensile strength, yield point or proof stress and elongation shall conform to Table 3-1 or Table 3-2.

Table 3 Mechanical Properties

Designation of grade	Tensile strength N/mm ²	Yield point or proof stress N/mm ²	Elongation %
			No.11 test piece
			No.12 test piece
STM-C 540	540 min.	-	18 min.
STM-C 640	640 min.	-	16 min.
STM-R 590	590 min.	375 min.	18 min.
STM-R 690	690 min.	440 min.	16 min.
STM-R 780	780 min.	520 min.	15 min.
STM-R 830	830 min.	590 min.	10 min.

5. Dimensions, Mass and Dimensional Tolerance

5.1 Dimensions and Mass

Unless otherwise specified, the outside diameter, wall thickness and mass of tubes shall be as specified below.

(1) For Casing Tube Table 4 shall be applied

Table 4 Outside Diameter, wall Thickness and Mass (for Casing Tube)

Nominal diameter	Outside diameter mm	Inside diameter mm	Wall thickness mm	Unit mass kg/m
43	43	37	3.0	2.96
53	53	47	3.0	3.70
63	63	57	3.0	4.44

73	73	67	3.0	5.18
83	83	77	3.0	5.92
97	97	90	3.5	8.07
112	112	105	3.5	9.36
127	127	118	4.5	13.6
142	142	133	4.5	15.3

(2) For Core Tube Table 5 shall be applied

Table 5 Outside Diameter, Wall Thickness and Mass (for Drill Rod)

Nominal diameter	Outside diameter mm	Inside diameter mm	Wall thickness mm	Unit mass kg/m
34	34	26.5	3.75	2.80
44	44	34.5	4.75	4.60
54	54	44.5	4.75	5.77
64	64	54.5	4.75	6.94
74	74	64.5	4.75	8.11
84	84	74.5	4.75	9.28
99	99	88.5	5.25	12.1
114	114	103.5	5.25	14.1
129	129	118.5	5.25	16.0
144	144	133.5	5.25	18.0
180	180	168	6.00	25.7

(3) For Drill Rod Table 6 shall be applied

Table 6 Outside Diameter, Wall Thickness and Mass (for Drill Rod)

Nominal diameter	Outside diameter mm	Inside diameter mm	Wall thickness mm	Unit mass kg/m
33.5	33.5	23	5.25	3.66
40.5	40.5	31	4.75	4.19
42	42	32	5.0	4.56
50	40	37	6.5	6.97

Remark

The values of unit mass listed in Tables 4.5 and 6 have been calculated from the following formula assuming 1 cm³ of steel to be equivalent to 7.85g and rounding off the values obtained to three significant figures in accordance with JIS Z 8401.

$$W = 0.02466 (D - t)$$

where W : unit mass of the tube (II/m)

D : wall thickness of the tube (mm)

t : outside diameter of the tube (mm)

5.2 Dimensional Tolerances

(1) The tolerances on outside diameter and wall thickness for drill rod tubes shall be as given in Tables 7 and 8, respectively, and those for casing tubes and core tubes shall be agreed upon by the purchaser and the manufacturer.

Table 7 tolerances on Outside Diameter (for Drill Rod)

Classification	Tolerances on outside diameter
Class 1	Under 50mm [0.5mm
	50mm or over [1%
Class 2	Under 40mm [0.2mm
	40mm or over [0.5%

6. Appearance

The tubes shall be practically straight, and their both ends shall be at right angles to their axes. The tubes shall be free from defects detrimental to practical use.

7. Method of Manufacture

(1) Tubes shall be manufactured by seamless process.

(2) Tubes shall be furnished as cold or hot finished, subject to subsequent adequate heat treatment, if necessary.

8. Test

8.1 Chemical Analysis

8.1.1 Chemical Analysis

General matters of chemical analysis and method of sampling specimens for analysis shall be in accordance with 3. in JIS G 0303.

8.1.2 Analytical Method

The analytical method shall be in accordance with one of the following Standards

JIS G 1214

JIS G 1215

JIS G 1253

JIS G 1256

JIS G 1257

8.2 Tensile Test

8.2.1 Test Piece

The test piece No.11, No.12 A, No.12 B or No.12 C test piece specified in JIS Z 2201, and shall be cut off from the tube along its longitudinal axis.

8.2.2 Test Method

The test method shall be as specified in JIS Z 2241

9. Inspection

9.1 Inspection

Inspection shall be as follows

(1) General matters of inspection shall be as specified in JIS G 0303.

(2) Chemical composition, mechanical 9.1(2) properties, dimensions and appearance for the tubes shall be as specified in 3, 4, 5 and 6

(3) The purchaser may specify a hydrostatic test for drill rod tube in addition to the inspection items specified in (2). In this case, the test pressure and its acceptance criteria shall previously be agreed upon the manufacturer.

The hydrostatic test should, as a rule, be applied to each tube.

(4) The method of sampling specimens and the number of test pieces for tensile test shall be as follows. Take one test specimen from 100 tubes or its fraction of the same dimensions and the concurrent heat treatment, and then take from this one test piece for the tensile test.

9.2 Reinspection

The tubes are entitled to a retest specified in 4.4 of JIS G 0303 for final acceptance.

10 Making

Each tube having passed the inspection shall be legibly marked with the following items. The order of arranging the items is not specified.

(1) Designation of grade

(2) Symbol indicating the manufacturing process ⁽¹⁾

(3) Dimensions

(4) Manufacturer's name or its identifying brand

Note ⁽¹⁾ The symbol indicating the manufacturing process shall be as follows. The mark may be replaced by a blank.

Hot finished seamless steel tube: -S-H

Cold finished seamless steel tube: -S-C

11. Report

The manufacturer shall, as a rule, submit to the purchaser a report carrying the test results, methods of manufacture, ordered dimensions, quantity and work lot number traceable to the manufacturing conditions.