JIS G3441 Alloy steel tubes for machine purposes

(JIS G 3441 / JISG3441)

1. Scope

This Japanese Industrial Standard specifies the alloy steel tubes, hereinfter referred to as the "tubes", used for machinery, automobiles and other machine parts.

2. Grade and Designation

The tubes shall be classified into 7 grades, and their designations shall be as given in Table1

Table 1. Designation of Grade

Designation of grade	Informatibe reference Former symbol	Classification
SCr420TK	-	Chromium steel
SCM415TK	-	Chromium molybdenum steel
SCM418TK	-	
SCM420TK	-	
SCM430TK	Akin to STKS1	
SCM435TK	Akin to STKS3	
SCM440TK	-	

World Standard Comparative Table

KS		ASTM		JIS		BS	
Number	GRADE	Number	GRADE	Number	GRADE	Number	GRADE
	SCr 420 TK				SCr 420 TK		
	SCM 415 TK				SCM 415 TK		
	SCM 418 TK				SCM 418 TK		CFS10
D 3574	SCM 420 TK	A519	5120	G-3441	SCM 420 TK	632	
	SCM 430 TK		4130		SCM 430 TK		
	SCM 435 TK		4135		SCM 435 TK		
	SCM 440 TK		4140		SCM 440 TK		CFS10
						1717	C6(CF3)

		6323	CFS, CFS3A
		6323	CFS4, CFS51
		6323	CFS6, CFS7
		6323	CFS8, CFS9
		6323	CFS11

3. Chemical Composition

The tubes shall be tested in accordance with 7.1 and the ladle analysis values obtained shall conform to Table 2.

Table 2 Chemical Composition

Unit :%

Designation of grade	Former symbol (informative reference)	C	Si	Mn	P	S	Cr
SCr 420 TK	-	0.18~0.23	0.15~0.35	0.60~0.85			0.90~1.20
SCM 415 TK	-	0.13~0.18	0.15~0.35	0.60~0.85	0.030 max	0.030 max	0.90~1.20
SCM 418 TK	-	0.16~0.21	0.15~0.35	0.60~0.85	0.030 max	0.030 max	0.90~1.20
SCM 420 TK	-	0.18~0.23	0.15~0.35	0.60~0.85	0.030 max	0.030 max	0.90~1.20
SCM 430 TK	Akin to STKS 1	0.28~0.33	0.15~0.35	0.60~0.85	0.030 max	0.030 max	0.90~1.20
					0.030 max	0.030 max	
SCM 435 TK	Akin to STKS 3	0.33~0.38	0.15~0.35	0.60~0.85	0.030 max	0.030 max	0.90~1.20
					0.030 max	0.030 max	
SCM 440 TK	-	0.38~0.43	0.15~0.35	0.60~0.85			0.90~1.20

Remark

1. As impurities, Ni and Cu for each grade shall not exced 0.25 % and 0.30 %, respectively

2. When the product analysis is required by the purchaser, the tolerances for the values given in the above Table shall be as specified in **Table 3** in **JIS G 0321**

4. Dimensional Tolerances

5. Apperance

(1) The tube shall be practically straight. and its both ends shall be at right angles to the axis of the tube.

(2) The tube shall be free from defects detrimental to practical use.

(3) When particularly required by the purchaser, the surface finishing of tubes shall be agreed upon by the purchaser and the manufacturer.

6. Method of Manufacture

(1) Tubes shall be manufactured by the seamless process or the electric resistance welding process.

(2) Tube shall, as a rule, be furnished as manufactured, as cold finished, or after annealed. However, the purchaser may specify a heat treatment other than annealing, if necessary.

7. Test

7.1 Chemical Analysis

7.1.1 Chemical analysis

The general requirements for chemical analysis and method of sampling specimens for analysis shall be in accordance with the specifications of **3. in JIS G 0303**

7.1.2 Analytical Method

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

JIS G 1211, JIS G 1212, JIS G 1213, JIS G 1214, JIS G 1215, JIS G 1216,
JIS G 1217, JIS G 1218, JIS G 1219, JIS G 1253, JIS G 1256, JIS G 1257

8. Inspection

(1)The general requirements for inspection shall be in accordance with **JIS G 0303.**

(2) he chemical composition, appearance and dimensions for tube shall conform to the requirements specified in 3., 5.

(3)The purchaser may specify tensile test (1), hardness test (2), flattening test, flaring test, grain size test (3)

decarburization test (3) and hydrostatic test, etc, in addition to the inspection items specified in 8.2 In this case, the test items, sampling method, test method and theiracceptance standard shall previously be agreed upon by the manufacturer.

(4) The number of specimens for product analysis shall be agreed upon by the purchaser and the manufacturer.

Note

([1]) Tensile test shall be in accordance with **JIS Z 2201** and **JIS Z 2241.**

([2]) Hardness test shall be in accordance with **JIS Z 2245 .**

([3]) Grain size test shall be in accordance with **JIS G 0551 .**

([4]) Decarburization test shall be in accordance with **JIS G 0558**

9.Marking

Each tube having passed the inspection shall be legibly marked with the following items. smaller tubes and other tubes as requested by the purchaser. however, may be bundled and marked for each bundle by suitable means. Whenapproved by the purchaser, part of the items may be omitted.

(1) Designation of grade

(2) Symbol indicating the manufacturing process([5])

(3) Dimensions

(4) Manufacturer's name or its abbreviation

Note ([5]) The symbols indicating the manufacturing processes shall be as follows..

Hot finished seamless steel tube :-S-H

Cold finished seamless steel tube :-S-C

Electric resistance welded steel tubes other than cold finished.:-E-G

Cold finished electric resistance welded steel tube :-E-C

10. Report

The manufacturer shall, as a rule, eubmit to the purchaser reports on the test results, method of manufacture, ordered dimensions, quantity and work lot number traccable to the manufacturing conditions etc.

JIS Number and Correnspondding Foreign Standards

JIS			ASTM			BS			DIN		NF		ISO		Index
Standard Number	Grade	Tupe	Standard Number	Grade	Tupe	Standard Number	Grade	Tupe	Standard Number	Grade Tupe	Standard Number	Grade Tupe	Standard Number	Grade Tupe	Number
G3441	SCr420TK	Cr													C018
	SCM415TK	CrMo													
	SCM418TK	CrMo				6323	CFS10	CrMo							
	SCM420TK	CrMo	A519	5120	CrMo										
	SCM430TK	CrMo	A519	4130	CrMo										
	SCM435TK	CrMo	A519	4135	CrMo										
	SCM440TK	CrMo	A519	4140	CrMo	6323	CFS10	CrMo							