

UDC 669.15-194.53/.54-426



JAPANESE INDUSTRIAL STANDARD

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High Carbon Steel Wire Rods

G 3506-1980

1. Scope

This Japanese Industrial Standard specifies high carbon steel wire rods, hereinafter referred to as the "wire rods", to be used for the manufacture of high carbon steel wire, oil tempered wire, high carbon steel wire for prestressed concrete, galvanized steel wire strand, wire rope, etc. However, the piano wire rods shall be excluded.

2. Classification and Symbol

The wire rods shall be classified into 21 classes, and their symbols shall conform to Table 1.

3. Chemical Composition

The chemical composition of the wire rods shall be determined by the ladle analysis, and the values obtained shall conform to Table 1.

Applicable Standards: See page 5.

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Table 1. Chemical Composition

Class symbol	Chemical composition %				
	C	Si	Mn	P	S
SWRH 27	0.24 to 0.31	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 32	0.29 to 0.36	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 37	0.34 to 0.41	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 42 A	0.39 to 0.46	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 42 B	0.39 to 0.46	0.15 to 0.35	0.60 to 0.90	0.040 max.	0.040 max.
SWRH 47 A	0.44 to 0.51	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 47 B	0.44 to 0.51	0.15 to 0.35	0.60 to 0.90	0.040 max.	0.040 max.
SWRH 52 A	0.49 to 0.56	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 52 B	0.49 to 0.56	0.15 to 0.35	0.60 to 0.90	0.040 max.	0.040 max.
SWRH 57 A	0.54 to 0.61	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 57 B	0.54 to 0.61	0.15 to 0.35	0.60 to 0.90	0.040 max.	0.040 max.
SWRH 62 A	0.59 to 0.66	0.15 to 0.35	0.30 to 0.60	0.040 max.	0.040 max.
SWRH 62 B	0.59 to 0.66	0.15 to 0.35	0.60 to 0.90	0.040 max.	0.040 max.
SWRH 67 A	0.64 to 0.71	0.15 to 0.35	0.30 to 0.60	0.030 max.	0.030 max.
SWRH 67 B	0.64 to 0.71	0.15 to 0.35	0.60 to 0.90	0.030 max.	0.030 max.
SWRH 72 A	0.69 to 0.76	0.15 to 0.35	0.30 to 0.60	0.030 max.	0.030 max.
* SWRH 72 B	0.69 to 0.76	0.15 to 0.35	0.60 to 0.90	0.030 max.	0.030 max.
SWRH 77 A	0.74 to 0.81	0.15 to 0.35	0.30 to 0.60	0.030 max.	0.030 max.
SWRH 77 B	0.74 to 0.81	0.15 to 0.35	0.60 to 0.90	0.030 max.	0.030 max.
SWRH 82 A	0.79 to 0.86	0.15 to 0.35	0.30 to 0.60	0.030 max.	0.030 max.
SWRH 82 B	0.79 to 0.86	0.15 to 0.35	0.60 to 0.90	0.030 max.	0.030 max.

Remark: Carbon content may be specified so as to be within the range narrowed by 0.01 % each from the upper and the lower limits given in Table 1, when agreed upon between the manufacturer and the purchaser.

4. Appearance and Sizes

4.1 The wire rods shall be free from any defects harmful to use.

4.2 The standard diameters of the wire rods shall conform to Table 2.

Table 2. Standard Diameters

Unit: mm

5.5,	6,	6.4,	7,	8,	9,	9.5,	10,	11,	12,	13,	14,	15,	16,	17,	19
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4.3 The tolerance on diameter and out-of-round of the wire rods shall conform to Table 3.

Table 3. Tolerance and Out-of-Round

Unit: mm

Tolerances	Out-of-round ⁽¹⁾
± 0.50	0.50 max.

Note ⁽¹⁾ Out-of-round is defined as the difference between the maximum and the minimum values of diameter at the same cross section of the wire rod.

5. Analytical Tests

5.1 The method of taking samples for the ladle analysis shall comply with the specification of 3. in JIS G 0303.

5.2 The method of analysis shall comply with the appropriate standard of the following:

JIS G 1211

JIS G 1212

JIS G 1213

JIS G 1214

JIS G 1215

JIS G 1252

JIS G 1253

JIS G 1256

JIS G 1257

6. Inspection

6.1 The chemical composition shall be determined by the test specified in 5., and the results shall comply with the requirements of 3.

6.2 The results of tests on appearance and sizes shall comply with the requirements of 4.

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6.3 In addition to the inspection described in 6.1 and 6.2, inspection on austenitic grain size, non-metallic inclusions, decarburization, and other particular item may be specified, if necessary.

In this case, the purchaser shall previously deliberate with the manufacturer on the inspection items, method of sampling, method of test, and criteria on acceptance. However, test piece, method of test, etc. for the inspection on the austenitic grain size, non-metallic inclusions, and decarburization shall comply with the appropriate standard of the following:

JIS G 0551

JIS G 0555

JIS G 0558

7. Marking

The wire rods having passed the inspection shall be marked clearly with the following particulars on each coil by a suitable means. However, when approved by the purchaser, the particulars mentioned below may be partially omitted:

- (1) Class symbol
- (2) Heat number or inspection number
- (3) Diameter of wire rod
- (4) Manufacturer's name or its abbreviation

8. Report

The manufacturer shall submit the purchaser the test results on the specified items when so requested by the purchaser.