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JIS G 3509-2 : 2003
(JWPA)

**Low-alloyed steels for cold
heading—Part 2 : Wires**

ICS 77.140.10; 77.140.20; 77.140.65

Reference number : JIS G 3509-2 : 2003 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from Japan Wire Products Association (JWPA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on **ISO 4954 : 1979 Steels for cold heading and cold extruding** for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS G 3509 consists of the following 2 parts under the general title *Low-alloyed steels for cold heading*.

Part 1 : Wire rods

Part 2 : Wires

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Low-alloyed steels for cold heading— Part 2 : Wires

Introduction This Japanese Industrial Standard has been established achieving coordination in a “modified” level specified in **ISO/IEC Guide 21 : 1999** with the second edition of corresponding International Standard **ISO 4954 : 1979** *Steels for cold heading and cold extruding*.

Portions with continuous side lines in this Standard are the items modified from the original International Standard. The table of modifications attached with their explanations is shown in Annex (informative).

1 Scope This Standard specifies low-alloyed steels for cold heading (hereafter referred to as “wires”) used in manufacturing screws such as bolts, nuts, small screws and various parts by cold heading.

Remarks : The International Standard corresponding to this Standard is as follows:

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**.

ISO 4954 : 1979 *Steels for cold heading and cold extruding* (MOD)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The normative references without the indication of the year of coming into effect apply only to the most recent edition (including amendments).

JIS B 7502 *Micrometer callipers*

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

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

JIS G 0558 *Methods of measuring decarburized depth for steel*

JIS G 3509-1 *Low-alloyed steels for cold heading—Part 1 : Wire rods*

JIS Z 2241 *Method of tensile test for metallic materials*

3 Classification and symbol Wires are classified into 29 classes and their symbols shall be as given in Table 1.

Table 1 Symbol of class

Classification of steel class	Symbol of steel class	Classification of steel class	Symbol of steel class
Manganese steel	SMn420WCH	Chromium molybdenum steel	<u>SCM430WCH</u>
	SMn433WCH		SCM435WCH
	SMn438WCH		SCM440WCH
	SMn443WCH		SCM445WCH
Manganese chromium steel	<u>SMnC420WCH</u>		SCM822WCH
	<u>SMnC443WCH</u>	Nickel chromium steel	SNC415WCH
Chromium steel	SCr415WCH		SNC631WCH
	SCr420WCH		SNC815WCH
	SCr430WCH	Nickel chromium molybdenum steel	SNCM220WCH
	SCr435WCH		<u>SNCM240WCH</u>
	SCr440WCH		SNCM420WCH
Chromium molybdenum steel	SCM415WCH		<u>SNCM439WCH</u>
	SCM418WCH		<u>SNCM447WCH</u>
	SCM420WCH		<u>SNCM616WCH</u>
	SCM425WCH		

- Remarks**
- Those to which dotted underlines are applied specify only ordinary steels, and quenching guaranteed steels (H steels) are not specified.
 - H steels are divided into 3 classes of H, H1 and H2 and their symbols are shown in the following example.
Example : SMn420H1WCH
 - Processes shall be as follows. Processes other than DA1 process, DA2 process and DA3 process specified below shall be as agreed upon between the manufacturer and the purchaser.
DA1 process: annealing (A) → wire drawing (Dr)
DA2 process: wire drawing (Dr) → annealing (A) → wire drawing (Dr)
DA3 process: annealing (A) → wire drawing (Dr) → annealing (A) → wire drawing (Dr)

4 Mechanical properties Mechanical properties of wires shall be as given in Attached Table 1.

5 Decarburized layer depth When requested by the purchaser, the tolerable limit of the average decarburized layer depth shall be as given in Table 2.

Further, harmful carburizing detrimental to cold forge welding shall not occur in cold forge welding.