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Steel tubes for machine structure with  
specified hardenability bands

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## Foreword

This Japanese Industrial Standard has been 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 a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS G 3479: 2016**), which has been technically revised.

However, **JIS G 3479: 2016** may be applied in the **JIS** mark certification based on the relevant provisions of Article 30, paragraph (1), etc. of the Industrial Standardization Act until 19 May 2022.

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# Steel tubes for machine structure with specified hardenability bands

## 1 Scope

This Japanese Industrial Standard specifies the requirements for the steel tubes for machine structure with specified hardenability bands used mainly for machine parts (hereafter referred to as tubes).

## 2 Normative references

Part or all of the provisions of the following standards, 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 0201 *Glossary of terms used in iron and steel (Heat treatment)*
- JIS G 0202 *Glossary of terms used in iron and steel (Testing)*
- JIS G 0203 *Glossary of terms used in iron and steel (Products and quality)*
- JIS G 0320 *Standard test method for heat analysis of steel products*
- JIS G 0321 *Product analysis and its tolerance for wrought steel*
- JIS G 0404 *Steel and steel products — General technical delivery requirements*
- JIS G 0415 *Steel and steel products — Inspection documents*
- JIS G 0551 *Steels — Micrographic determination of the apparent grain size*
- JIS G 0561 *Method of hardenability test for steel (End quenching method)*

## 3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS G 0201**, **JIS G 0202** and **JIS G 0203** apply.

## 4 Symbol of grade

The tubes shall be classified into 24 grades, and their symbols shall be as given in Table 1.

**Table 1 Symbols of grade and symbols of manufacturing method**

Classification	Symbol of grade	Symbol of manufacturing method		
		Tube manufacturing method	Finishing method	Marking
Manganese steel	SMn420HTK SMn433HTK SMn438HTK SMn443HTK	Seamless : S Electric resistance welding : E	Hot finished : H Cold finished : C As electric resistance welded : G	As given in <b>13 b).</b>
Manganese chromium steel	SMnC420HTK SMnC443HTK			
Chromium steel	SCr415HTK SCr420HTK SCr430HTK SCr435HTK SCr440HTK			
Chromium molybdenum steel	SCM415HTK SCM418HTK SCM420HTK SCM425HTK SCM435HTK SCM440HTK SCM445HTK SCM822HTK			
Nickel chromium steel	SNC415HTK SNC631HTK SNC815HTK			
Nickel chromium molybdenum steel	SNCM220HTK SNCM420HTK			

## 5 Manufacturing method

The manufacturing method shall be as follows.

- a) Tubes shall be manufactured by combination of the tube manufacturing method and the finishing method which are indicated in Table 1. If required, tubes may be subjected to the appropriate heat treatment. The symbols of manufacturing method shall be as given in Table 1.
- b) If required, the purchaser may specify the heat treatment.
- c) Tubes shall be finished with plain ends unless otherwise specified.

## 6 Chemical composition

The tubes shall be tested in accordance with 11.1, and the obtained heat analysis values shall be as given in Table 2. In the case where a product analysis is requested by the purchaser, the test shall be conducted in accordance with 11.1, and the product analysis values shall satisfy the requirements in Table 2 to which tolerances in Table 4 of JIS G 0321 are applied.