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Iron and steel—Methods for determination of niobium content

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Descriptors : steels, niobium, chemical analysis and testing, determination of content, iron, transition metals, ferrous metals, ferrous alloys

Reference number : JIS G 1237 : 1997 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

In this revision, inductively coupled plasma atomic emission spectrometric method is newly specified, however, niobium pentoxide gravimetric method and pyrogallol spectrophotometric method were withdrawn as they had not been used.

JIS G 1237:1997 contains Annexes as under:

Annex 1 Sulfochlorophenol S spectrophotometric method

Annex 2 Sulfochlorophenol S 1-butanol extraction spectrophotometric method

Annex 3 Inductively coupled plasma atomic emission spectrometric method

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Divisional Council on Iron and Steel

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In the event of any doubts arising as to the contents,
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Iron and steel—Methods for determination of niobium content

1 Scope This Japanese Industrial Standard specifies the methods for determination of niobium in iron and steel.

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. Normative references described on the most recent edition shall apply.

JIS G 1201 *General rules for chemical analysis of iron and steel*

JIS K 0116 *General rules for atomic emission spectrometry*

JIS Z 8402 *General rules for permissible tolerance of chemical analyses and physical tests*

3 General matters General matters common to the determination methods shall be in accordance with **JIS G 1201**.

4 Classification of determination methods The methods for determination of niobium shall be in accordance with any one of the following methods.

- (1) **Sulfochlorophenol S spectrophotometric method** This method is applied to the sample of 0.5 % (*m/m*) or over up to and including 2.5 % (*m/m*) niobium content, and the determination method shall be as described in Annex 1. However, this method can not be applied to such sample that 1 mg or over tungsten, 0.2 mg or over titanium, 0.1 mg or over molybdenum, 0.05 mg or over copper, 0.01 mg or over zirconium, or 0.005 mg or over tantalum coexists even independently in the sample solution partially taken for coloration.
- (2) **Sulfochlorophenol S 1-butanol extraction spectrophotometric method** This method is applied to the sample of 0.01 % (*m/m*) or over up to and including 0.5 % (*m/m*) niobium content, and the determination method shall be as described in Annex 2. However, this method can not be applied to such sample that each 5 mg or over of manganese, nickel, copper, aluminium, cobalt, or vanadium, each 1 mg or over of tin, arsenic, tungsten, or yttrium, 0.2 mg or over of titanium, 0.1 mg or over of molybdenum, 0.02 mg or over of zirconium, or 0.005 mg or over of tantalum coexists even independently in the sample solution partially taken for coloration.
- (3) **Inductively coupled plasma atomic emission spectrometric method** This method is applied to the sample of 0.001 % (*m/m*) or over up to and including 2.5 % (*m/m*) niobium content, and the determination method shall be as described in Annex 3.