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Iron and steel—ICP atomic emission spectrometric method—Part 3: Determination of various elements—Decomposition with acids and fusion with sodium carbonate

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Foreword

This translation has been made based on the original Japanese Industrial Standard 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 the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently, **JIS G 1258-3**:2007 is replaced with this Standard.

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JIS G 1258 series consists of the following 8 parts under the general title "*Iron and steel—ICP atomic emission spectrometric method*":

Part 0: General rules

Part 1: Determination of various elements—Decomposition with acids and fusion with potassium disulfate

Part 2: Determination of various elements—Decomposition with phosphoric and sulfuric acids

Part 3: Determination of various elements—Decomposition with acids and fusion with sodium carbonate

Part 4: Determination of niobium content—Dissolution in phosphoric and sulfuric acids or Dissolution in acids and fusion with potassium disulfate

Part 5: Determination of boron content—Dissolution in phosphoric and sulfuric acids

Part 6: Determination of boron content—Dissolution in acids and fusion with sodium carbonate

Part 7: Determination of boron content—Distillation as trimethyl borate

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Iron and steel—ICP atomic emission spectrometric method—Part 3: Determination of various elements—Decomposition with acids and fusion with potassium disulfate

Introduction

This Japanese Industrial Standard has been established in 2007, and the revision at this time is to respond to the recent expansion of applicable elements.

No corresponding International Standard has been established at this point.

1 Scope

This Standard specifies ICP atomic emission spectrometric method using decomposition with acids and fusion with sodium carbonate to determine the content rate of 14 components specified in table 1 in steel. This method applies to the determination of each component within the range specified in table 1, however, it is not applicable to steels when they contain one or more components of content rate over the maximum limit of determination specified in table 1. In the case of arsenic, this method is not applicable to steels of iron content rate under 90 % (mass fraction).

Table 1 Applicable element and determination range

Applicable element	Determination range [mass fraction (%)]
Silicon	≥ 0.10 ≤ 2.0
Manganese	≥ 0.01 ≤ 20.0
Phosphorous	≥ 0.003 ≤ 0.10
Nickel	≥ 0.02 ≤ 10.0
Chromium	≥ 0.03 ≤ 35.0
Molybdenum	≥ 0.10 ≤ 3.0
Copper	≥ 0.01 ≤ 5.0
Vanadium	≥ 0.01 ≤ 1.0
Cobalt	≥ 0.01 ≤ 1.0
Titanium	≥ 0.001 ≤ 2.5
Aluminium	≥ 0.004 ≤ 1.5
Calcium	≥ 0.001 ≤ 0.005
Magnesium	≥ 0.002 ≤ 0.011
Arsenic	≥ 0.003 ≤ 0.012

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