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**Iron and steel—Atomic absorption
spectrometric method—
Part 0: General rules**

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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 for establishment 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.

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JIS G 1257 series consists of the following 32 parts under the general title “*Iron and steel—Atomic absorption spectrometric method*”:

JIS G 1257-0 *Part 0: General rules*

JIS G 1257-1 *Part 1: Determination of manganese—Flame atomization after decomposition with acids*

JIS G 1257-2 *Part 2: Determination of phosphorus—Flame atomization indirect method after extraction of molybdophosphate*

JIS G 1257-3 *Part 3: Determination of nickel—Flame atomization after decomposition with acids*

JIS G 1257-4 *Part 4: Determination of chromium—Flame atomization after decomposition with acids*

JIS G 1257-5 *Part 5: Determination of molybdenum—Flame atomization after decomposition with acids*

JIS G 1257-6 *Part 6: Determination of copper—Flame atomization after decomposition with acids*

JIS G 1257-7 *Part 7: Determination of vanadium—Flame atomization after decomposition with acids*

JIS G 1257-8 *Part 8: Determination of cobalt—Flame atomization after decomposition with acids*

JIS G 1257-9 *Part 9: Determination of titanium—Flame atomization after decomposition with acids*

JIS G 1257-10-1 *Part 10: Determination of aluminium—Section 1: Flame atomization after decomposition with acids*

JIS G 1257-10-2 *Part 10: Determination of aluminium—Section 2: Determination of acid-soluble aluminium*

JIS G 1257-10-3 *Part 10: Determination of aluminium—Section 3: Flame atomization after separation of iron*

- JIS G 1257-10-4 *Part 10: Determination of aluminium—Section 4: Electrothermal atomization*
- JIS G 1257-11-1 *Part 11: Determination of tin—Section 1: Flame atomization after extraction of iodide*
- JIS G 1257-11-2 *Part 11: Determination of tin—Section 2: Electrothermal atomization*
- JIS G 1257-12-1 *Part 12: Determination of lead—Section 1: Flame atomization after decomposition with acids*
- JIS G 1257-12-2 *Part 12: Determination of lead—Section 2: Flame atomization after extraction of iodide*
- JIS G 1257-12-3 *Part 12: Determination of lead—Section 3: Electrothermal atomization*
- JIS G 1257-13 *Part 13: Determination of magnesium—Flame atomization after decomposition with acids*
- JIS G 1257-14 *Part 14: Determination of calcium—Flame atomization after decomposition with acids*
- JIS G 1257-15-1 *Part 15: Determination of zinc—Section 1: Flame atomization after decomposition with acids*
- JIS G 1257-15-2 *Part 15: Determination of zinc—Section 2: Flame atomization after extraction of tetra-hexylammonium iodide-trioctylamine complex*
- JIS G 1257-16-1 *Part 16: Determination of bismuth—Section 1: Flame atomization after extraction of iodide*
- JIS G 1257-16-2 *Part 16: Determination of bismuth—Section 2: Electrothermal atomization*
- JIS G 1257-17-1 *Part 17: Determination of antimony—Section 1: Flame atomization after extraction of iodide*
- JIS G 1257-17-2 *Part 17: Determination of antimony—Section 2: Electrothermal atomization*
- JIS G 1257-18-1 *Part 18: Determination of tellurium—Section 1: Flame atomization after extraction of iodide*
- JIS G 1257-18-2 *Part 18: Determination of tellurium—Section 2: Electrothermal atomization*
- JIS G 1257-19-1 *Part 19: Determination of arsenic—Section 1: Electrothermal atomization*
- JIS G 1257-19-2 *Part 19: Determination of arsenic—Section 2: Hydride generation method (to be established)*
- JIS G 1257-20 *Part 20: Determination of selenium—Electrothermal atomization*

Iron and steel—Atomic absorption spectrometric method—Part 0: General rules

Introduction

This Japanese Industrial Standard has been prepared by reviewing and reorganizing the general matters contained separately in the main body and respective Annexes of **JIS G 1257:1994** (including the Annexes contained in Amendment 1:1999 and Amendment 2:2000), and also by adding new specification contents.

1 Scope

This Standard specifies the scopes of application of individual parts of the **JIS G 1257** standard series (hereafter referred to as “standard series”), and general matters of the standard series.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) listed below shall be applied.

JIS G 1201 *Iron and steel—General rules for analytical methods*

JIS K 0121 *General rules for atomic absorption spectrometry*

JIS K 0133 *General rules for high frequency plasma mass spectrometry*

JIS Z 8103 *Glossary of terms used in measurement*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS G 1201**, **JIS K 0121** and **JIS Z 8103** and the following apply.

3.1 zero member

a solution, in a series of calibration solutions, to which zero volume of the standard solution of the target component is added

3.2 acid-soluble

a term used to designate the chemical species which is contained in the filtrate obtained by decomposing the sample with acid and then filtering the resultant solution

Example: Acid-soluble aluminium, acid-soluble calcium

3.3 acid-insoluble

a term used to designate the chemical species which is contained in the filtration residue obtained by decomposing the sample with acid and then filtering the resultant solution

3.4 platform

a graphite plate inserted in the graphite tube used as the heating element for an electrothermal atomic absorption spectrometry

It has a depression in the centre for accommodating sample solution. Its function is to isolate the sample from the heat-generating graphite tube walls, so that a stable temperature state can be maintained through indirect heating and more efficient atomization can be realised. Some products are integrated in the graphite tube.

4 General matters

For the general matters of the analysis not specified in this Standard, see **JIS G 1201** and **JIS K 0121**.

5 Scope of individual parts in the standard series

The applicable component and content range of individual parts of the **JIS G 1257** standard series are shown in table 1.

Table 1 Applicable component and content range of individual parts of the JIS G 1257 standard series

Part No. — Section No.	Applicable component — Determination method	Content range mass fraction (%)	Information		
			Preparation of sample solution	Atomization	Corre- sponding ISO Standard
Part 1	Manganese — Flame atomization after decomposition with acids	0.003 or over up to and incl. 2.0	Decomposition with aqua regia + evaporation with perchloric acid to allow emission of white fumes	Acetylene- air flame	ISO 10700 (MOD)
Part 2	Phosphorus — Flame atomization after extraction of molybdophosphate	0.000 3 or over up to and incl. 0.010, for samples with a tungsten content (mass fraction) of less than 0.01 %	1) a) Decomposition with nitric acid or (nitric acid + hydrochloric acid) + evaporation with perchloric acid to allow emission of white fumes b) Decomposition with nitric acid + evaporation with perchloric acid to allow emission of white fumes + addition of ammonium iron (II) sulphate c) Decomposition with nitric acid or (nitric acid + hydrochloric acid) + evaporation with perchloric acid to allow emission of white fumes + decomposition with hydrofluoric acid + addition of boric acid 2) Extraction of molybdophosphate (addition of hexaammonium heptamolybdate + extraction with 2-methylpropyl acetate)	Acetylene- dinitrogen monoxide flame (atomiza- tion of molybdenum combining with phosphorus)	—
Part 3	Nickel — Flame atomization after decomposition with acids	0.003 or over up to and incl. 1.0	a) Decomposition with acid mixture A b) Decomposition with aqua regia + evaporation with perchloric acid to allow emission of white fumes	Acetylene- air flame	ISO 4940 (MOD)