JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS G 1221-1 : 2025

(JISF)

Iron and steel — Determination of vanadium — Part 1: Ammonium iron(II) sulfate titrimetric methods after potassium permanganate oxidation

ICS 77.080.01

Reference number: JIS G 1221-1 : 2025 (E)

Date of Establishment: 2025-04-21

Developed by: The Japan Iron and Steel Federation

Investigated by: The Japan Iron and Steel Federation,
Standardization Center

JIS G 1221-1 : 2025, First English edition published in 2026-02

Translated and published by: Japanese Standards Association
Mita Avanti, 3-11-28, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

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

Printed in Japan SW

Contents

Page

Foreword

This Japanese Industrial Standard has been established by the Minister of Economy, Trade and Industry based on the provision of Article 14, paragraph (1) of the Industrial Standardization Act in response to a proposal for establishment of Japanese Industrial Standard with a draft being attached, submitted by The Japan Iron and Steel Federation (JISF), an accredited standards development organization. This Standard partially replaces **JIS G 1221** : 1998, which has been withdrawn.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Minister is not responsible for identifying any of such patent rights, published patent application or utility model rights.

JIS G 1221 series consists of the following 2 parts under the general title *Iron and steel — Determination of vanadium —*:

Part 1: Ammonium iron(II) sulfate titrimetric methods after potassium permanganate oxidation

Part 2: Spectrophotometric methods after extraction of N-benzoyl-N-phenylhydroxylamine complex

Iron and steel — Determination of vanadium — Part 1: Ammonium iron(II) sulfate titrimetric methods after potassium permanganate oxidation

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 4947** : 2020, Edition 2, with some modifications of the technical contents.

Specific procedures specified in the corresponding International Standard are given in Annex A. The vertical lines on both sides and dotted underlines in Clause **1** to Clause **5** and Annex A indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the ammonium iron(II) sulfate titrimetric methods after potassium permanganate oxidation, for the determination of vanadium in iron and steel.

This method is applicable to the determination of vanadium contents of 0.04 % or over up to and including 6.0 % in mass fraction. The method specified in the main body is applicable to the determination of vanadium contents of 0.10 % or over up to and including 6.0 % in mass fraction. The method specified in Annex A is applicable to the determination of vanadium contents of 0.04 % or over up to and including 2 % in mass fraction.

NOTE 1 The applicable determination ranges of standards in **JIS G 1221** (all parts) shall be as given in Table 1.

Table 1 Determination ranges of standards in JIS G 1221 (all parts)

Standard number	Determination range [mass fraction (%)]
JIS G 1221-1	0.04 or over up to and incl. 6.0
JIS G 1221-2	0.005 or over up to and incl. 0.50

NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 4947 : 2020 *Steel and cast iron–Determination of vanadium content–Potentiometric titration method* (MOD)

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 21-1**.

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.