



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS G 0417 : 2025

(JISF)

**Steel and iron — Sampling and preparation
of samples for the determination of chemical
composition**

ICS 77.080.20;77.140.01

Reference number: JIS G 0417 : 2025 (E)

PROTECTED BY COPYRIGHT

Date of Establishment: 1999-12-20

Date of Revision: 2025-04-21

Date of Public Notice in Official Gazette: 2025-04-21

Developed by: The Japan Iron and Steel Federation

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

JIS G 0417 : 2025, First English edition published in 2025-09

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.

© JSA 2025

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

SW

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Requirements for sampling and preparation of samples	6
4.1 General	6
4.2 Sample	6
4.3 Sampling	8
4.4 Preparation of samples	9
4.5 Safety precautions	12
5 Sampling and preparation of samples from liquid iron	12
6 Sampling and preparation of samples from melt for cast iron production	13
6.1 General	13
6.2 Spoon sampling from cast iron	13
6.3 Probe sampling from cast iron	15
6.4 Preparation of a test sample from cast iron	15
6.5 Sampling and preparation of samples for the determination of oxygen and nitrogen of cast iron	17
7 Sampling and preparation of samples from liquid steel	17
7.1 General	17
7.2 Spoon sampling	17
7.3 Probe sampling	18
7.4 Preparation of a test sample	19
7.5 Sampling and preparation of samples for the determination of oxygen and nitrogen	21
7.6 Sampling and preparation of samples for the determination of hydrogen	22
8 Sampling and preparation of samples from pig iron mould	23
9 Sampling and preparation of samples from cast iron products	23
9.1 General	23
9.2 Sampling and preparation of samples	24
10 Sampling and preparation of samples from products	26
10.1 General	26
10.2 Selection of a laboratory sample or a test sample from a cast product	26
10.3 Selection of a sample from cross-section	26
10.4 Preparation of a test sample	29

10.5	Sampling of leaded free cutting steels	30
10.6	Sampling and preparation of samples for the determination of oxygen	30
10.7	Sampling and preparation of samples for the determination of hydrogen	31
Annex A (informative)	Sampling probes for use with liquid iron and steel	34
Annex B (informative)	Sampling probes for use with liquid steel for the determination of hydrogen	42
Annex JA (informative)	Sampling apparatus and preparation mould for splash sample	46
Annex JB (informative)	Sampling and preparation of samples from liquid iron	48
Annex JC (informative)	Sampling and preparation of samples from pig iron mould	52
Annex JD (informative)	Comparison table between JIS and corresponding International Standard	56

Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry based on the provision of Article 14, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act in response to a proposal for revision of Japanese Industrial Standard with a draft being attached, submitted by The Japan Iron and Steel Federation (JISF), an accredited standards development organization. This edition replaces the previous edition (**JIS G 0417** : 1999), which has been technically revised.

This **JIS** document is protected by the Copyright Act.

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.

Blank

Steel and iron — Sampling and preparation of samples for the determination of chemical composition

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 14284** : 2022, Edition 2, with some modifications of the technical contents.

Annex JA is unique to **JIS** and not given in the corresponding International Standard. Clause 5 and Clause 8 of the corresponding International Standard are shown in Annex JB and Annex JC respectively, for reference. The dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JD.

1 Scope

This Standard specifies methods for sampling and preparation of samples for the determination of the chemical composition of pig irons, cast irons and steels. Methods are specified for both liquid and solid metal.

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

ISO 14284 : 2022 *Steel and iron — Sampling and preparation of samples for the determination of chemical composition* (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.

JIS G 0201 *Glossary of terms used in iron and steel (Heat treatment)*

JIS G 0203 *Glossary of terms used in iron and steel (Products and quality)*

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

JIS G 1239 *Iron and steel — Determination of oxygen — Infrared absorption method after fusion under inert gas*

JIS R 6001-1 *Bonded abrasives — Determination and designation of grain size distribution — Part 1: Macrogrits F4 to F220*

JIS R 6001-2 *Bonded abrasives — Determination and designation of grain size distribution — Part 2: Microgrits*

JIS R 6010 *Coated abrasive grain sizes*