
**Ferronickels — Determination of
phosphorus, manganese, chromium,
copper and cobalt contents —
Inductively coupled plasma optical
emission spectrometric method**

*Ferro-nickels — Détermination du phosphore, du manganèse,
du chrome, du cuivre et du cobalt — Méthode par spectrométrie
d'émission optique avec plasma induit par haute fréquence*



This document is a preview generated by EUS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Reagents	2
6 Apparatus	4
6.1 General	4
6.2 Instrument performance requirements	4
6.2.1 Wavelengths	4
6.2.2 Practical resolution of the spectrometer	5
6.2.3 Short-term stability	5
6.2.4 Background equivalent concentration	5
6.2.5 Linearity of the calibration curves	5
7 Sampling and sample preparation	5
8 Procedure	5
8.1 Test portion	5
8.2 Preparation of the test solution	6
8.3 Preparation of the calibration solutions	6
8.4 Optimization of the instrument	7
8.5 Measurements	7
8.5.1 Measurement of the calibration solutions	7
8.5.2 Measurement of the test solutions	8
8.6 Calibration curves	8
9 Expression of the results	8
9.1 Calculation of results	8
9.2 Precision	8
9.2.1 Interlaboratory test	8
9.2.2 Precision data	8
9.3 Trueness	10
10 Test report	12
Annex A (normative) Checking the performance of an inductively coupled plasma optical emission spectrometer	13
Annex B (informative) Notes on the interlaboratory test	15
Bibliography	16

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 155, *Nickel and nickel alloys*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Ferronickels — Determination of phosphorus, manganese, chromium, copper and cobalt contents — Inductively coupled plasma optical emission spectrometric method

1 Scope

This document specifies a method for the determination of phosphorus, manganese, chromium, copper and cobalt contents in ferronickels, by inductively coupled plasma (ICP) optical emission spectrometry, within the ranges specified in [Table 1](#).

This method is applicable to all grades of ferronickels specified in ISO 6501.

Table 1 — Application ranges of the elements to be determined

Element	Application range % (mass fraction)
Phosphorus	0,009 to 0,045
Manganese	0,02 to 1,0
Chromium	0,076 to 1,86
Cobalt	0,24 to 1,4
Copper	0,02 to 0,07

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 8049, *Ferronickel shot — Sampling for analysis*

ISO 8050, *Ferronickel ingots or pieces — Sampling for analysis*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>