

Australian Standard™

Lead sulfide concentrates—Chemical analysis

Part 3: Determination of silver and gold contents—Fire assay and flame atomic absorption method using scorification or cupellation

[ISO title: Lead sulfide concentrates—Determination of silver and gold contents—Fire assay and flame atomic absorption spectrometric method using scorification or cupellation]



This Australian Standard was prepared by Committee MN-005, Copper, Lead, Zinc, Gold and Silver Ores and Concentrates. It was approved on behalf of the Council of Standards Australia on 16 November 2001 and published on 4 January 2002.

The following interests are represented on Committee MN-005:

Australasian Institute of Mining and Metallurgy
CSIRO Minerals
Minerals Council of Australia
The Royal Australian Chemical Institute

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Australian Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

Australian Standard™

Lead sulfide concentrates—Chemical analysis

Part 3: Determination of silver and gold contents—Fire assay and flame atomic absorption method using scorification or cupellation.

First published as AS 4030.3—2002.

COPYRIGHT

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 4226 2

PREFACE

This Standard was prepared by the Standards Australia Committee MN-005, Copper, Lead, Zinc, Gold and Silver Ores and Concentrates as part of a programme of standardizing methods for the determination of elements of commercial interest in such materials.

The objective of this Standard is to provide those involved in the analysis of lead sulfide concentrates with a standardized method of determining silver and gold contents supported by precision data obtained from an inter-laboratory test programme.

This Standard is identical with and has been reproduced from ISO 12740:1998, *Lead sulfide concentrates—Determination of silver and gold contents—Fire assay and flame photometric absorption spectrometric method using scorification or cupellation*, which has been prepared by ISO/TC 183 Copper, Lead and Zinc Ores and Concentrates. Australia holds the Chairmanship and Secretariat of ISO/TC 183 and has made a significant contribution to the preparation of ISO 12740.

As this Standard is reproduced from an International Standard, the following applies:

- Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- In the source text 'this International Standard' should read 'this Australian Standard'.
- A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent Australian or Australian/New Zealand Standards, as follows:

<i>Reference to International Standard</i>		<i>Australian/New Zealand Standard</i>	
ISO		AS	
9599	Copper, lead and zinc sulfide concentrates—Determination of hygroscopic moisture in the analysis sample—Gravimetric method	2816	Copper, lead and zinc sulfide concentrates—Determination of hygroscopic moisture in the analysis sample—Gravimetric method
385	Laboratory glassware—Burettes	—	
385-1	Part 1: General requirements	—	
648	Laboratory glassware—One-mark pipettes	—	
1042	Laboratory glassware—One-mark volumetric flasks	—	
3696	Water for analytical laboratory use—Specification and test methods	—	
4787	Laboratory glassware—Volumetric glassware—Methods for use and testing of capacity	—	

CONTENTS

	<i>Page</i>
1 Scope	1
2 Normative references	1
3 Principle	1
4 Reagents	2
5 Apparatus	4
6 Sample	5
7 Procedure	5
8 Expression of results	10
9 Precision	10
10 Test report	13
Annex A (normative) Procedure for the preparation and determination of the mass of a predried test portion	14
Annex B (normative) Trial fusion	16
Annex C (normative) Blank determination	17
Annex D (normative) Flowsheet of the procedure for the acceptance of analytical values for the test samples	18
Annex E (informative) Derivation of precision equations	19
Annex F (informative) Bibliography	26

Currently in preview, click buy full version

AUSTRALIAN STANDARD

Lead sulfide concentrates—Chemical analysis**Part 3: Determination of silver and gold contents—Fire assay and flame atomic absorption method using scorification or cupellation****1 Scope**

This International Standard specifies a fire assay and flame atomic absorption spectrometric procedure for the determination of silver and gold contents of lead sulfide concentrates.

The method is applicable to the determination of silver and gold in lead sulfide concentrates containing 10 % (*m/m*) to 80 % (*m/m*) lead.

The method is applicable to silver contents from 200 g/t to 2 000 g/t and gold contents from 0,1 g/t to 25 g/t.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 385-1:1984, *Laboratory glassware — Burettes — Part 1: General requirements.*

ISO 648:1977, *Laboratory glassware — One-mark burettes.*

ISO 1042:1998, *Laboratory glassware — One mark volumetric flasks.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

ISO 4787:1984, *Laboratory glassware — Volumetric glassware — Methods for use and testing of capacity.*

ISO 9599:1991, *Copper, lead and zinc sulfide concentrates — Determination of hygroscopic moisture in the analysis sample — Gravimetric method.*

3 Principle**3.1 Scorification**

Fire assay fusion of a test portion to produce a lead button, which is scorified to reduce it to a mass of 2 g to 5 g.

Re-treatment fusion of the primary fusion and scorification slags to produce a low-silver content lead button which is scorified to approximately 2 g to 5 g.

Dissolution of both lead buttons in nitric acid and filtration of the solution. Dissolution of the filter paper plus gold and determination of silver and gold by flame atomic absorption spectrometry.