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Determination of magnesium
content (flame atomic
absorption spectrometric
method) 6pp CC
Specifies a flame atomic
absorption spectrometric
method for the determination
of magnesium content between
0.010 percent and 0.25 percent
in all types of iron and steel.
(CH/10): Supersedes AS 1050.20—
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Australian Standard 1050.20—1983

METHODS FOR THE ANALYSIS OF IRON AND STEEL

Part 20—DETERMINATION OF MAGNESIUM IN IRON AND STEEL (FLAME ATOMIC ABSORPTION SPECTROMETRIC METHOD)

STANDARDS ASSOCIATION
OF AUSTRALIA
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The following interests were represented on the committee responsible for the preparation of this standard:

Aluminium Development Council
Australasian Institute of Mining and Metallurgy
Australian Lead Development Association
Australian Mineral Development Laboratories
Australian Tin Information Centre
Australian Zinc Development Association
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Copper Producers Association of Australia
Department of Defence
Electricity Supply Association of Australia
Metal Trades Industry Association of Australia
National Association of Testing Authorities
Railways of Australia Committee
Royal Australian Chemical Institute

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STANDARDS ASSOCIATION OF AUSTRALIA

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Amendment No 1

to

AS 1050, Part 20—1983

**METHODS FOR THE ANALYSIS OF IRON AND STEEL—
DETERMINATION OF MAGNESIUM IN IRON AND STEEL
(Flame Atomic Absorption Spectrometric Method)**

CORRECTION

SUMMARY: This amendment applies to Clause 10.2.

Published on 7 March 1983.

Page 6. Clause 10.2.

Add between first and second sentences:

'Correct the absorbance values by subtracting the absorbance of the standard containing no magnesium.'

AMDT
No 1
MAR.
1983

PREFACE

This standard was prepared by the Association's Committee on the Analysis of Metals under the direction of the Chemical Standards Board. It supersedes AS K1, Part 20—1964. This revision differs from the previous edition in that a nitrous oxide/acetylene flame is used to overcome interference effects inherent with the air/acetylene flame.

The committee organized an inter-laboratory test program to obtain information on the repeatability and reproducibility of the method. Laboratories from the following organizations participated in the test program to provide the data given in Table 1:

Australian Iron and Steel, Port Kembla
Australian Mineral Development Laboratories
State Electricity Commission, Victoria
State Rail Authority, N.S.W.
The Broken Hill Proprietary Co. Ltd, Newcastle

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS FOR THE ANALYSIS OF IRON AND STEEL

PART 20—DETERMINATION OF MAGNESIUM IN IRON AND STEEL (FLAME ATOMIC ABSORPTION SPECTROMETRIC METHOD)

1 SCOPE. This standard sets out a flame atomic absorption spectrometric method for the determination of the magnesium content of iron and steel.

2 APPLICATION. The method covers the range 0.010 percent to 0.25 percent magnesium and is applicable to all grades of iron and steel.

3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1213 Methods for the Sampling of Iron and Steel

AS 2134 Code of Practice for the Chemical Analysis of Materials by Flame Atomic Absorption Spectroscopy

AS 2164 One-mark Volumetric Flasks

BS 4237 Report on Reproducibility of Methods of Chemical Analysis Used in the Iron and Steel Industry.

4 REPRODUCIBILITY. A planned trial of the method was carried out in accordance with BS 4237.

The reproducibility index ($2s$) is obtained from the following formula:

$$2s = 2 \sqrt{(s_b^2 + s_w^2)}$$

where

s_b = between-operator standard deviation

s_w = within-operator standard deviation

95 percent of the results obtained by any one analyst should be reproducible to within two standard deviations of the overall mean value derived from all laboratories (i.e. $\bar{x} \pm 2s$).

For further information, see BS 4237.

The planned trial was carried out by five analysts, each from a different laboratory. Five tests were carried out by each analyst on each of four samples.

From the results obtained the 95 percent confidence limits ($2s$, Table 1) have been calculated.

TABLE 1
REPRODUCIBILITY DATA FOR MAGNESIUM DETERMINATIONS

Sample	Mean magnesium content percent	Components of standard deviation		Reproducibility index $2s$
		s_w	s_b	
SAA 117 Cast iron Cr 0.04; Cu 0.4; P 0.05; Si 2.91	0.0315	0.0008	0.0008	0.0023
Euro-Norm 481-1*	0.0498	0.0007	0.0013	0.0029
SAA 116 Nickel mond cast iron Ni 2	0.0683	0.0016	0.0016	0.0045
SAA 118 Cobalt steel Cr 12.5; Co 2.75; C 1.25; Mo 1.5	0.236	0.0042	0.0047	0.013

*Certificate value 0.051 percent Mg.