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Magnesium and magnesium alloys — Determination of arsenic — Inductively

**Inductively coupled plasma optical emission spectrometric method**

**Magnésium et alliages de magnésium — Détermination de l'arsenic — Méthode par spectrométrie d'émission atomique avec source à plasma induit**

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CH-1214 Vernier, Geneva  
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E-mail: [copyright@iso.org](mailto:copyright@iso.org)  
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## Foreword

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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~~document 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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 5, *Magnesium and alloys of cast or wrought magnesium*.

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## Introduction

Magnesium and magnesium alloys are one kind of light metallic materials and show several advantageous properties, such as low density, high specific stiffness and strength, good damping capacity, castability, weldability and machinability, etc. Arsenic as one of the hazardous impurities has ~~bad~~negative effects on the environment and ~~the~~health, ~~so its content must and needs to~~ be strictly controlled. The sum of the mass contents of cadmium (Cd), mercury (Hg), arsenic (As) and chromium (Cr) ~~given~~ in ISO 8287 is defined to be less than 0,01% in magnesium and its alloys, which ~~must needs to~~ be inspected if used in food and medicine fields.

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# Magnesium and magnesium alloys — Determination of arsenic — Inductively coupled plasma optical emission spectrometric method

## 5.1 Scope

This document specifies an inductively coupled plasma optical emission spectrometric method (ICP-OES) for the determination of arsenic contents between 0,001-0% (mass fraction) and 0,050% (mass fraction) in magnesium and magnesium alloys.

The method is limited to magnesium alloys containing less than 0,6% (mass fraction) of cerium, 0,1% (mass fraction) of gadolinium, 0,2% (mass fraction) of neodymium and 0,8% (mass fraction) of zirconium.

## 6.2 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-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*

## 7.3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain ~~terminological~~terminology 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/>

## 8.4 Principle

After dissolution of a test sample with nitric acid and hydrochloric acid, the solution is nebulized into an inductively coupled plasma optical emission spectrometer and the intensity of the arsenic emitted light is measured. The concentrations of arsenic in the test solutions are derived from a magnesium-based calibration curve.