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**Metallic and other inorganic coatings —  
Chromate conversion coatings on zinc,  
cadmium, aluminium-zinc alloys and zinc-  
aluminium alloys — Test methods**

*Revêtements métalliques et autres revêtements inorganiques —  
Couches de conversion au chromate sur zinc, cadmium et alliages  
d'aluminium-zinc et de zinc-aluminium — Méthodes d'essai*



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## Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 3613 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*.

This third edition cancels and replaces the second edition (ISO 3613:2000), which has been technically revised.

## Introduction

This International Standard specifies methods for the qualitative determination of the presence of chromate conversion coatings as well as the total chromium content of chromate conversion coatings.

The application of very thin, colourless, practically invisible chromate conversion coatings is frequently called “passivation”, while the application of thicker, coloured chromate conversion coatings is called “chromating”. The term “passivation” is not correct, does not comply with the ISO 2080 designation and is therefore deprecated.

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# Metallic and other inorganic coatings — Chromate conversion coatings on zinc, cadmium, aluminium-zinc alloys and zinc-aluminium alloys — Test methods

**WARNING** — This International Standard calls for the use of substances and/or procedures that may be injurious to health if adequate safety measures are not taken. This International Standard does not address any health hazards, safety or environmental matters associated with its use. It is the responsibility of the user of this International Standard to establish appropriate health, safety and environmentally acceptable practices and take suitable actions for any national and international regulations. Compliance with this International Standard does not in itself confer immunity from legal obligations.

## 1 Scope

This International Standard specifies methods for the determination of

- the presence of colourless chromate conversion coatings,
- the presence of hexavalent chromium in colourless and coloured coatings on zinc or cadmium or aluminium-zinc (mass fraction of aluminium: 55 %, within a range of 54 % to 56 % mass fraction) and zinc-aluminium (mass fraction of aluminium: 5 %) alloys,
- the total chromium content per unit area on zinc and cadmium,
- the mass per unit area of both colourless and coloured coatings,
- the satisfactory adhesion of chromate conversion coatings, and
- the quality of chromate coatings.

These methods are applicable

- to colourless and coloured chromate conversion coatings containing trivalent and hexavalent chromium in varying proportions and produced by either chemical or electrochemical processes, and
- only to chromate coatings that are free from any supplementary coatings, such as oil, water or solvent-based polymers or wax.

## 2 Normative references

The following referenced documents are indispensable for the application 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 3892, *Conversion coatings on metallic materials — Determination of coating mass per unit area — Gravimetric methods*

ISO 4520, *Chromate conversion coatings on electroplated zinc and cadmium coatings*

IEC 60068-2-30, *Environmental testing — Part 2-30: Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle)*