

# Metallic coatings — Electroplated coatings of nickel plus chromium on plastics materials

ICS 25.220.40

# National foreword

This British Standard is the UK implementation of ISO 4525:2003. It supersedes BS 4601:1970 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/33, Electrodeposited and related coatings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard cannot confer immunity from legal obligations.**

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# INTERNATIONAL STANDARD

**ISO**  
**4525**

Second edition  
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## **Metallic coatings — Electroplated coatings of nickel plus chromium on plastics materials**

*Revêtements métalliques — Dépôts électrolytiques de nickel plus chrome  
sur matières plastiques*



Reference number  
ISO 4525:2003(E)



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## **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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 4525 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 3, *Electrodeposited coatings and related finishes*.

This second edition cancels and replaces the first edition (ISO 4525:1985), which has been technically revised.

Annexes A, C, D, E, F and G form a normative part of this International Standard. Annex B is for information only.

## Introduction

The traditional method of preparing plastics for electroplating includes electrodeposition of a ductile acid copper layer, before electroplating with nickel plus chromium, to meet thermal cycle requirements. The elimination of copper and its substitution with *ductile* nickel is a new trend aimed at facilitating the reclamation of electroplated plastics at the end of the product-life cycle. Nickel plus chromium metal can be readily separated from plastics and utilized directly in the production of stainless steel, whereas copper plus nickel plus chromium coatings would first require separation and complete removal of copper because of its detrimental effects on the properties of stainless steel. Although the traditional method is still the one most widely applied, the automotive and plumbing industries are now specifying ductile nickel as replacement for copper undercoats in Europe, because of the reclamation benefits. These recent trends have been taken into account in revising this document which permits the specification of decorative, electroplated nickel plus chromium coatings on plastics materials with either copper or nickel undercoats when thermal cycle resistance is a requirement.

New developments in preparing plastics for electroplating, e.g., the use of ionic palladium catalysts, and the elimination of electroless deposition and chromic/sulfuric acid etchants, make it more essential than ever that the instructions provided by the suppliers of proprietary processes for preparing plastics for electroplating be followed. Proper surface preparation is essential to obtain satisfactory performance of electroplated coatings on plastics materials.

No distinction is made between the types of plastics suitable for electroplating and no detailed requirements are laid down concerning the surface condition of the plastics material or the level of moulding stresses. However, where plastics articles are produced by some technique that involves a change of phase, such as moulding, then it is essential that the electroplating operation not take place until at least 24 h have elapsed after production.

