



BSI Standards Publication

Metallic coatings for electromagnetic interference shielding — Designation and characterization method

National foreword

This British Standard is the UK implementation of ISO 7582:2023.

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 committee manager.

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© The British Standards Institution 2023
Published by BSI Standards Limited 2023

ISBN 978 0 539 19016 8

ICS 25.220.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2023.

Amendments/corrigenda issued since publication

Date	Text affected
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INTERNATIONAL STANDARD

ISO
7582

First edition
2023-02-22

Metallic coatings for electromagnetic interference shielding — Designation and characterization method

*Revêtements métalliques pour le blindage contre les interférences
électromagnétiques — Désignation et méthode de caractérisation*



Reference number
ISO 7582:2023(E)
Documents
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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.

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 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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document was developed to provide the designation of characteristics and the characterization methods of metallic coatings for electromagnetic interference (EMI) shielding, in response to worldwide demand for the standardization of such products.

ISO 17334 specifies the requirements for autocatalytic copper coatings plus nickel-phosphorous alloy coatings on platable plastics or metallic materials, to provide EMI and electrostatic discharge (ESD) shielding mainly for the housing of computers, telecommunication and other devices. However, varieties of metallic coatings, which are not specified in ISO 17334, are used to provide higher EMI/ESD shielding effectiveness in a wider frequency range. In particular, metallic coatings with a larger thickness or with a higher permeability are used to provide higher EMI/ESD shielding effectiveness in automobile parts and mobile communication devices.

A number of electronic controlling units (ECUs), motors and connectors are used in a car. Their housings and covers are made from engineering plastics for mass reduction and varieties of metallic coatings are applied to these parts to provide a high EMI/ESD shielding effectiveness.

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Metallic coatings for electromagnetic interference shielding — Designation and characterization method

1 Scope

This document specifies the designation and the characterization methods metallic coatings that provide electromagnetic interference (EMI) shielding for parts fabricated from plastics, ceramics, glasses and other materials.

The designation consists of the EMI shielding effectiveness in a specific frequency range and the adhesion of metallic coatings to the substrate, as well as the substrate material and the principal component, manufacturing process and thickness of the metallic coatings.

The characterization methods consist of the methods to determine the EMI shielding effectiveness of metallic coatings and those to evaluate the adhesion of metallic coatings to the substrate.

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 472, *Plastics — Vocabulary*

ISO 2080, *Metallic and other inorganic coatings — Surface treatment, metallic and other inorganic coatings — Vocabulary*

ISO 4525, *Metallic coatings — Electroplated coatings of nickel plus chromium on plastics materials*

ISO 16348, *Metallic and other inorganic coatings — Definitions and conventions concerning appearance*

IEC 60050, *International electrotechnical vocabulary*

ASTM B533, *Standard test method for peel strength of metal electroplated plastics*

JIS H 8630, *Electroplated coatings on plastics materials for decorative purposes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472, ISO 2080, ISO 16348 and IEC 60050 and the following apply.

ISO and IEC maintain 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 <https://www.electropedia.org/>

3.1

ABS

acrylonitrile-butadiene-styrene

plastic, based on terpolymers and/or blends of polymers and copolymers, made with acrylonitrile, butadiene and styrene

[SOURCE: ISO 472:2013, 2.5]