BSI Standards Publication

Metallic and other inorganic coatings - Phosphate conversion coating of metals (ISO 9717:2017)

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National foreword

This British Standard is the UK implementation of EN ISO 9717:2017. It is identical to ISO 9717:2017. It supersedes BS EN ISO 9717:2013, which is withdrawn.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.

Published by BSI Standards Limited 2017

ISBN 978 0 580 89763 4

ICS 25.220.20

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

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2017.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD EN ISO 9717

NORME EUROPÉENNE

EUROPÄISCHE NORM October 2017

ICS 25.220.20 Supersedes EN ISO 9717:2013

English Version

Metallic and other inorganic coatings - Phosphate conversion coating of metals (ISO 9717:2017)

Revêtements métalliques et autres revêtements inorganiques - Couches de conversion au phosphate sur métaux (ISO 9717:2017)

Metallische und andere anorganische Überzüge - Phosphatüberzüge auf Metallen (ISO 9717:2017)

This European Standard was approved by CEN on 21 September 2017.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN ISO 9717:2017: E

European foreword

This document (EN ISO 9717:2017) has been prepared by Technical Committee ISO/TC 107 “Metallic and other inorganic coatings” in collaboration with Technical Committee CEN/TC 262 “Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2018, and conflicting national standards shall be withdrawn at the latest by April 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 9717:2013 .

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 9717:2017 has been approved by CEN as EN ISO 9717:2017 without any modification.

Contents

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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 8, *Chemical conversion coatings*.

This third edition cancels and replaces the second edition (ISO 9717:2010), which has been technically revised. The following changes have been made:

— the Scope has been clarified;

— the Normative references have been updated;

— the Terms and definitions have been replaced by a reference to ISO 2080 ;

— Clause 4 has been revised;

— the terms in Clause 5 have been revised;

— requirements for the phosphate layer have been revised;

— statements on corrosion resistance have been shifted to a new Annex A;

— Annex B on salt spray testing has been revised;

— Annex C to the properties of the phosphate layers has been revised.

Introduction

Phosphate conversion coatings are applied to ferrous metals, aluminium, zinc and their alloys (including zinc- and zinc-alloy-plated steel, cadmium and their alloys) either as an end finish or as an intermediate layer for other coatings. They are intended to

— impart corrosion resistance,

— improve adhesion to paints and other organic finishes,

— facilitate cold-forming operations, such as wire drawing, tube drawing and extrusion, and

— modify surface frictional properties so as to facilitate sliding.

Phosphate conversion coatings are produced by treatment with solutions, the main constituents of which are the appropriate dihydrogen orthophosphates. These coatings are applied principally to ferrous materials and zinc, and differ in coating mass per unit area and apparent density, depending on

— the construction material and surface condition of the components,

— previous mechanical and chemical treatment of the components, and

— processing conditions for phosphating.

All phosphate conversion coatings are more or less porous but can be sealed substantially by subsequent sealant processes.

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WARNING — This document calls for the use of substances and/or procedures that could be injurious to health if adequate safety measures are not taken. This document does not address any health hazards, safety or environmental matters associated with its use. It is the responsibility of the producers, purchasers and/or users of this document to establish appropriate health, safety and environmentally acceptable practices and take appropriate actions.

1 Scope

This document specifies a process for the confirmation of requirements for phosphate coatings which are usually destined for application on ferrous materials, zinc, cadmium and their alloys (see Annex B).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 3892 , *Conversion coatings on metallic materials — Determination of coating mass per unit area — Gravimetric methods*

ISO 4519 , *Electrodeposited metallic coatings and related finishes — Sampling procedures for inspection by attributes*

ISO 9227 , *Corrosion tests in artificial atmospheres — Salt spray tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2080 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Information to be supplied by the purchaser to the processor

The following information shall be provided by the purchaser.

a) A description of the coating according to this document, i.e. ISO 9717 (see 5.2).

b) In cases of phosphating steel parts with tensile strength ≥ 1 000 MPa, possibly also locally restricted, e.g. for case-hardened or cold-formed structures or in weld seam areas, the safety against brittle fracture (hydrogen embrittlement) is of primary importance. The phosphatising process shall be carried out in such a manner that any damage caused by hydrogen-induced brittleness is excluded. Technical measures to minimize the risk of hydrogen-induced brittleness shall be defined by the user and provided by the supplier/customer. Heat treatment in accordance

