BSI Standards Publication

Metallic and other inorganic coatings — Phosphate conversion coating of metals

National foreword

This British Standard is the UK implementation of EN ISO 9717:2024. It is identical to ISO 9717:2024. It supersedes BS EN ISO 9717:2017, which is withdrawn.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 committee manager.

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Revêtements métalliques et autres revêtements inorganiques - Couches de conversion au phosphate sur métaux (ISO 9717:2024)

Metallische und andere anorganische Überzüge - Phosphatumwandlungsüberzüge auf Metallen (ISO 9717:2024)

This European Standard was approved by CEN on 30 June 2024.

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European foreword

This document (EN ISO 9717:2024) 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of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

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 9717:2017.

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The text of ISO 9717:2024 has been approved by CEN as EN ISO 9717:2024 without any modification.

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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 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).

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This document was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings, Subcommittee SC 8, Chemical conversion coatings*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 262, *Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 9717:2017), which has been technically revised.

The main changes are as follows:

— the introduction has been clarified (1 bracket shifted);

— 5.1 Table 1 formatted and for Znph second line added to describe types of Znph; new Table 1 copied on Table C.1

— 5.2 and ff.: all terms are uniformed from “phosphate coating” or “conversion coating” to “phosphate conversion coating” (when applicable);

— 5.2 and ff.: “after-treatment” was changed to “post treatment”; other definitions and spelling changed according to ISO 2080;

— 6.3 Table 2: definition of T1 recharged, second sentence deleted (this is content of T2);

— 6.3: last sentence updated to describe impact of neutral salt spray test;

— 6.4: revision of 6.4, thickness measurement replaced by area related mass;

— Annex B: last sentence of B.1 deleted: Table B.1 updated;

— Annex B: Table B.1 and B.3 headlines updated;

— Annex B: Table B.4 headline updated;

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.

Phosphate conversion coatings are produced by treating substrates with appropriate solutions. The main constituents of these solutions are the appropriate dihydrogen orthophosphates.

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 to facilitate sliding.

Phosphate conversion coatings are produced by treatment with solutions, the main constituents of which are the appropriate dihydrogen orthophosphates. These phosphate conversion 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 crystalline and porous but can be sealed substantially by subsequent sealant processes.

Metallic and other inorganic coatings — Phosphate conversion coating of metals

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1 Scope

This document specifies the requirements for phosphate conversion coatings which are usually destined for application on ferrous materials, aluminium, zinc, and their alloys (see Annex B).

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 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*

ISO 9588, *Metallic and other inorganic coatings — Post-coating treatments of iron or steel to reduce the risk of hydrogen embrittlement*

3 Terms and definitions

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

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 phosphate conversion 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, also in locally restricted areas (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 phosphating process shall be carried