

Coatings on metal fasteners —

Part 1: Specification for general requirements and selection guidelines

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the General Mechanical Engineering Standards Policy Committee (GME/-) to Technical Committee GME/9, upon which the following bodies were represented:

- BEAMA Ltd.
- British Constructional Steelwork Association Ltd.
- British Industrial Fasteners' Federation
- British Railways Board
- British Steel Industry
- British Steel Industry (Wire Section)
- Gauge and Tool Makers' Association
- Ministry of Defence
- Society of Motor Manufacturers and Traders Limited
- Washer Manufacturers' Association of Great Britain

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Turned-parts Manufacturers' Association
- EEA (the Electronic and Business Equipment Association)
- Institute of Metal Finishing
- Metal Finishing Association
- Stainless Steel Fabricators' Association of Great Britain

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Foreword

This Part of BS 7371 has been prepared under the authority of the General Mechanical Engineering Standards Policy Committee to provide part of a series of standards on coatings on metal fasteners.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

0 Introduction

BS 7371 deals with the performance of coatings on metal fasteners and accessories.

This Part of BS 7371 specifies the general requirements for coatings on fasteners and accessories and will be supplementary to all other Parts of the standard.

Further Parts of the series to incorporate the following are in preparation.

- Specification for torque/clamping force relationship
- Specification for electroplated zinc and cadmium coatings
- Specification for electroplated nickel, nickel/chromium and copper/nickel/chromium coatings
- Specification for electroplated tin and tin/lead coatings
- Specification for electroplated coatings for special purposes
- Specification for mechanically applied zinc and cadmium coatings
- Specification for mechanically applied coatings for special purposes
- Specification for phosphate and oil coatings
- Specification for organic coatings
- Specification for zinc flake non-electrolytically applied cured coatings

The Parts of BS 7371 listed provide coatings for the following purposes:

- a) corrosion protection;
- b) appearance;
- c) electrical conductivity;
- d) controlled lubricity;
- e) identification;
- f) avoidance of hydrogen embrittlement.

Attention is drawn to clause 3 and Appendix A which provides advice on the suitability and limitations of the coatings for these purposes.

1 Scope

This Part of BS 7371 specifies general requirements that apply to all other Parts of BS 7371, including the following:

- a) preparations before coating;
- b) hydrogen embrittlement hazards and avoidance;
- c) sampling;

- d) thickness testing;
- e) area tables for parallel threaded fasteners;
- f) selection of coatings.

These requirements are supplementary to the specific requirements of each Part of BS 7371.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

2.1 significant surfaces

those areas visible on a part when assembled

2.2 production run

those batches of parts processed continuously without any changes in coating techniques or constituents within a single working day

3 Selection of coatings

The coating shall be selected with regard to the following:

- a) corrosion resistance;
- b) appearance;
- c) shape and size;
- d) embrittlement;
- e) conductivity;
- f) lubricity;
- g) application limitations;
- h) colour (if applicable).

NOTE Appendix A provides guidance on suitable coatings for specific components.

4 Preparation before coating

Prior to coating, parts shall be free of oil, grease, scale, oxides and other foreign matter.

NOTE 1 The cleaning process should not induce hydrogen embrittlement (see clause 5).

NOTE 2 It is essential that the cleaning process is not detrimental to the substrate.

5 Hydrogen embrittlement

5.1 Cleaning processes

Parts heat treated or cold worked to a surface hardness of 320 HV to 390 HV, and also property classes¹⁾ 9.8, 10.9, and 10.9 shall be cleaned with an inhibited acid, alkaline or mechanical process.

NOTE 1 The time during which parts are immersed in inhibited acid cleaning agents increases the risk of the introduction of potential hydrogen embrittlement. Immersion time in the inhibited acid should therefore be of minimum duration. Cathodic cleaning processes should be avoided.

¹⁾ Property classes are designated in BS 6104.