

Protection of magnesium-rich alloys against corrosion — Specification

ICS 49.025.15; 49.040

Confirmed December 2011

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ACE/65, Inspection and testing requirements for non-metallic materials, upon which the following bodies were represented:

- British Hydromechanics Research Group
- British Plastics Federation
- Society of British Aerospace Companies Ltd.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 22 March 2005

© BSI 22 March 2005

Amendments issued since publication

Amd. No.	Date	Comments

The following BSI references relate to the work on this British Standard:
Committee reference ACE/65
Draft for comment 02/709330 DC

ISBN 0 580 45462 2

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Classification	1
5 Information to be supplied to the processor	1
6 Condition of parts prior to processing	2
7 Process schedule	2
8 Inspection	3
9 Removal of coatings	3
10 Quality assurance	3
Annex A (informative) Cleaning and pickling	4
Annex B (normative) Chromating	6
Annex C (normative) Anodizing	8

Foreword

This British Standard has been prepared by Technical Committee ACE/65 and is one of a series for paints and varnishes suitable for aerospace purposes.

It has been assumed in the drafting of this standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

WARNING This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

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 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 9 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

Introduction

Magnesium and its alloys are susceptible to corrosion and, as such, require corrosion protection. The protective systems involve either chromating or anodizing as a pre-treatment.

- Chromating is a chemical conversion process producing very thin (typically $2.5 \times 10^{-3} \mu\text{m}$ to $1 \mu\text{m}$) coatings that provide a good surface on which to paint and a supply of inhibiting hexavalent chromate ions.
- Anodizing, by definition, is an electrolytic process producing thicker ($13 \mu\text{m}$ – $40 \mu\text{m}$) but inherently porous coatings. These coatings have to be sealed with a heat-cured coating and might or might not have a finish coat.

1 Scope

This British Standard specifies the methods of protection for magnesium and magnesium alloys and specifies the required characteristics for the performance of various protection schemes for magnesium, as well as the quality assurance of the coating obtained.

Two types of protection are produced:

- a) Type I: Chromating and BS X 38 primer and finish coat;
- b) Type II: Anodizing and unpigmented BS X 38 sealer and finish coat (optional)

This standard applies to parts in magnesium and magnesium alloys when used in aerospace construction, when reference is made to this standard.

2 Normative references

The following referenced documents are indispensable for the application 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.

BS 2015, *Glossary of paint and related terms*.

BS EN 2437, *Aerospace series — Chromate conversion coatings (yellow) for aluminium and aluminium alloys*.

BS X 38, *Heat curing paint for aerospace purposes — Specification*.

3 Terms and definitions

For the purposes of this British Standard, the terms and definitions given in BS 2015 apply.

4 Classification

Two types of protection shall be classified as follows.

- a) Type I: Chromating and BS X 38 primer and finish coat.
- b) Type II: Anodizing and unpigmented BS X 38 sealer and finish coat (optional).

5 Information to be supplied to the processor

The following information shall be supplied to the processor of the parts:

- a) classification (see Clause 4);
- b) magnesium alloy being processed;
- c) areas to be processed;
- d) thickness measuring points (Type II only);
- e) electrical contact points or where these are prohibited (Type II only);
- f) surface roughness requirements of the finished part;
- g) requirements for any finishing operations, i.e. painting, etc.