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Superseding AMS03-4

The Pre-Treatment and Protection of Steel Items of
Specified Maximum Tensile Strength Exceeding 1450 MPa

RATIONALE

AMS03-4A stabilizes this document because this document contains mature technology that is not expected to change and thus no further revisions are anticipated.

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FOREWORD

REVISION NOTE

This Defence Standard was raised to Issue 6 to update its content and incorporate the latest MoD/DStan policy in place at the time.

HISTORICAL RECORD

This standard supersedes the following:

Def Stan 03-4 / Issue 1 dated 23 November 1971

Def Stan 03-4 / Issue 2 dated 31 March 1977

Def Stan 03-4 / Issue 3 dated 1 February 1991

Def Stan 03-4 / Issue 4 dated 2 January 1998

Def Stan 03-4 / Issue 5 dated 13 October 2006

INTRODUCTION

This Standard sets out the special treatments and precautions that are to be observed when protective and other surface treatments are applied to items, including springs, made from steel of specified maximum tensile strength exceeding 1450 MPa. The requirements of this Standard qualify those in process specifications and override the latter where there is conflict. The Standard also gives advice on design, manufacture, and preparation of items prior to cleaning and protection.

Though this Standard refers to the use of cadmium, it should be noted that in accordance with MOD Policy and UK Environmental (Control of Hazardous Substances) No.2 Regulation 1993, cadmium is only to be used where specific agreement has been given by the MOD. Every effort must be made to define alternative coatings (see Def Stan 03-36) and cadmium is only to be used where its use is permitted by regulation and no other acceptable alternative is available.

Similarly there is increasing concern regarding the use of hexavalent chromium chemicals with more and more legislation being introduced to limit its use. Although this standard refers to the use of chromium electroplating, for instance, users should make every effort to identify alternatives (see Def Stan 03-38).

NOTE: In the case of hexavalent chromium it is the coating process itself where the hazard exists not the end product; i.e., chromium electroplate is non-toxic. This is contrary to cadmium for instance where potential hazards exist during processing, use and disposal.

TABLE OF CONTENTS

1.	SCOPE.....	5
2.	WARNING	5
3.	NORMATIVE REFERENCES	5
4.	DEFINITIONS	7
5.	INFORMATION TO BE SUPPLIED BY THE PURCHASER	8
6.	PROCESS CONTROL	8
7.	RECOMMENDATIONS FOR DESIGN AND MANUFACTURE.....	8
7.1	Design Considerations	8
7.1.1	Choice of Steel.....	8
7.1.2	Avoidance of Stress Concentrations.....	8
7.1.3	Protective Treatment.....	9
7.2	Type Testing	9
7.3	Manufacture	9
7.3.1	Machining and Grinding	9
7.3.2	Chemical Machining.....	9
7.3.3	Cold Forming.....	10
7.3.4	Surface Rolling.....	10
7.3.5	Protection during Manufacture.....	10
7.3.6	Etch Inspection.....	10
8.	PHYSICAL PREPARATION	10
8.1	Stress Relief.....	10
8.1.1	General.....	10
8.1.2	Standard Procedure	10
8.1.3	Stress Relief of Items	11
8.2	Mechanical Preparation	11
9.	CLEANING	11
10.	PROTECTIVE TREATMENTS.....	12
10.1	Precautions Applicable to all Treatments.....	12
10.2	Cadmium Electrodeposition (AMS03-19/Def Stan 03-19)	13
10.2.1	Preparation.....	13
10.2.2	Choice of Electrolyte	13
10.2.3	Baking	13
10.2.4	Protection Against Vapor Corrosion.....	13
10.3	Physical Vapor Deposition of Aluminum, Cadmium and Titanium Nitride (AMS03-28, parts 1, 2, and 3/Def Stan 03-28 parts 1, 2, and 3)	13
10.4	Zinc Electrodeposition (AMS03-20/Def Stan 03-20).....	13
10.5	Hard Chromium Electrodeposition (AMS03-14/Def Stan 03-14)	13
10.5.1	Preparation.....	13
10.5.2	Baking	14
10.5.3	Post-Electrodeposition Grinding	14
10.6	Nickel Electrodeposition for Engineering Purposes (AMS03-27/Def Stan 03-27)	14
10.7	Electroless Nickel Coating of Metals (BS EN ISO 4527)	14
10.8	Silver Electrodeposition (AMS03-9/Def Stan 03-9).....	14
10.9	Gold Electrodeposition (AMS03-17/Def Stan 03-17)	14
10.10	Sprayed Coatings of Aluminum and Zinc (BS EN ISO 2063)	14
10.11	Phosphate Treatment (AMS03-11/Def Stan 03-11).....	14
10.12	Paint Applied to Uncoated Steel	15
10.13	Processes Permitted but not Recommended	15
10.13.1	Tin Electrodeposition (BS 1872)	15



10.13.2	Copper Electrodeposition.....	15
10.14	Processes not Permitted	15
10.14.1	Tin-Zinc Alloy Electrodeposition.....	15
10.14.2	Sheradizing (BS 4921)	15
10.14.3	Hot Dip Galvanizing	16
10.15	Re-Processing and Re-Furbishment.....	16
11.	INSPECTION AND TESTING	16
12.	NOTES	16
ANNEX A	METHOD FOR DETERMINING OXIDIZABLE MATERIAL IN SULFURIC ACID.....	18
Table 1	Tensile strength criteria.....	7
Table 2	Baking treatments to be given to items after protective processing	17

1. SCOPE

This SAE Standard specifies the special treatments and precautions that are to be observed when protective and other surface treatments are applied to items, including springs, made from steel of specified maximum tensile strength exceeding 1450 MPa. The requirements of this Standard qualify those in process specifications and override the latter where there is conflict. The Standard also gives advice on design, manufacture, and preparation of items prior to cleaning and protection.

2. WARNING

This section which appeared in DEF STAN 03-4 Issue 6 has been deliberately deleted.

3. NORMATIVE REFERENCES

3.1 The publications shown below are referred to in the text of this standard. Publications are grouped and listed in alpha-numeric order.

BS EN ISO 2063	Thermal Spraying. Metallic and Other Inorganic Coatings. Zinc, Aluminium and their Alloys
BS EN ISO 4527	Metallic Coatings. Autocatalytic (Electroless) Nickel-Phosphorous Alloy Coatings
BS EN ISO 6507-1	Metallic Materials: Vickers Hardness Test: Test Method
BS EN 2828	Adhesion Tests for Metallic Coatings by Burnishing
BS EN 2829	Adhesion Tests for Metallic Coatings by Shot Peening
BS EN 2830	Adhesion Tests for Metallic Coatings by Shearing Action
BS EN 2831	Hydrogen Embrittlement of Steels: Test by Slow Bending
BS EN 2832	Hydrogen Embrittlement of Steels: Notched Specimen Test
BS 1872	Specification for Electroplated Coatings of Tin
BS 4921	Specification for Sherardized Coatings on Iron and Steel
BS 7195	Guide for the Prevention of Corrosion of Metals Caused by Vapours from Organic Coatings
BS M37	Method for the Etch Inspection of Metallic Materials and Components
BS 2X33	Specification for Two Component Epoxy Primer for Aerospace Purposes
BS 2X34	Specification for Air Drying, Two Component, Polyurethane Finish for Aerospace Purposes
Def Stan 00-970	Design and Airworthiness Requirements for Service Aircraft
Def Stan 03-2	Cleaning and Preparation of Metal Surfaces
AMS03-2	Cleaning and Preparation of Metal Surfaces
Def Stan 03-9	Electro-Deposition of Silver
AMS03-9	Electro-Deposition of Silver
Def Stan 03-11	Phosphate Treatment of Iron and Steel
AMS03-11	Phosphate Treatment of Iron and Steel