



AEROSPACE MATERIAL SPECIFICATION

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Superseding AMS03-2B

Cleaning and Preparation of Metal Surfaces

RATIONALE

AMS03-2C 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:

CS2625 dated 9 August 1951

Def 38 dated 13 May 1959

Def 39 dated November 1959

Def Stan 03-2 / Issue 1 dated 28 December 1970

QTM 5 dated February 1975

Def Stan 03-2 / Issue 2 dated 1 March 1991

Def Stan 03-2 / Issue 3 dated 24 March 1994

Def Stan 03-2 / Issue 4 dated 14 October 2005

Def Stan 03-2 / Issue 5 dated 20 November 2009

INTRODUCTION

This Standard details processes for the cleaning of metal surfaces to remove any extraneous or undesirable material or deposits at any stage of manufacture, storage or service and for the preparation of these surfaces for further treatment. Any necessary stress-relieving treatments are also included.

This Standard is not intended to override special preparatory procedures specified in individual Defence Standards, Defence Specifications, DTD Process Specifications, DG Ships Specifications and Naval Defence Standards. It also does not cover cleaning operations associated with the maintenance of internal combustion engines, the preliminary removal of heavy deposits of oil, grease, or dirt accumulated during operational service, preparations for welding and the cleaning of electrical contacts.

The standard is constructed around a small preamble section detailing the general requirements followed by Annexes detailing the requirements for individual substrate materials and the designated cleaning and preparation processes.

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1. SCOPE

This SAE Standard specifies processes for the cleaning of metal surfaces to remove any extraneous or undesirable material or deposits at any stage of manufacture, storage or service and for the preparation of these surfaces for further treatment. Any necessary stress-relieving treatments are also included. This Standard does not override special preparatory procedures specified in individual Defence Standards, Defence Specifications, DTD Process Specifications, DG Ships Specifications and Naval Defence Standards. It also does not cover cleaning operations associated with the maintenance of internal combustion engines, the preliminary removal of heavy deposits of oil, grease, or dirt accumulated during operational service, preparations for welding and the cleaning of electrical contacts.

2. WARNING

This section which appeared in DEF STAN 03-2 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.

AMS2700C	Passivation of Corrosion Resistant Steels
BS EN 2516	Passivation of Corrosion Resisting Steels and Decontamination of Nickel Base Alloys
BS EN ISO 3696	Water for Analytical Laboratory Use. Specification and Test Methods.
BS EN ISO 4527	Metallic Coatings. Autocatalytic (Electroless) Nickel Phosphorus Alloy Coatings. Specification and Test Methods.
BS EN ISO 4788	Laboratory Glassware. Graduated Cylinders
BS EN ISO 6507-1	Metallic Materials. Vickers Hardness Test. Test Method.
BS EN ISO 11124-3	Preparation of Steel Substrates before Application of Paints and Related Products. Specification for Metallic Blast Cleaning Abrasives. Part 3: High-Carbon Cast-Steel Shot and Grit.
BS EN ISO 11126-7	Preparation of Steel Substrates before Application of Paints and Related Products. Specification for Non-Metallic Blast Cleaning Abrasives. Part 7F: Fused Aluminium Oxide.
BS EN 10140	Cold Rolled Narrow Steel Strip – Tolerances on Dimensions and Shape
BS 245	Specification for Mineral Solvents (White Spirit and Related Hydrocarbon Solvents) for Paints and Other Purposes
BS 558 & 564	Specification for Nickel Anodes, Anode Nickel and Nickel Salts for Electroplating
BS 2569	Specification for Sprayed Metal Coatings
BS 2869	Specification for Fuels Oils for Agricultural, Domestic and Industrial Engines and Boilers
BS 4130	Specification for Sodium Hydroxide (Technical Grades)
BS 4921	Specification for Sherardized Coatings on Iron or Steel
BS 5599	Specification for Hard Anodic Oxidation Coatings on Aluminium and its Alloys for Engineering Purposes
BS 6338	Specification for Chromate Conversion Coatings on Electroplated Zinc and Cadmium Coatings

BS 7079	Preparation of Steel Substrates before Application of Paints and Related Products
BS 2X32	Specification for Pre-Treatment Etch Primer for Aerospace Purposes
Def Stan 03-3	Protection of Aluminium Alloys by Sprayed Metal Coatings
AMS03-3	Protection of Aluminum Alloys by Sprayed Metal Coatings
Def Stan 03-4	The Pre-Treatment and Protection of Steel Items of Specified Maximum Tensile Strength Exceeding 1450 MPa
AMS03-4	The Pre-Treatment and Protection of Steel Items of Specified Maximum Tensile Strength Exceeding 1450 MPa
Def Stan 03-11	Phosphate Treatment of Iron and Steel
AMS03-11	Phosphate Treatment of Iron and Steel
Def Stan 03-18	Chromate Conversion Coatings (Chromate Filming Treatments) for Aluminium and Aluminium Alloys
AMS03-18	Chromate Conversion Coatings (Chromate Filming Treatments) for Aluminum and Aluminum Alloys
Def Stan 03-24	Chromic Acid Anodizing of Aluminium and Aluminium Alloys
Def Stan 03-25	Sulphuric Acid Anodizing of Aluminium and Aluminium Alloys
AMS03-25	Sulphuric Acid Anodizing of Aluminum and Aluminum Alloys
Def Stan 03-27	Electro-Deposition of Nickel for Engineering Purposes
AMS03-27	Electro-Deposition of Nickel for Engineering Purposes
Def Stan 08-39	Cutting, Welding and Corrosion Protection of Aluminium Alloy Military Equipment
Int. Def Stan 68-160	Degreasing Compound, Types A and C
Def Stan 68-188	Emulsifying Agent, Cleaning Compound
Def Stan 68-189	Solvent for Grease, Emulsifiable
Def Stan 80-15	Paint, Pre-Treatment Primer (Etching Primer)
DTD 911	Protection of Magnesium-Rich Alloys Against Corrosion (Obsolescent)

3.2 This section which appeared in DEF STAN 03-2 Issue 6 has been deliberately deleted.

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4. DEFINITIONS

4.1 For the purposes of this part of the Standard the following definitions apply:

4.2 TENSILE STRENGTH OF STEELS

4.2.1 Tensile Strength

Throughout this Standard the tensile strength figures refer to the specified maximum tensile strength. Where the steel specification specifies only the minimum tensile strength the equivalent maximum tensile strength category shall be determined from Table 1.

Table 1 - Specified minimum/maximum tensile strengths

Specified Minimum Tensile Strength MPa	Specified Maximum Tensile Strength MPa
Up to 1000	Up to 1100
Over 1000 up to 1400	Over 1100 up to 1450
Over 1400 up to 1800	Over 1450 up to 1800
Over 1800	Over 1800

4.2.2 Tensile Strength/Hardness Relationship

If no maximum or minimum tensile strength is specified for the steel, hardness values of 310 HV, 340 HV, 435 HV, 450 HV, and 545 HV (as measured in accordance with BS EN ISO 6507-1) shall be regarded as equivalent to 1000, 1100, 1400, 1450, and 1800 MPa respectively. Steels which have been wholly or partly surface hardened shall be considered as being in the category appropriate to the hardness of the surface layer.

4.3 PROCESS CONTROL SCHEDULE

The document which specifies/defines:

- (a) The sequence of manufacturing operations and processes.
- (b) The control parameters and their tolerances for each individual process within the total sequence.

5. INFORMATION TO BE SUPPLIED TO THE PROCESSOR

The following information shall be given on the drawing, contract or order:

- (a) The number of this AMS Material Specification or its superseded Defence Standard.
- (b) The specification and metallurgical condition of the material of the item.
- (c) Instructions concerning stress relieving heat treatment required including the limits of temperature and time to be employed.
- (d) Instructions concerning post cleaning de-embrittlement which is required.
- (e) When necessary, the cleaning method or methods given in this Standard which are to be used.

- (f) Details of any particular requirements for special surfaces.
- (g) Any special information regarding coatings to be removed, or coatings or inserts to be protected.
- (h) Where appropriate the surface coating which is to be subsequently applied.

6. PROCESS CONTROL

- 6.1 A Process Control Schedule suitable of achieving the requirements of this Standard shall be prepared by the processing contractor(s) prior to the commencement of production.
- 6.2 Details of all processes and treatments, including all preparatory and post treatments, processing, significant surfaces, tests and all other processes and treatments shall be included in the Process Control Schedule.
- 6.3 All stages in the complete Schedule shall follow each other without delay.

7. GENERAL REQUIREMENTS

- 7.1 Any materials used for cleaning and preparation shall contain not more than: 5 ppm mercury (Hg). Where items can be regarded as susceptible to degradation by residual arsenic and/or antimony the following maximum limitations shall also apply: 15 ppm arsenic (As), 15 ppm antimony (Sb).

WARNING: The presence of arsenic, reduced sulphur, or reduced phosphorous compounds in an acid bath will promote absorption of hydrogen by steel and may reduce the adhesion of subsequently applied coatings.

NOTE: Contamination of steel components can occur when antimony inhibited solutions are used. The resultant deposit of antimony on exposed surfaces can adversely affect the properties of the steel and subsequent processing of the item. If processing solutions become contaminated this can lead to further items being similarly affected.

- 7.2 When assembled items are being processed the treatments chosen must be suitable for each constituent material and combination of materials.
- 7.3 Items will often require a sequence of degreasing and cleaning treatment and solvent cleaning may occasionally leave traces of soil after evaporation of the solvent, care shall therefore be taken to avoid this. Inorganic contamination may not always be removed by solvent processes therefore it may be necessary to use aqueous processes in addition after final degreasing and cleaning (see Section 6 regarding process control).
- 7.3.1 The surfaces shall be free from grease, oil, oxide, scale or other foreign matter and shall be in a chemically clean condition (i.e., fully receptive to any subsequent processing). To test for surface cleanliness the cleaned surface may be sprayed or immersed in cool, clean water. On clean surfaces, the water will form a uniform film, in the presence of oily soils; the water film will break away from contaminated areas. In cases of gross contamination, the entire film may break down into discrete globules. If the surface to be tested has any residue of cleaning agent containing surface active agent, a continuous film may be obtained even in the presence of grease. This false effect shall be overcome by dipping the surface in dilute acid and rinsing before carrying out the test. Subsequent specified treatments shall be applied without delay.
- 7.3.2 The mechanical properties shall not be impaired significantly except where they may be recovered by subsequent baking or other treatment which forms part of the normal processing sequence.
- 7.3.3 The dimensions and surface finish shall be such as to enable the finished (e.g., electroplated) items to be within the required drawing or specification limits.

- 7.4 Where solvent cleaning is used, corrosion of items, particularly those made in light alloys, may occur by subjecting them to heat before all solvent has disappeared from the surfaces, therefore, solvents which thermally degrade with the liberation of corrosive products shall not be used. Care is to be taken, therefore, to ensure that items of complicated form, or containing blind holes, have all trace of liquid removed. Bundles of items intended for immediate heat treatment are to be shaken to ensure that liquid is not retained by capillary attraction between surfaces in contact. In any event, items shall not be immersed in a molten salt bath until they are completely dry and have reached room temperature after removal from the degreaser.

NOTE: It is not good practice to allow an interval before treatment, it must be remembered that degreasing and cleaning produce a surface whose resistance to corrosive attack is low. Consequently, readily corrodible materials must be protectively coated or further processed.

- 7.5 Immediately after each treatment in an aqueous solution the items shall be thoroughly rinsed in clean hot and/or clean cold water, as appropriate, paying special attention to items containing crevices. Immediately after the final rinsing the metal surface shall not exhibit a water break. Water used for final rinsing after processing shall be discarded or retreated when the conductivity exceeds 100 $\mu\text{S}/\text{cm}$.
- 7.6 After the final rinsing or preparatory treatment, items to be given a protective treatment in aqueous solutions shall be transferred immediately without drying to the treatment bath.
- 7.7 Items to be given further treatment by dry processes and items which are not to be subjected to further processing, shall be thoroughly dried.
- 7.7.1 Where drying in a draught of warm air is recommended, the air shall be free from oil or other contaminants.
- 7.7.2 The use of chlorinated solvents for drying purposes is not permitted.
- 7.8 The acid and alkaline solutions used in some of the cleaning and preparation processes can have a deleterious effect on explosives. When an item is for use with explosive materials, particular care must be taken to ensure that all such solutions are completely removed by thorough washing with clean water. Special attention should be paid to irregularly shaped items and to blind holes and crevices.
- 7.9 Where limits of composition of solutions are known they are quoted in this Standard. Where limits are not quoted other proportion may be used provided they have a tolerance of not more than $\pm 10\%$.
- 7.10 Where a surface is cleaned and pretreated, at least the first coat of the paint system shall be applied in conformity with the manufacturer's instructions as soon as possible but within 16 hours. During this period the surface shall be kept under clean, dry conditions.

8. STANDARD CLEANING METHODS

- 8.1 Throughout this Standard the processes and methods in brackets which follow references to cleaning treatments refer to the processes and methods in Annex J.
- 8.2 The efficiency of some of the methods may be increased by application of ultrasonic agitation, Process A (Method A6). But care should be taken to avoid damage to delicate items and assemblies such as electrical or electronic equipment and semi-conductor devices.

9. NOTES

NOTICE

This specification may reference the use of substances, products or procedures that are restricted or banned by local (regional) chemical substance regulations. Users of this specification should consider the implications of local legislation on the products, substances, and processes referred to within the document.

9.1 Revision Indicator

A change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications nor in documents that contain editorial changes only.

PREPARED BY AMS COMMITTEE "B"

ANNEX A - STEELS, NON-CORROSION RESISTING, CAST IRONS AND PURE IRONS

A.1 SELECTION OF METHOD OF CLEANING

The choice of cleaning methods for steels of specified maximum tensile strength over 1000 MPa is restricted by the requirements of Section A.2 in order to avoid embrittlement by hydrogen absorption during cathodic or acid treatments. In general the methods given are suitable for both steel and iron. Treatment of cast iron in acid solutions is, however liable to set up preferential etching around the graphite which may become detached leaving holes which may entrap treatment solution and give rise to subsequent staining or corrosion.

A.2 STRESS RELIEVING HEAT TREATMENT

A.2.1 Items made from steel of specified maximum tensile strength in the range of 1001 to 1450 MPa which have been ground or subjected to heavy machining after final tempering shall be stress relieved at a temperature between 200 and 230 °C for not less than 3 hours, or not more than 50 °C below the tempering temperature for 15 to 30 minutes. Any stress relieving treatment shall be applied after degreasing (Process A) and before any treatment liable to cause embrittlement (see Section A.1). Items which have been treated in order to introduce beneficial compressive stresses into any part of the surface, e.g., by shot peening or cold working, shall not be heated above 230 °C. Carburized surface hardened items shall be heated at 130 to 150 °C for not less than 6 hours.

A.2.2 Steels of specified maximum tensile strength over 1450 MPa are subject to the requirements of AMS03-4/Def Stan 03-4 for stress relief.

A.3 GENERAL DEGREASING AND CLEANING

A.3.1 Steels of Specified Maximum Tensile Strength up to 1000 MPa

Degrease to Process A (Method A1, A2) and Process B (Method B1, B2, B3) prior to the commencement of a cleaning sequence which shall be selected from Processes D to L as appropriate.

A.3.2 Steels of Specified Maximum Tensile Strength in the Range 1000 to 1450 MPa

Any form of cathodic cleaning treatment of these steels is prohibited. Degrease to Process A (Method A1, A2) and Process B (Method B1, B2, B3) prior to the commencement of a cleaning sequence which shall be selected from Processes D, F, H, and K1 as appropriate.

A.3.3 Steels of Specified Maximum Tensile Strength over 1450 MPa

The items shall be cleaned in accordance with the requirements of AMS03-4/Def Stan 03-4.

A.4 PREPARATION FOR ELECTROPLATING

Degrease to Process A (Method A1, A2) and Process B (Method B1, B2, B3) prior to the selection of a cleaning sequence from Section A.3 taking into account the tensile strength of the steel. If inhibited solutions are used for acid pickling (Process F) or de-rusting (Process J) it may be necessary to remove adsorbed inhibitor from the surface by acid dipping (Process G) or by a suitable alkaline solution (Process B) before chemical smoothing (Process L) and/or electroplating.

A.5 PREPARATION FOR ELECTROLESS NICKEL PLATING

A.5.1 For steels having a specified maximum tensile strength below 1100 MPa items shall be treated as follows:

A.5.1.1 Degrease to Process A (Method A1) and Process B (Method B1) prior to the commencement of a cleaning sequence which shall be in accordance with Processes D to F and K as appropriate.

A.5.1.2 Clean by periodic reverse current (finishing anodically) in an alkaline solution.

A.5.1.3 Acid dip in 10% by volume sulfuric acid ($d = 1.84 \text{ g/ml}$).

A.5.1.4 Electroless nickel plate (BS EN ISO 4527).

NOTE 1 Some steels containing chromium and molybdenum may become passivated by anodic cleaning. For these steels, cathodic cleaning in place of cleaning by periodic reverse current may be employed.

NOTE 2 A warm rinse may be found desirable immediately before stage A.5.1.4 to pre-heat large items but care should be taken to ensure that the items do not dry off before being immersed in the electroless nickel solution.

A.5.2 For steels having a specified maximum tensile strength in the range 1100 to 1450 MPa the following procedure shall be carried out:

A.5.2.1 Degrease to Process A (Method A1) and Process B (Method B1) prior to the commencement of a cleaning sequence which shall be in accordance with Processes D, F, and K as appropriate.

A.5.2.2 Anodic etch (Process H) for between 1 and 3 minutes.

NOTE: This bath is liable to deterioration from frequent use. Therefore, care shall be exercised to monitor and maintain the bath in good condition or tarnishing will occur. Some steels containing chromium and molybdenum may become passivated by anodic cleaning.

A.5.2.3 Thoroughly rinse to remove all viscous sulfate solution from the surface.

A.5.2.4 Electroless nickel plate (BS EN ISO 4527).

A.6 PREPARATION PRIOR TO PHOSPHATING TO AMS03-11/DEF STAN 03-11

Degrease and clean to the Processes listed in Section A.3 taking into account the tensile strength of the steel. Abrasive cleaning (Process D) is preferred. If inhibited solutions are used for acid pickling (Process F) or de-rusting (Process J or K) it may be necessary to remove adsorbed inhibitors by an acid dip (Process G) or by a suitable alkaline solution (Process B) before rinsing and phosphating. Information on the effect of cleaning treatment solutions on the quality of phosphate coatings is given in AMS03-11/Def Stan 03-11.

A.7 PREPARATION PRIOR TO SHERADISING TO BS 4921

Degrease and clean to the Processes listed in Section A.3 taking into account the tensile strength of the steel.

A.8 PREPARATION PRIOR TO HOT DIP GALVANISING

A.8.1 Steel (other than castings)

Degrease by using Process A (Method A1, A2) and Process B (Method B1) prior to one of the following:

- (a) Acid Pickle to Process F (Method F1 or F2). When necessary a flux coating shall be applied.
- (b) Abrasive blasting with chilled iron or steel grit to Process D (Method D1) to remove welding slag or paint. After abrasive blasting, Process F (Methods F1 or F2) may be used and when necessary a flux coating shall be applied.

A.8.2 Steel Castings

Preparation shall be carried out using one of the following procedures:

- (a) Abrasive blasting with chilled iron or steel grit to Process D (Method D1) to remove moulding sand and iron scale. After abrasive blasting degrease by using Process A (Method A1, A2) and Process B (Method B1) and clean by Process F (Method F1 or F2). When necessary a flux coating shall be applied.

- (b) Hydrofluoric acid (30% HF) diluted 10 to 50 times by volume with water, followed by hosing with water to remove any gelatinous products. After rinsing, degrease by Process A (Method A1, A2) and Process B (Method B1). Clean by using Process F (Method F2); when necessary a flux coating shall be applied.

NOTE 1 High strength steels can be susceptible to hydrogen embrittlement during pickling.

NOTE 2 Stresses induced, e.g., by welding or hardening can result in grain boundary penetration of steels by zinc during hot dip galvanizing. Hence stress relieving prior to galvanizing should be considered.

A.9 PREPARATION PRIOR TO METAL SPRAYING

A.9.1 Spraying for Protection Corrosion

Spraying to BS 2569 for protection against corrosion and high temperature oxidation. Degrease to Process A (Method A1, A2) and Process B (Method B1) prior to abrasive cleaning Process D (Method D1) with suitable grits. The prepared surface shall be comparable in roughness with a reference surface produced in accordance with Appendix A of BS 2569 and shall provide an adequate key for the subsequent sprayed metal coating. Metal spraying shall immediately follow abrasive cleaning.

NOTE: For sheet steel of thickness up to and including 1.6 mm, some relaxation on the degree of roughness may be acceptable in order to minimize distortion during surface preparation. Distortion can be reduced by blast cleaning on both sides.

A.9.2 Spraying for Reclamation Purposes

Items shall be thoroughly degreased prior to the commencement of a cleaning sequence which shall be in accordance with the Processes and Methods in Section A.3 as appropriate to the requirements of the subsequent metal spraying process.

A.10 PREPARATION PRIOR TO DIRECT APPLICATION OF PAINT TO THE BARE METAL

Degrease to Process A (Method A4) and Process B (Method B1) prior to the selection of a cleaning sequence from Section A.3 taking into account the tensile strength of the steel. When Process D (Method D1, D2) is used for the removal of oxide, scale or rust, the entire surface shall show a blast cleaning pattern and shall be clean bare steel completely free from any contamination or discoloration.

ANNEX B - STEELS, CORROSION RESISTING

B.1 STRESS RELIEVING HEAT TREATMENT

Certain hardenable corrosion-resisting steels may need stress relieving after grinding or heavy machining. The heat treatment specified in A.2.1 shall be used, i.e., 200 to 230 °C for not less than 3 hours for steels having a maximum specified tensile strength up to 1450 MPa or not more than 50 °C below the tempering temperature for 15 to 30 minutes. Steels of specified maximum tensile strength over 1450 MPa are subject to the requirements of AMS03-4/Def Stan 03-4 for stress relief.

B.2 GENERAL DEGREASING AND CLEANING

B.2.1 Degrease prior to the selection of a cleaning sequence from Section A.3 taking into account the strength of the steel.

NOTE: Electropolishing or chemical polishing by a suitable method may be used.

B.3 PREPARATION PRIOR TO ELECTROPLATING

Degrease to Process A (Method A1) and Process B (Method B1) prior to the selection of a cleaning sequence from Section A.3 taking into account the tensile strength of the steel. The items shall then be given a nickel strike in accordance with Process V before electroplating with the metal(s) required.

NOTE: Modified methods, including the omission of the nickel strike, may be permitted provided that adequate adhesion will be obtained.

B.4 PREPARATION PRIOR TO ELECTROLESS NICKEL PLATING

B.4.1 The items shall be degreased and cleaned in accordance with Section 7 and Section A.5 taking into account the tensile strength of the steel, and then either given a nickel strike in accordance with Process V or striking electrolytically in the electroless nickel solution until the surface is covered.

NOTE: The surface may be activated by dipping for 1 to 2 minutes in 50% by volume hydrochloric acid ($d = 1.16 \text{ g/ml}$) at a temperature of 40 to 50 °C.

B.4.2 After rinsing in water the items shall be transferred directly to the electroless nickel bath.

B.5 PREPARATION PRIOR TO METAL SPRAYING

B.5.1 Spraying to BS 2569

Cleaning and preparation prior to metal spraying shall be carried out as for steels, non-corrosion-resisting.

B.5.2 Spraying for Reclamation Purposes

Items shall be thoroughly degreased prior to the commencement of a cleaning sequence which shall be in accordance with the Processes and Methods in Section A.3 as appropriate to the requirements of the subsequent metal spraying process.

B.6 PREPARATION PRIOR TO THE DIRECT APPLICATION OF PAINT TO THE BARE METAL

Degrease to Process A (Method A1) and Process B (Method B1) prior to the selection of a cleaning sequence from Section A.3 taking into account the tensile strength of the steel. When Process D (Method D1, D2) is used for the removal of oxide, scale or rust, the entire surface shall show a blast cleaning pattern and shall be completely free from contamination or discoloration. For abrasive cleaning non-metallic grits shall be used.

B.7 PASSIVATION PRIOR TO PUTTING INTO SERVICE

- B.7.1 The durability of corrosion resistant (stainless) steels is based on the presence of an extremely thin “passive layer” of a chromium-rich oxide on the component surface. This passive layer forms spontaneously in air and many aqueous environments but its quality and thickness can be improved by a final passivation treatment prior to entering service. It is generally considered that some passivation treatments will also remove light surface contamination. For effective passivation, however, the steel surface must not have depleted chromium concentration and must be free from oxide scale and many other surface defects produced during fabrication.
- B.7.2 Where passivation is called for, Process M shall be used