



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

PLATING, TIN/ZINC ALLOY, ELECTROPLATED
OVER FERROUS SURFACES

WSE-M1P93-A1/A2/A3/A4

PLATING, TIN/ZINC ALLOY, MECHANICALLY
PLATED OVER FERROUS SURFACES

WSE-M1P93-A5/A6

1. SCOPE

This specification defines the requirements for electroplated or mechanically plated deposits and associated chromate coatings.

2. APPLICATION

This specification was released originally to define performance requirements for corrosion resistance and electrical conductivity, and are also suitable for general corrosion protection of non-electrical components.

A supplementary surface treatment (e.g., chromate finish per specification WSB-M10P10-A1/A5) must be applied to coated parts to retard formation of white corrosion products.

3. REQUIREMENTS

All requirements identified for each specification must be met to achieve acceptable field durability. No one requirement, exclusive of others, is capable of ensuring satisfactory performance. Any deviations to the requirements of these specifications may be subject to additional performance requirements.

3.1 QUALITY SYSTEM REQUIREMENTS

Material suppliers and part producers must conform to Quality System Requirements, QS-9000. Material specification requirements are to be used for initial qualification of materials. A Control Plan for ongoing production verification is required. This plan must be reviewed and approved by the relevant Ford Materials activity and/or Ford Supplier Technical Assistance (STA) prior to production parts submission. Appropriate statistical tools must be used to analyze process/product data and assure consistent processing of the materials.

Part producers using this material in their products, must use Ford approved materials and must conform to a process control plan which has been approved by STA and/or the relevant Materials Activity.

Date	Action	Changes
1996 03 15	Activated	P. Lee

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3.2 CHEMICAL COMPOSITION

	Tin	Zinc
A1, A2, A3, A4, Weight %	60 - 80	20 - 40
A5, A6, Weight %	25 - 35	65 - 75

3.3 PLATING THICKNESS AND CORROSION RESISTANCE
(ASTM B 659/ASTM B 117/ASTM B 487)

Plating thickness requirements identified represent minimum values and apply to all significant surfaces unless otherwise specified on the Engineering Drawing.

Note: In case of dispute, the thickness measurement umpire method shall be metallographic sectioning per ASTM B 487.

Evidence of basis metal red rust corrosion products on significant surfaces following testing when evaluated by the unaided eye at normal reading distance constitutes failure of the part.

Evidence of zinc/tin alloy white corrosion products on significant surfaces following salt spray testing when evaluated by the unaided eye at normal reading distance constitutes failure of the part due to breakdown of the supplementary surface treatment. This requirement applies to all supplementary surface treatments and supersedes any conflicting requirements governing supplementary surface treatments unless otherwise specified on the engineering drawing.

3.3.1 Plating Thickness

	Plating Thickness Micrometers, min
A1	5
A2	8
A3	10
A4	13
A5	8
A6	10

3.3.2 Corrosion Resistance

Specification No.	Salt Spray Hours	
	White Corrosion min	Red Corrosion min
WSE-M1P93-A1	72	288
WSE-M1P93-A2	72	408
WSE-M1P93-A3	72	504
WSE-M1P93-A4	72	600
WSE-M1P93-A5	72	192
WSE-M1P93-A6	72	240