



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

CORROSION PROTECTIVE COATING,
ZINC/CHROMATE/COMBINATION TYPE - 240 h
CORROSION PROTECTIVE COATING,
ZINC/CHROMATE/COMBINATION TYPE - 500 h
CORROSION PROTECTIVE COATING,
ZINC/CHROMATE/COMBINATION TYPE - 500 h
CORROSION PROTECTIVE COATING,
ZINC/ALUMINUM/COMBINATION TYPE - 400 h
PLUS TOP COAT SEALER

WSD-M21P13-A1

WSD-M21P13-A2

WSD-M21P13-A3

WSA-M21P13-A4

1. SCOPE

These specifications define four performance levels of a proprietary corrosion protection coating for steel which is heat converted from an aqueous dispersion of zinc flake, chromium salts, and organic materials. The final coating of A1, A2 and A3 principally consists of zinc. A4 consists of approximately 50/50 zinc/aluminum. A3 contains an integral lubrication constituent for the control of Torque-Tension characteristics.

2. APPLICATION

These specifications were released originally for a corrosion protection coating on steel where salt spray resistance in excess of 240 h is required. Since hydrogen embrittlement is not induced, this coating is suitable for springs and other high hardness parts. Functional testing should be performed on metals susceptible to bimetallic corrosion, or which are adversely affected by baking temperatures of 330 C maximum. A4 is solvent and heat resistant. It was released originally for brake system components and other high temperature applications (425 C).

3. REQUIREMENTS

3.1 STATISTICAL PROCESS

Suppliers must conform to the requirements of Ford Quality System Standard Q-101. A mutually acceptable Control Plan as described therein is required for material/source approval. Appropriate statistical tools must be used to analyze process/product data so that variation in the final product is continuously reduced.

Date	Release No.	Release/Revision
1991 0508	NC00E10079779007	Added A4 & Revised B.Edward EAO A.Yuhas NAAO 5/13/91 3/27/91
1988 08 31	B/031515TCTc	Application Changed, 5.3 Added C.A.McK.
1986 07 03	SM/ER 3667TC	Released J.P.C. Lines EAO.

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3.2 APPEARANCE

The coating shall be uniform in colour and free from discontinuities. The coating shall be metallic grey. Water based top coatings shall be applied to WSD-M21P13-A1 and A2 when stated on the part drawing. The color of the top coating shall be stated on the part drawing, e.g. WSD-M21P13-A2 Plus Gold Top Coat.

A clear top coat sealer is mandatory on parts coated to WSA-M21P13-A4.

Top coatings shall not be applied to WSD-M21P13-A3 as this may affect the integral lubrication.

3.3 CORROSION RESISTANCE

Finished components shall be tested in accordance with ASTM B 117. After the specified test time, without using supplementary magnification, one red rust spot per 1600 mm² of significant surface area is acceptable provided the spot is no greater than 1.5 mm in diameter. Significant surfaces are defined in 5.2.

A1	240 hours
A2	500 hours
A3	500 hours
* A4 (425 C for 1 h)	400 hours

* Note: Prior to salt spray testing, parts coated to WSA-M21P13-A4 shall be heated to a minimum metal temperature of 425 C for 1 hour.

3.4 COATING MASS AND THICKNESS

	Coating Mass min g/m ²	Thickness mm
A1	20	0.005 - 0.007
A2	28	0.008 - 0.010
A3	28	0.008 - 0.010
A4	11	0.002 - 0.004