**CORROSION PROTECTIVE COATING, ZINC RICH INORGANIC BASECOAT, LUBRICATED ALUMINUM RICH ORGANIC TOPCOAT, SILVER** — **WSS-M21P42-A1**

**CORROSION PROTECTIVE COATING, ZINC RICH INORGANIC BASECOAT, LUBRICATED ORGANIC TOPCOAT, BLACK** — **WSS-M21P42-A2**

**CORROSION PROTECTIVE COATING, ZINC RICH INORGANIC BASECOAT, LUBRICATED INORGANIC TOPCOAT, CLEAR** — **WSS-M21P42-A3**

## 1. SCOPE

The materials defined by these specifications are corrosion protective coatings over steel. They consist of a high zinc and aluminum flake micro layer forming basecoat, with an organic, cross linked, micro layer forming topcoat with an integral lubricant in silver and black for A1 and A2. The A3 topcoat is an aqueous, inorganic sealing system that provides increased heat resistance; these coating systems all provide enhanced corrosion protection, color and/or consistent torque-tension control.

They are free of chromium, nickel, lead and cadmium.

## 2. APPLICATION

These specifications were released originally for materials used for corrosion protective coatings over steel. Since the process does not induce hydrogen embrittlement, these coatings are suitable for high hardness parts. The cure temperature for the zinc-rich basecoat is 220 °C to 240 °C and 200 °C to 220 °C for the topcoat.

These coatings shall not be specified if this temperature adversely affects the component being coated. These coatings provide good bi-metallic corrosion resistance when in contact with aluminum. They should not be applied to parts in contact with uncoated copper, magnesium or stainless steel surfaces.

### 2.1 SERVICE TEMPERATURE

The maximum recommended continuous service temperature resistance is 260 °C.

## 3. REQUIREMENTS

### 3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

### 3.1 LICENSEE APPLICATOR QUALITY REQUIREMENTS

Applicators must follow coating manufacturer procedures and recommendations for chemical usage, equipment and processing.

| Date | Action | Revisions |
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## 3.2 MATERIAL PERFORMANCE

### 3.2.1 Raw Material Storage Stability

The material must be capable of being stored at 23 +/- 2 °C for 60 days without detrimental effect to the performance of the coated parts.

### 3.2.2 Cleaning

Prior to coating, the parts shall be free of oil, scale, and similar foreign materials. The cleaning process shall have no detrimental effect on the substrate, including freedom from embrittlement. The primary cleaning process will include fine grain zinc phosphate with a coating weight of 3 - 4 g/m². Alternative cleaning techniques may be required for some materials/parts such as parts made of powdered metal, austempered spring clips, and some internally threaded fasteners. Each exception must be recorded in the applicators control plan and approved by the coating manufacturer.

### 3.2.3 Curing

The basecoat is typically cured at a metal temperature of 220 °C to 240 °C and the topcoat at 200 °C to 220 °C. The coating shall not be used on materials that are adversely affected by these metal temperatures. Parts must be sufficiently cured at the time of packing to withstand normal handling and shipping without marring.

### 3.2.4 Finished Condition

Parts must be dry to touch such that, when held with a Watman's No.41 filter paper, or equivalent, and applying hand pressure for 5 to 10 seconds, there shall be no visible staining of the filter paper when viewed without using supplementary magnification. For referee purposes this test shall be carried out using a force of 10N.

### 3.2.5 Appearance

The coating shall be uniform in color and free from discontinuities when viewed without magnification.

### 3.2.6 Storage Life

Parts supplied shall still meet the specific requirements of this specification 6 months after receipt by Ford when stored at 5 to 28 °C with no direct heat or sunlight.

## 3.3 ADHESION

The cured coating shall withstand normal handling, storage and installation without flaking or peeling or other loss of adhesion.

Parts heated to 120 °C for 60 minutes shall not exhibit blistering, peeling, flaking or coating which can be removed by a filament type tape, such as 3M No. 898-2. The testing of coating quality by salt spray and/or determination of coating thickness will be performed on parts passing the adhesion test.

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