



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

CORROSION PROTECTIVE COATING, INORGANIC
ALUMINUM BASECOAT - ORGANIC TOPCOAT

ESA-M21P18-A

1. SCOPE

This specification defines the performance of a corrosion resistant protective coating which is suitable for both spray and dip/spin applications. The coating consists of an aluminum filled basecoat with a fluorocarbon topcoat which provides excellent corrosion resistance, adhesion and durability. It is a non-electrolytic type coating which is suitable for use with heat treated components (will not induce hydrogen embrittlement). Cure temperatures for the basecoat and topcoat range from 175 C to 340 C. This coating should not be used on parts which cannot tolerate these cure temperatures.

2. APPLICATION

This specification was originally released for a corrosion resistant coating for brake anti-lock sensor rings.

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.

3.2 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to this specification. The IR spectra and thermograms established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce IR spectra and thermograms that correspond to the reference standard when tested under the same conditions.

Date	Release No.	Release/Revision
C 880906	RD-254050-C5	Released <i>AP Minnick</i> 880831 <i>SPB/amine</i> 880831

WP 3948-a

Page 1 of 3

9009160 0016951 873



3.3 CONDITIONING AND TEST CONDITIONS

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

3.4 APPEARANCE

The parts as coated shall be black in color unless otherwise specified on the engineering drawing, uniform in coverage and free from any visual imperfections such as cracks, chips, tears or contaminants.

3.5 SURFACE PREPARATION

The basecoat shall be applied only over a properly grit blasted part (80 - 120 RMS surface profile).

3.6 FILM THICKNESS (FLTM BI 17-1)

The thickness of the total coating system (basecoat plus topcoat) shall range from 30 micrometers to 76 micrometers and shall be adequate to maintain the specified salt spray protection. In case of dispute between a supplier and the Ford Motor Company, the umpire method shall be the metallographic method (ASTM B 487).

3.7 FILM PROPERTIES

Tests are to be completed on components whenever possible. When test panels are required, they must be prepared by the Approved Source using a process that is representative of that used for component coating.

3.7.1 Adhesion
(FLTM BI 6-1,
method A, use
13mm scratch and
Method B tape

Must not flake, chip or transfer
film to tape

3.7.2 Chip Resistance
(SAE J400)

No greater than 2A

3.8 CORROSION RESISTANCE, min
(ASTM B117)

2000 h or as specified on the
engineering drawing

3.8.1 Salt Spray Evaluation

Part must have no more than 0.1 % red rust per ASTM D 610,
Grade 8.

WP 3948-b

Page 2 of 3

9009160 0016952 73T



Documents

Document Sharing Hub