ENGINEERING MATERIAL SPECIFICATION

Material Name	Specification Number
CORROSION PROTECTIVE COATING, SOLID FILM LUBRICANT 96 h SALT SPRAY	ESA-M21P24-A1
CORROSION PROTECTIVE COATING, SOLID FILM LUBRICANT 500 h SALT SPRAY	ESA-M21P24-A2

1. SCOPE

These specifications define the performance of two solid film lubricant coatings containing molybdenum disulphide and other lubricating pigments. They are intended to be utilized on metallic parts to materially lower the coefficient of friction, reduce wear, minimize metallic adhesion of parts operating dry, and provide good corrosion resistance. They are non-electrolytic type coatings which are suitable for use with heat treated components (will not induce hydrogen embrittlement).

2. APPLICATION

These specifications were released originally for friction/wear applications where the unit loading exceeds 35 MPa (for applications where unit loading is less than 35 MPa consult Ford Specification ESF-M21P8-A).

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.

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.

Date	Release No.	Release/Revision
		L. Mastrofrancesco 2-26-91
91 02 27	NC00-E-10092841-000(SP)	Released R1w K. A. Mitchell

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3.4 APPLICATION CHARACTERISTICS

These materials are suitable for applications where either the entire part or portions thereof are to be coated. This can be accomplished by spraying or dipping the pretreated part. The proper pretreatment of each part shall be specified on the Engineering drawing.

3.5 APPEARANCE

The parts as coated shall be dull charcoal gray to black in color, uniform in coverage and free from visual imperfections such as cracks, chips, tears or contaminants.

3.6 FILM THICKNESS

The coating thickness shall be 5 - 20 micrometres or as specified on the Engineering drawing and adequate to meet the specified salt spray resistance.

3.7 FILM PROPERTIES

Tests are to be completed on components whenever possible. The following test results were run on test panels and are used to establish a baseline for qualification. Test results on component parts may vary and underscore the need to run tests on the actual components. In all cases, application of the coating must be done by an approved source as the proper application of the material is as important as the material itself.

		A1	A2
3.7.1	Coefficient of Friction (ASTM D 2714)	.02 - .07	.02 - .07
3.7.2	Endurance Life (ASTM D 2625, Procedure A)		
	Average	450 minutes	350 minutes
	Minimum	390 minutes	250 minutes
3.7.3	Load Carrying Capacity	13.3 kN	11.1 kN
3.7.4	Adhesion (FLTM BI 106-01, zinc phosphated panels)	Grade 0	

The coating must not chip, flake or expose any base metal surface. A uniform deposit of powdery material clinging to the tape shall not be objectionable.

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