



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

GREASE, MULTIPLE FLUID BASED - ORGANIC THICKENER

ESA-M1C221-A

1. SCOPE

The material defined by this specification is a multiple fluid based grease with an organic thickening agent.

2. APPLICATION

This specification was released originally for grease used in the lubrication of speed control slip 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 Color Bright Orange

3.3 CONE PENETRATION 270-280
(ISO 2137/ASTM D 217,
Worked 60 strokes)

3.4 DROPPING POINT, min 176 C
(ISO 2176/ASTM D 566)

3.5 COPPER CORROSION, 3 h at 100 C, max 1a
(ISO 2160/ASTM D 130)

3.6 SHELL FOUR-BALL WEAR TEST, scar dia, max 0.50 mm
(FLTM BJ 16-1, 1 h, 1200 rpm,
40 kg, 75 C)

3.7 LITHIUM SOAP CONTENT 7-10 %
(ASTM D 128)

3.8 MINERAL/SYNTHETIC OIL REQUIREMENTS

3.8.1 Viscosity at 100 C, min 5.6 mm²/s
(ISO 3104/ASTM D 445)

3.8.2 Viscosity at 40 C, max 29 mm²/s
(ISO 3104/ASTM D 445)

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	DR	
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WP 3948-a

Page 1 of 2

9009160 0001555 360



3.8.3	Viscosity Index, min (ISO 2909/ASTM D 2270)	160
3.8.4	Pour Point, max (ISO 3016/ASTM D 97)	-18 C
3.8.5	Flash Point, min (ISO 2592/ASTM D 92)	210 C
3.8.6	Fire Point, min (ISO 2592/ASTM D 92)	220 C

3.9 QUALITY

Material shall be a smooth homogeneous product free from abrasive particles, it shall be consistent in color and texture, and free from objectionable odors during normal storage. It shall be suitable for the intended application.

3.10 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.

3.11 SUPPLIER'S RESPONSIBILITY

All materials supplied to this specification must be equivalent in all characteristics to the material upon which approval was originally granted.

Prior to making any change in the properties, composition, construction, color, processing or labeling of the material originally approved under this specification, whether or not such changes affect the material's ability to meet the specification requirements, the Supplier shall notify Purchasing, Toxicology and the affected Materials Engineering activity of the proposed changes and obtain the written approval of the Materials Engineering activity. Test data, test samples and a new code identification are to be submitted with the request.

Substance restrictions imposed by law, regulations or Ford, apply to the materials addressed by this document. The restrictions are defined in Engineering Material Specification WSS-M99P9999-A1, unless a different suffix (e.g., A2 or A3) is specified on the engineering document for the application.

4. APPROVAL OF SUPPLIERS

Suppliers to this specification must be approved by the affected product engineering office. Procedure for gaining approval of a specific material to a new/existing ES-M specification is contained in Supplier Procedure I-A. Approved new suppliers will be added to the Engineering Materials Approved Source List.

WP 3948-b

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Page 2 of 2

9009160 0001556 2T7