



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

TUBING, PTFE - GLASS SPHERE FILLED

ESA-M4D465-A1

TUBING, PTFE - POLYPHENYLENE SULFIDE FILLED

ESA-M4D465-A2

1. SCOPE

The materials defined by these specifications are a glass sphere or polyphenylene sulfide filled polytetrafluoroethylene tubings.

2. APPLICATION

These specifications were released originally for material used for clutch, shifter or accelerator cable inner liner tubes.

3. REQUIREMENTS

3.1 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 curves established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce curves that correspond to the reference standard when tested under the same conditions as those specified on the master curve.

3.2 COMPOSITION

3.2.1 Base Material

Polytetrafluoroethylene per ESA-M4D27-A

3.2.2 Filler

ESA-M4D465-A1

ESA-M4D465-A2

Glass Spheres

Polyphenylene Sulfide

3.3 PHYSICAL PROPERTIES

3.3.1 Color

A1
Red

A2
Brown

3.3.2 Specific Gravity
(ASTM D 792)

2.1-2.3

1.90-2.15

3.3.3 Melting Point, C
(ASTM D 3418, DTA)

327 +/- 5

330 +/- 5

Date	Release No.	Release/Revision
881028	RD-367200-C12	
EE1028	3.3.3	Revised, was 327, retyped
1984-05-22		Engineering Deviation NR 133071

WP 3948-a

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	<u>A1</u>	<u>A2</u>
3.3.4 Tensile Strength, MPa, min (ASTM D 638)	13.8	24.1
3.3.5 Elongation, % min (ASTM D 638)	150	100

3.4 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 MATERIALS

Materials defined by this specification must have prior approval by the responsible Materials Engineering activity. Suppliers desiring approval of their materials shall first obtain an expression of interest from the affected Purchasing, Design and Materials Engineering activity. Upon request, the Supplier shall submit to the affected Materials Engineering activity its own laboratory report to the specification (test results, not nominal values), the material designation and code number, and test specimens for Ford evaluation. Upon approval, the material will be added to the Engineering Material Approved Source List.

Handwritten:
APR 20 1976
J. H. B. 1000