



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

SEALER, ANAEROBIC, VACUUM IMPREGNATED

WSS-M4G210-B

1. SCOPE

The material defined by this specification is an anaerobic polyester resin used for impregnation of metallic parts utilizing a vacuum system. The purpose of the vacuum impregnation is to seal microscopic porosity. It is not intended for use on parts exhibiting macroporosity or other structural defects.

2. APPLICATION

This specification was released originally for material used for impregnation of the corporate rack and pinion power steering gear aluminum die cast housing.

3. REQUIREMENTS

3.1 QUALITY SYSTEM REQUIREMENTS

Material suppliers and part producers must conform to Quality System Requirements, QS-9000. Material specification requirements are to be used for initial qualification of materials. A Control Plan for ongoing production verification is required. This plan must be reviewed and approved by the relevant Ford Materials activity and/or Ford Supplier Technical Assistance (STA) prior to production parts submission. Appropriate statistical tools must be used to analyze process/product data and assure consistent processing of the materials.

Part producers using this material in their products, must use Ford approved materials and must conform to a process control plan which has been approved by STA and/or the relevant Materials Activity.

Date	Action	Changes/Revisions
1999 08 10	Activated	Replaces ESA-M4G210-A <span style="float: right;">P. Lee</span>



### 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 APPEARANCE (Properties as a liquid) Light amber

3.4 SPECIFIC GRAVITY 0.99 - 1.02  
(ASTM D 1298)

3.5 VISCOSITY 7 - 10 cP (mPa.s)  
(Brookfield LVF, No. 1 spindle,  
60 rpm at 23 +/- 2 C)

3.6 FLASH POINT, min 93 C  
(ASTM D 92)

3.7 PERFORMANCE REQUIREMENTS  
(FLTM BV 131-01)

All parts to be used for Engine specific applications shall meet the testing and acceptance criteria specified in FLTM BV 131-01.

### 3.8 ADDITIONAL REQUIREMENTS

Specific requirements for material and/or manufactured parts shall be specified on the Engineering drawing, Engineering parts specification and/or performance specification. All critical areas with respect to these properties shall be clearly designated on the Engineering drawing.

### 3.9 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 regulations are defined in Engineering Materials Specification WSS-M99P9999-A1.



## 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 a completed copy of their laboratory test reports, signed by a qualified and authorized representative of the test facility, demonstrating full compliance with all the requirements of this specification (test results, not nominal values), the material designation and code number, and test specimens for Ford evaluation. Ford's engineering approval of a material will be based on its performance to this specification and on an assessment of suitability for intended processes and/or applications. Upon approval, the material will be added to the Engineering Material Approved Source List.

## 5. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification.

- |     |  |                              |
|-----|--|------------------------------|
| 5.1 | Temperature Range, continuous  | -54 to 204 C                 |
| 5.2 | Coefficient of Thermal Expansion<br>(after curing)                                   | $216 \times 10^{-6}$ mm/mm/C |
| 5.3 | Fluorescence - Parts may be inspected with black light for evidence of impregnation. |                              |