



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

SEALER, METHACRYLATE, ONE PACK, THERMOSET,
VACUUM IMPREGNATION

WSK-M4G303-B1

1. SCOPE

The material defined by this specification is a mixture of liquid methacrylate resin and an accelerator to seal micro-porosity (less than 0.2 mm diameter) in metal castings.

2. APPLICATION

This specification is released originally for material used for impregnation of aluminum oil pump body and differential housing in a vacuum impregnation process using a cold water wash and a hot water cure (10 minutes at 90 C).

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.

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	Action	Changes/Revisions
1999 08 10	Revised	Revised para 3, 3.5, 3.9, 5; Updated P. Lee
1989 07 03	SM/EQ 4042 TP	Released B. Lange

Page 1 of 4

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3.3	COLOR	Light amber - pale straw, fluorescent
3.4	WEIGHT PER VOLUME, max (ASTM D 816)	0.920 kg/L
3.5	SOLIDS, min (FLTM BV 150-10)	98.5 %
3.6	ASH, max (FLTM BV 150-10)	0.01 %
3.7	VISCOSITY at 23 +/- 2 C (ASTM D 1824, Brookfield LVT/D, Spindle No. 1, rotational frequency 60 cycles/minute)	7 - 30 mPa.s
3.8	WATER CONTENT, max	0.5 %

Test Method: Adjust the temperature of sealant to 20 +/- 0.5 C. Add 5 mL to a titration bottle and slowly add n-heptane from a burette with constant agitation. At the end-point the sample remains cloudy after agitation; at this point note the amount of n-heptane added and calculate the water content as follows:

< 5.8 mL n-heptane	< 0.5 %
6 +/- 0.2 mL n-heptane	0.5 %
> 6.2 mL n-heptane	> 0.5 %

3.9 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.

3.10 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.