ENGINEERING MATERIAL SPECIFICATION

Material Name	Specification Number
SEALER, POLYACRYLIC ESTER, SOLVENT FREE, PRECURABLE, EC-COATABLE, HEAT CURING	WSK-M4G253-B1
SEALER, POLYACRYLIC ESTER, SOLVENT FREE, PRECURABLE, EC-COATABLE, HEAT CURING, ADFOSY	WSK-M4G253-B2

1. SCOPE

The materials defined by these specifications are solvent free, pre-curable, heat expanding, EC-coatable and heat curing polyacrylic ester based sealers.

2. APPLICATION

These specifications were released originally for materials used for sealing of clinch flange cutting edges on e.g. doors. The materials are applied to oily panels, WSK-M4G253-B1 by nozzle and WSK-M4G253-B2 by ADFOSY.

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 10 04	Activated	W. Scholz

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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.

3.4	COLOR	Black or as specified on Engineering drawing	
		B1	B2
3.5	SOLIDS, %, min (FLTM BV 150-10)	99	98
3.6	ASH, %, max (FLTM BV 150-10)	30	22
3.7	DENSITY AT 23 C, kg/L, max (ASTM D 1475)	1.45	1.43
3.8	VISCOSITY AT 23 C, s (FLTM BV 103-01, line pressure 1 bar, nozzle diameter 2 mm)		
3.8.1	As Received	15 - 90	70 - 120
3.8.2	After Aging, max (120 h at 30 +/- 2 C)	120	150
3.9	STORAGE STABILITY (From date of receipt at Ford Motor Company)		6 months

When stored in sealed unopened containers out of direct sunlight at ambient temperatures between 5 and 32 C.

3.10	FLEXIBILITY AFTER AGING (FLTM BV 153-02, Method D, except test panels 300 x 100 x 0.8 - 0.9 mm, prepared according to FLTM BV 150-11, "Normal Grade", aging at 80 +/- 2 C, mandrel diameter 100 mm)	No chipping, no loss of adhesion

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3.11	COLD ADHESION AFTER AGING (FLTM BV 153-04, Method A, except test panels 300 x 100 x 0.8 - 0.9 mm, prepared according to FLTM BV 150-11, Normal Grade", 14 d aging at 80 +/- 2 C, - 30 +/- 1 C, mandrel diameter 100 mm)	No chipping, no loss of adhesion

3.12 CORROSION RESISTANCE

The material shall protect the test panel from corrosion. No corrosion or blistering at the borderline sealer/EC/steel.

Test Method:

- Apply 250 x 30 x 2 mm ribbons of material under test to 300 x 100 x 0.8 - 0.9 mm oiled test panels prepared according to FLTM BV 150-11, "Normal Grade".
- Condition for 10 minutes at 23 +/- 2 C and expose in a mechanical oven at a metal temperature of 93 +/- 2 C for 1 minute. The heating up time to reach this temperature shall not exceed 10 minutes.
- After 1 h at 23 +/- 2 C wash, phosphate, electrocoat and cure test assemblies under normal production conditions.
- Expose separate test assemblies to curing conditions according to FLTM BV 150-05, Table 1, Phase 2 and 3:
  a. min curing cycle
  b. max curing cycle.
- After 24 h at 23 +/- 2 C expose test assemblies to a salt spray fog according to ASTM B 117 for 480 h.
- Remove approximately 50 % of material and check for corrosion.

3.13 WASH AND PHOSPHATING SOLUTION RESISTANCE

No evidence of dissolution of material or lifting from panel, no cracking or chipping.

Test Method:

- Specimen preparation according to para 3.12, test method, para 1 and 2.
- After conditioning for 1 h at 23 +/- 2 C expose test assemblies one after another in each wash and phosphating solutions of the affected plant where this material is to be used and maintain for 15 minutes at 60 +/- 1 C.

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