



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

ADHESIVE, POLYURETHANE, ONE COMPONENT,
MOISTURE CURING, MEDIUM STRENGTH, WHITE
ADHESIVE, POLYURETHANE, ONE COMPONENT,
MOISTURE CURING, HIGH STRENGTH, BLACK

WSK-M2G370-A

WSK-M2G370-A2

1. SCOPE

The materials defined by these specifications are solvent free one component adhesives based on polyurethane. They cure at room temperature in the presence of moisture.

2. APPLICATION

These specifications were released originally for material used for special vehicle applications e.g. bonding of high roof to body. The material is to be applied to dry, clean and painted surfaces.

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 INFRARED SPECTROPHOTOMETRY AND/OR THERMAL ANALYSIS

Ford Motor Company, at its option, may conduct infrared and/or thermal analysis of material/parts supplied to these specifications. 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.

Date	Release No.	Release/Revision	
1993-06-01	EP00E10258817000	Released	B. Lange

WP 3948-a

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3.4	UNCURED MATERIAL PROPERTIES	A	A2
3.4.1	Color	White	Black
3.4.2	Solids, %, min (FLTM BV 150-10)	95	98
3.4.3	Ash, %, max (FLTM BV 150-10)	14	6
3.4.4	Viscosity at 23 C, s, +/- 25 (FLTM BV 103-01, 2 mm orifice, 2.8 bar)		
3.4.4.1	As Received, max	185	500
Note: All samples shall produce also flow diagrams including viscoelasticity established by using rotational test equipment as Physica, Haake, Eprecht, Rheometrix etc. to identify characteristic of material.			
3.4.4.2	After Ageing, s, max (14 d at 30 +/- 2 C)	210	540
3.4.5	Density at 23 C, range (A & A2) (ASTM D 1475)	1.15 - 1.25 kg/L	
3.4.6	Resistance to Sagging		
No flow, blisters or other deleterious effects.			
Test Method:			
. Apply to 150 x 150 x 0,8 mm test panels prepared according to FLTM BI 103-02, Method B, center a bead of test material in dimensions of 100 x 8 x 8 mm.			
. Mount test specimen vertically in a fixture with the long axis of the adhesive bead in horizontal position.			
. Expose test assembly for 20 minutes in a mechanically convected air dry oven maintained at 110 +/- 2 C.			
3.4.7	Cure Rate, h, max	A	A2
A 150 x 6 mm diameter bead shall be tested.			
	Tack free	2	1
	Completely cured	72	48



3.5 CURED MATERIAL PROPERTIES A A2

3.5.1 Shrinkage after curing, %, max 8 3

Test Method:

- Apply to a release paper two beads of material under test in dimensions of 50 x 8 x 5 mm and determine exact volume by water displacement method.
- Age test samples at 80 +/- 2 C for 14 days.
- Determine exact volume of material under test once again and calculate volume shrinkage.

3.6 PAINT COMPATIBILITY

The supplier must certify compliance to all requirements of these specifications (test values, not nominal values). The adhesive must be compatible with all related materials, e. g. topcoat, clearcoat, polyurethane, etc. For additional requirements see para 3.11.

	A	A2
3.7 WATER ABSORPTION, %, max (FLTM BV 153-07, substitute heat treatment by 48 h at 23 +/- 2 C)	2	1

3.8 SHEAR STRENGTH, MPa, min	0.5	2.5
	(except 3.8.1 at 90 +/- 2 C)	

Test Method:

- Test panels are to be prepared by using production enamels (for metal panels as well as SMC).
- Dimension of SMC specimens: 80 x 30 mm, body steel specimens: 100 x 25 x 1.3 (+/- 0.5 mm).
- Apply adhesive to painted surface. After 10 minutes at 23 +/- 2 C, assemble specimens according to Fig. 1.
- Allow adhesive to cure 48 h for WSK-M2G270-A and 120 h for WSK-M2G270-A2 at standard atmosphere (23 +/- 2 C and 50 % relative humidity).
- Determine shear strength at a speed of testing of 25 mm/minute. A minimum of 5 specimens shall be tested and the average result shall conform to the requirement specified above.