



**TAPE ADHESIVE, EPOXY BASED, STRUCTURAL, LOW-EXPANDING,
HIGH TEMPERATURE HEAT CURING, WELDABLE, FLOW
WASH RESISTANT**

WSB-M2G383-A1

**TAPE ADHESIVE, EPOXY BASED, STRUCTURAL, MEDIUM-EXPANDING
HIGH TEMPERATURE HEAT CURING, WELDABLE, FLOW
WASH RESISTANT**

WSB-M2G383-A2

1. SCOPE

WSB-M2G383-A1: The material defined by this specification is an epoxy resin base, high temperature heat curing, 0 - 15% expanding, structural weldable tape adhesive.

WSB-M2G383-A2: The material defined by this specification is an epoxy resin base, high temperature heat curing, 30 – 75% expanding, structural weldable tape adhesive.

2. APPLICATION

These specifications were released originally for material used at high temperature curing schedules (minimum metal temperatures of 10 minutes at 170 °C) for bonding metal-to-metal body structures on body in white. Optimal adhesion strengths are achieved at 0.8 mm adhesive bondline thicknesses.

3. REQUIREMENTS

3.1 APPROVED SOURCES

This specification requires the use of approved sources. Only the sources identified on the Ford Approved Source List (ASL) can be used when this specification is listed on the drawing, CAD file, or other documents. The list of approved sources is located within Ford at www.mats.ford.com or available externally through a Ford Materials Engineer.

3.2 DIMENSIONS

Cross sections/dimensions as specified on the Engineering Drawing.

3.3 SOLIDS

(ASTM D2834, except heat at 100 +/- 2 °C
for 3 h in a mechanical convection oven)

98% min

3.4 ASH

(ISO 3541, Method A, 760 +/- 30 °C, based on solids weight)

Ash content for any one supplier shall be +/- 3% based on the recorded ash of their original approved production sample. Refer to para 4.5 for additional information.

3.5 WEIGHT PER VOLUME

(ASTM D816)

The weight tolerance for any one supplier shall be +/- 0.01 kg/L, based on the recorded weight of their original approved production sample. Refer to para 4.4 for additional information.

Date	Action	Revisions	Rev. 04
2016 10 17	Revised	See Summary of Revisions	S. Short, NA
2014 12 17	Revised	Removed A3	L. Sinclair, NA
1995 01 15	NB00E10361355001	Released	D. D. Gregorio, E. Rezendes



- 3.6 FLASH POINT** 205 °C min
(ASTM D1310, tag open cup)
- 3.7 CONE PENETRATION at 25 °C**
(ASTM D217, 150 g total weight)
- Initial and after material is aged 72 h at 45 +/- 2 °C.
- The core penetration tolerance for any one supplier shall be +/- 2 mm based on the recorded cone penetration of their original approved production sample. Refer to para 5.10 for additional information.
- 3.8 WASH RESISTANCE** No evidence of
(FLTM BV 116-01, Method B) material wash off or displacement
- 3.9 WELD ACCEPTANCE** Must pass
(FLTM BV 109-01, Shunt Method)
- 3.10 WELD FLAMMABILITY TEST**
(FLTM BV 114-01)
- Less than 5% of the welds shall exhibit flame and shall be self-extinguishable within 30 seconds.
- 3.11 ELECTROCOAT COMPATIBILITY** Shall not contaminate electrocoat primer bath or cause film irregularities
(FLTM BV 119-01, use current production paints as identified by the Materials Engineering Activity)
- 3.12 VOLUME EXPANSION** A1: 5 - 15%
(FLTM BV 108-02) A2: 30 - 75%
- 3.13 ADHESION, COLD IMPACT** No cracking or adhesion failure
- Test Method: Apply a ribbon of sealant material 0.8 x 12.7 x 200 mm to two 0.9 x 300 x 300 mm oily steel panels. Bake one panel to each cure schedule per para 5.3. Position panels in a horizontal attitude during material bake. After bake, condition panels at 23 +/- 2 °C for 1 h minimum. Condition the panels in a mechanical convection oven at 70 +/- 2 °C for 7 days. Condition the panels at 23 +/- 2 °C for 1 h. Place panels in the slamming apparatus (FLTM BV 101-02) at - 30 +/- 1 °C. Each panel shall be slammed a total of 10 times.
- 3.14 SHEAR ADHESION , MPa**
(SAE J1523, material bondline thickness 0.8 mm, 325 mm² bond area, material cure per para 5.3, substrates per para 5.2, jaw speed 13 mm/minute)
- 3.14.1 Normal

Condition for 30 minutes at specified temperature prior to test.

	A1	A2
Test at 23 +/- 2 °C, MPa	10	7
Test at 80 +/- 2 °C, MPa	6	5





	Test at - 30 +/- 1 °C, MPa	13	8
3.14.2	Aged, MPa	6	5

Condition for 24 h at 23 +/- 2 °C after exposure, then test at 23 +/- 2 °C.

3.14.2.1 Two weeks heat age at 90 +/- 2 °C

3.14.2.3 Two weeks humidity age at 38 +/- 1 °C
and 98 +/- 2% relative humidity

3.14.2.4 Thermal Cycle - 5 cycles

- . 4 h at 90 +/- 2 °C
- . 4 h at 38 +/- 1 °C and 98 +/- 2% relative humidity
- . 16 h at - 30 +/- 1 °C

3.14.2.5 Corrosion Resistance
(CETP 00.00-L-467, 6 weeks)

3.15 PEEL RESISTANCE (T-Peel) 1500 N/m min
(ASTM D1876, material cure per
para 4.3, substrates per para 4.2)

3.16 WATER TIGHTNESS No water leaks after 1 h

Test Method: Use two 75 x 150 mm CRS steel panels. Form one of the panels into the configuration shown in figure 1. Place a 12 x 150 x 1.5 mm strip of material on the 15 mm area of the formed panel. Weld this panel to the flat panel placing one weld at each end (12 mm from the edge). Immerse the entire fixture into a 50 °C constant temperature water bath for 20 minutes. Remove from bath and bake at material cure schedules per para 4.3. The fixture should remain in an upright position (i.e. funnel end up) during the baking process. After bake, condition at 23 +/- 1 °C for 1 h. Seal each end of the funnel end of the fixture to form a trough. Place fixture in a vise grip, trough side up. Fill the trough with water at 23 +/- 1 °C. Aim a 5 mm diameter air nozzle set at 0.2 MPa line pressure into bottom of fixture and make lengthwise passes along bondline for 30 seconds. Hold air nozzle approximately 25 mm from bottom of fixture. No air should pass through adhesive material. Allow fixture to sit for 1 h at 23 +/- 1 °C while watching for water leaks at bottom of fixture.

3.17 STORAGE STABILITY

Material shall be stored below 38 °C, away from all sources of heat and sunlight. Under these storage conditions, the minimum shelf life of the material shall be 3 months. The material shall not block, harden or become tacky and must be capable of achieving minimum baked properties as required by this specification. When these materials are stored at temperatures below 23 °C, they shall be conditioned at room temperature prior to application. Adequate conditioning permits the material to retain its optimum application properties.

3.18 HANDLING

May be minimally tacky but must be handleable without leaving residue on the gloves of the operators.

3.19 FOGGING