



ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

PERFORMANCE, STRUCTURAL ADHESIVE, REPAIR	WSK-M11P47-A1
PERFORMANCE, STRUCTURAL ADHESIVE, 0.1 - 0.3 mm GAP	WSK-M11P47-A2
PERFORMANCE, STRUCTURAL ADHESIVE, 0.3 - 7 mm GAP	WSK-M11P47-A3
PERFORMANCE, STRUCTURAL ADHESIVE, 0.1 - 0.3 mm GAP	WSK-M11P47-A4

1. SCOPE

These specifications define the performance requirements for solvent free, epoxy resin and epoxy/PVC blend based, structural metal-to-metal adhesives as follows:

WSK-11P47-A1: Two component materials to be used for production repair as well as dealer repair (see 5.1),

WSK-11P47-A2: One component material, low viscose, airless and/or ADFOSY sprayable, E-coatable, induction heat precurable, oven curing (see 5.1).

WSK-11P47-A3: One component material, pumpable, warm bead applied and oven curing (see 5.1).

WSK-11P47-A4: One component material, pumpable, high viscose, cold bead or ADFOSY applied pregellable and oven curing (see 5.1).

2. APPLICATION

These specifications were released originally to provide lifetime structural bonding for body components such as inner and outer panel (hem flange) of doors, rear door lock reinforcement, roof panel and pillar, hood, deck lid etc. made from cold rolled as well as precoated steel.

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 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 11 02	EP00E10258829000	Revised A4	B. Lange
1992 10 01	EP00E01763082000	Added A4	B. Lange
1991 03 01	EP00E01089482000	Released	B. Lange

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3.3 SYSTEMS COMPONENTS

3.3.1 Substrates

Cold rolled steel as specified on engineering drawing.
Panel thickness: 0.8 mm unless otherwise specified.

Note: If any other steel, such as precoated with Zn, Zn/Ni, Duplex, galvanized, galvanealed, etc. is used for manufacturing, the adhesive has to be tested according to this specification on these substrates.

3.3.2 Preparation of Substrate

WSK-M11P47-A1: Sanded (ground), clean and degreased,

WSK-M11P47-A2 to A4: According to FLTM BZ 150-11, normal grade, unless otherwise specified.

3.3.3 Adhesives, One or Two Component (see 5.1)

Suitable to meet the requirements of these specifications or as specified on engineering drawing.

3.3.4 Adhesive Application Temperature

WSK-M11P47-A1: 23 +/- 2 C,

WSK-M11P47-A2: 23 +/- 2 C,

WSK-M11P47-A3: 80 +/- 2 C,

WSK-M11P47-A4: 23 +/- 2 C.

3.3.5 Adhesive Coating Thickness

WSK-M11P47-A1: X = 3 mm, unless otherwise specified

WSK-M11P47-A2: X = 0.2 mm, unless otherwise specified

WSK-M11P47-A3: X = 3 mm, unless otherwise specified

WSK-M11P47-A4: X = 0.2 mm, unless otherwise specified

3.3.6 Curing Conditions

WSK-M11P47-A1: 48 h at 23 +/- 2 C and 30 minutes at 80 +/- 2 C

WSK-M11P47-A2 to A4: According to FLTM BV 150-05, Table 1, min and max curing cycle (separate test specimens for each cycle).



3.4 PERFORMANCE PROPERTIES OF PRECURED ADHESIVE

3.4.1 Wash and Dip Tank Resistance (A3 only)
(Also A4, except after pregelling per
FLTM BU 119-01)

There shall be no evidence of material wash-out or displacement.

Test Method:

- . Apply two parallel (X = see 3.3.5) mm x 10 mm beads of adhesive with 50 mm (edge) distance from each other to a 300 x 300 x 0.8 mm body steel panel.
- . No precuring, but pregelling for WSK-M11P47-A4 per FLTM BU 119-01, induction heat with ? s hold time at ??? +/- 5 C.
- . Position the panel horizontally and maintain a spray of water at a temperature of 55 +/- 2 C using a jet spray (Spraying System Co., Nozzle No. 1/2 GG-25 Full Jet) at 200 kPa. Direct the spray at a distance of 250 mm between the two beads of adhesive for 1 minute.

	A1	A2
3.4.2 Green Shear Strength, MPa, min (FLTM BV 154-03)	0.1	1.0

Test Method:

- . Prepare test specimens (body steel quality per para 3.3.1 of specification) according to section A, para 1 to 3 of FLTM BV 154-03.
- . Precure test specimens for:

WSK-M11P47-A1: 2 h at 23 +/- 2 C.

WSK-M11P47-A2: Induction heat with 5 s hold time at 185 +/- 5 C.

Note: Induction heating to be done according to FLTM BU 119-01 (temperatures mentioned refer to adhesive temperature, not substrate temperature).
- . Condition for 2 h at 23 +/- 2 C.
- . Determine shear strength according to Method B of FLTM BV 154-03.