ADHESIVE, EPOXY, SOLVENT FREE, 180 °C CURING 80 °C APPLICABLE, METAL/METAL, STRUCTURAL — **WSK-M2G329-A**

ADHESIVE, EPOXY, SOLVENT FREE, 180 °C CURING 80 °C APPLICABLE, METAL/METAL, STRUCTURAL — **WSK-M2G329-A2**

ADHESIVE, EPOXY, SOLVENT FREE, 180 °C CURING 60 °C APPLICABLE, METAL/METAL, STRUCTURAL — **WSK-M2G329-A3**

1. SCOPE

The material defined by these specifications is an epoxy base, polyester modified (not for A3), mineral filled, pumpable, solvent-free and heat curing structural metal to metal adhesive. The structural adhesive physical properties are valid for an adhesive thickness from 0.3 to 7.0 mm (for A3 0.1 to 1.0 mm). Mechanical structural adhesive properties are dependent upon bondline thickness.

2. APPLICATION

These specifications were released originally for material used for bonding the roof to the body side panel. Assembling of parts to be bonded has to be possible immediately after adhesive application as well as after cooling of adhesive to 23 +/- 2 °C.

The materials are applicable on oiled surfaces with acceptable oil film weights (European applications limit the oil/pre-lubricant film weight to max 3 g/m², see Performance Specification WSK-M11P47 paragraph 3.6).

Note: Care must be taken to ensure that the local oil film weight in the area of the adhesive/sealer application does not exceed the critical limit. Monitoring of the film thickness, adequate storage of the part and/or cleaning of the surface prior to sealer/adhesive application is necessary to avoid critical film thickness values, which would then cause malfunction of the sealer/adhesive.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 COMPOSITION

Modified Epoxy, based on Bisphenol A and Bisphenol F. Curing mechanism by poly-addition.

Date	Action	Revisions
2007 02 08	Revised	Revised 2. & 3.3; Deleted 3.3.8; Inserted 3.6, 4., 4.1, 4.2 & 4.3 — W. Janitschke/B. Ütrecht
2003 01 10	Revised	Added A3, updated & renumbered — W. Janitschke
1991 03 01	Released	EP00E01089482000; Released A2 — B. Lange concurred J. Schuh

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3.3 MATERIAL PROPERTIES

3.3.1	Color		As specified by the supplier
3.3.2	Solids, min (FLTM BV 150-10)		99.0%
		A/A2	A3
3.3.3	Ash, max (FLTM BV 150-10)	40%	15%
3.3.4	Weight per Volume, max (ASTM D 792)	1.45 g/cm^3	1.3 g/cm^3

3.3.5 Viscosity at 80 °C
(for A1/A2 FLTM BV 103-01, nozzle 2 mm ID, conditioning time up to measurement: 30 minutes at test temperature. For A3 SAE J1524, rotational rheometer with 40 mm diameter parallel plates, 500 micron gap, 50 Pas^{-1} ramp, stress controlled rheometers use stress range 0-3500 Pa, strain controlled rheometers use strain range 0-100 s^{-1}, evaluate material to highest stress or strain as the formulation will allow, report material batch/lot number, identify rheometer make and model, for each test condition report, yield stress and submit plots for shear stress vs. shear rate, submit plot for viscosity vs. temperature at mid-range shear rate, each component and mixed)

		A	A2
Line pressure, kPa		280	400
3.3.5.1	As received, s	350 – 550	1600 – 2000
3.3.5.2	For A3 at 40 °C		
	Yield stress		40 – 140 Pa
	Casson Viscosity		150 – 450 Pas
3.3.5.3	After Aging (A, A2), max (7 d at 40 +/- 2 °C)		15% increase based on original value
3.3.5.4	After Aging (A3), max (7 d at 23 +/- 2 °C)		15% increase based on original value

All samples shall produce flow diagrams including viscoelasticity established by using rotational test equipment as Physica, Haake, Epprecht, Rheometrix etc. to identify characteristic of material.

		A	A2	A3
3.3.6	Cone Penetration at 23 +/- 2 °C (ASTM D 217, total mass 150 g)	7 - 8	5 – 7	30

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