Technical Data Sheet

SilGrip™ PSA518 Pressure Sensitive Adhesive

SilGrip* PSA518 Pressure Sensitive Adhesive

Description

PSA518 silicone pressure sensitive adhesive is a xylene solution of phenyl based polysiloxane gum and resin. It is supplied at 56 percent silicone solids and may be further diluted with aromatic, aliphatic or chlorinated solvents. PSA518 may be blended with SR545 resin dispersion to obtain specific performance properties. PSA518 adhesive has been found useful in coating of film and fabric substrates for manufacturing industrial pressure sensitive tapes. May be an excellent choicefor electrical insulation tapes and masking tapes used in electronic and plasma/flame spray applications due to its superior thermal stability.

Key Features and Benefits

- Wide temperature range performance, maintains good shear and tack properties at intermittent temperatures up to
550 º F
- Adhesion to a wide variety of surfaces including low energy surfaces (silicones, fluoropolymers, polyolefines)
- Resistance to moisture, weathering (ozone, sunlight), chemical (acids, alkalis, oils, flux, reverse current stripping) and biological (fungus) attack

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- Excellent balance of tack, peel adhesion, lap shear and creep resistance
- Excellent electrical properties

Typical Physical Properties

Property	Value
Silicone Solids, %	56
Specific Gravity, 25C	0.99
Viscosity @ 25º C (77º F), cps (Brookfield RVF, #6, Spindle @ 10 rpm)	65,000
Color	Light Straw
Flash Point (ASTM D93), ºC (ºF)	12 (54)
Solvent	Xylene

TYPICAL CURED ADHESIVE PROPERTIES

• Peel Adhesion(1), oz/inch	37
• Tack(2), g/cm^2	910

(1) 1.5 mil dry adhesive thickness, 1mil polyester film, 1.5% benzoyl peroxide(3), curing cycle: 10 min air dry, 90 sec at 177ºC
(2) Polyken Tack Tester, 100g weight, 0.5 sec dwell time, 0.5 cm/sec draw speed, 1.5 mil dry adhesive thickness, 1mil polyester film, 1.5% benzoyl peroxide(3), curing cycle: 10 min air dry, 90 sec at 177ºC
(3) Luperox® A98 from Elf Atochem North America, Inc.

The properties of a cured silicone adhesive are affected by several factors such as type and amount of catalyst, cure cycle, adhesive thickness and backing type and thickness. Higher catalyst concentration will increase cohesive strength of the adhesive and

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improve shear strength, but it will reduce its adhesive strength resulting in lower tack and peel values. Typical peel adhesion values for various substrates, adhesive build and benzoyl peroxide concentrations are listed in Table 1.

TABLE 1

Typical peel adhesion values of PSA518 adhesive coated tapes per ASTMD-1000:

Substrate	% BPO on Solids	Adhesive Build In mils	180° Peel oz/inch
2 mil Mylar*	0	1.5	65 to 70
2 mil Mylar	0	2.0	67 to 72
2 mil Mylar	1.0	1.5	52 to 57
2 mil Mylar	1.0	2.0	55 to 59
2 mil Mylar	2.0	1.5	50 to 53
2 mil Mylar	2.0	2.0	52 to 54
2 mil Teflon**	0	1.5	45 to 47
2 mil Teflon	0	2.0	50 to 55
2 mil Teflon	1.0	1.5	40 to 52
2 mil Teflon	1.0	2.0	42 to 45
2 mil Teflon	2.0	1.5	33 to 36
2 mil Teflon	2.0	2.0	36 to 38
3 mil Glass	0	2.3	38
3 mil Glass	2.0	2.0	27

* MYLAR is a Registered Trademark of DuPont

** TEFLON is a Registered Trademark of DuPont

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Patent Status
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Product Safety, Handling and Storage
The warranty period is 6 months from date of shipment from Momentive Performance Materials if stored in the original unopened container at 25ºC (77ºF).

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Processing Recommendations

Application

PSA518 silicone adhesive is supplied at a viscosity suitable for conventional tape coating equipment. If necessary, it may be thinned with toluene, xylene or other compatible solvents. After the adhesive is applied to the backing, it is exposed to a two step process: solvent removal and curing.

Solvent Removal

To achieve optimum adhesive properties, it is essential to optimize the drying step of the process in order to assure that the solvent is removed from the adhesive film before the curing step of the process starts. Improper drying will result in residual solvent entrapment within the adhesive. If the adhesive is then exposed to temperatures higher than 93.5º C (200ºF), decomposing peroxide catalyst can cause crosslinking reaction between solvent and adhesive through methyl groups on siloxane chains and on solvent molecules and adversely affect the properties of the adhesive. Typical temperature range for the drying step of the process is 83 ºC (180 ºF) to 90 ºC (194

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°F). A typical drying cycle is 2 minutes at 90 °C (194 °F).

Curing Process

Once the solvent is removed from the adhesive film, the peroxide cure should be initiated by exposure to heat. A typical curing cycle is 2 minutes at 165 °C (329 °F). Longer exposure time and higher temperature, up to 204 °C (400 °F), can be used without adverse effects. The exact conditions required to achieve a complete cure will depend on oven length and efficiency, peroxide type and type of substrate used, and should be established during experimental trials on the machine.

Catalysts

High purity, 98% benzoyl peroxide [(3)] in the quantity of 1 to 3% based on silicone solids, has been found to give the most consistent results in curing of silicone pressure sensitive adhesives. In applications requiring low temperature cure, 2,4 -dichlorobenzoyl peroxide, which is activated at 132 °C (270 °F), can be used. It should be noted that 2,4-dichlorobenzoyl peroxide may generate polychlorinated biphenyls during the curing process. Please refer to Code of Federal Regulations, title 40, part 761 regarding incidental PCB byproducts if 2,4- dichlorobenzoyl peroxide is utilized.

The peroxide should be dispersed in solvent before it is mixed with the adhesive. Thorough mixing of the peroxide and adhesive to achieve homogeneous dispersion is essential for consistency of finished product.

(3) Available from: Elf Atochem North America, Inc.,

Priming

In certain applications, the anchorage of the adhesive to the backing may be insufficient and the coating of a primer prior to the adhesive coating may be required.

A typical formulation for a primer may be found in Table 2 below. The formulation may need to be adjusted depending on required bath life, coating equipment and backing

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material. The primer may be coated by direct gravure, wire wound rod or other coating technique suitable for solvent based coatings, and must be cured prior to adhesive application. The curing conditions will depend on equipment capabilities, substrate type and formulation used and should be established during experimental trials on the machine.

Table 2. Typical Primer (4) Formulation

Component	Parts by Weight
SS4195A-D1	13.30
SS4191B	0.16
SS4192c	0.50
SS4259c	0.30
Solvent (5)	85.74

(4) Refer to document #CDS5511, SS4195-D1 Primer for Phenyl Based Silicone Pressure Sensitive Adhesives, for more information

(5) Typical solvents: toluene, heptane, toluene/heptane mixtures

Limitations

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Contact Information

Email

commercial.services@momentive.com

Telephone

Americas	Latin America	EMEAI- Europe, Middle East, Africa & India	ASIA PACIFIC

*SilGrip™ is a trademark of Momentive Performance Materials Inc.

+1 800 295 2392
Toll free*
+704 805 6946
Direct Number

*All American countries

Brazil
+55 11 4534 9650
Direct Number

Mexico
+52 55 2169 7670
Direct Number

Europe
+390510924300
Direct number

India, Middle East & Africa
+ 91 44 71212207
Direct number*
***All Middle Eastern countries, Africa, India,**

China
800 820 0202
Toll free
+86 21 3860 4892
Direct number

Japan
+81 3 5544 3111
Direct number

Korea
+82 2 6201 4600

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