

Silgrip\* PSA518

**Silicone Pressure Sensitive Adhesive**

**Product 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. It is particularly suitable for electrical insulation tapes and masking tapes used in electronic and plasma/flame spray applications due to its superior thermal stability.

**Key Performance Properties**

- Wide temperature range performance, maintains good shear and tack properties at intermittent temperatures up to 290 °C
- 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
- Excellent balance of tack, peel adhesion, lap shear and creep resistance
- Excellent electrical properties

**Typical Product Data**

Property	Value
Silicone Solids, %	56
Density , 25C	0.99
Viscosity @ 25° C, cps (Brookfield RVF, #6 Spindle @ 10 rpm)	65,000
Colour	Light Straw
Flash Point (ASTM D93), °C	12
Solvent	Xylene

**TYPICAL CURED ADHESIVE PROPERTIES**

Peel Adhesion <sup>(1)</sup> , g/cm	415
Tack <sup>(2)</sup> , g/cm <sup>2</sup>	910

(1) 38 micron dry adhesive thickness, 25 micron polyester film, 1.5% benzoyl peroxide<sup>(3)</sup>, curing cycle: 10 min air dry, 90 sec at 177°C

(2) Polyken Tack Tester, 100g weight, 0.5 sec dwell time, 0.5 cm/sec draw speed, 38 micron dry adhesive thickness, 25 micron polyester film, 1.5% benzoyl peroxide<sup>(3)</sup>, curing cycle: 10 min air dry, 90 sec at 177°C

(3) Luperox A98 from Elf Atochem`

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 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.

**Typical Product Data TABLE 1**

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

Substrate	% BPO on Solids	Adhesive Build In microns	180° Peel g/cm
50 micron Mylar <sup>1</sup>	0	38	725 to 780
50 micron Mylar	0	50	750 to 800
50 micron Mylar	1.0	38	580 to 635
50 micron Mylar	1.0	50	615 to 660
50 micron Mylar	2.0	38	560 to 590
50 micron Mylar	2.0	50	580 to 605
50 micron Teflon <sup>2</sup>	0	38	500 to 525
50 micron Teflon	0	50	560 to 615
50 micron Teflon	1.0	38	445 to 580
50 micron Teflon	1.0	50	470 to 500
50 micron Teflon	2.0	38	370 to 400
50 micron Teflon	2.0	50	400 to 425
75 micron Glass	0	58	425
75 micron Glass	2.0	50	300

<sup>1</sup> MYLAR is a Registered Trademark of DuPont

<sup>2</sup> TEFLON is a Registered Trademark of DuPont

**Specifications** Typical product data values should not be used as specifications.

**Instructions for Use** **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 93.5°C, 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°C to 90°C. A typical drying cycle is 2 minutes at 90°C.

**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. Longer exposure time and higher temperature, up to 204°C, 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<sup>(3)</sup> 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. 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

**Instructions for Use** **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 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<sup>(4)</sup> Formulation

<b>Component</b>	<b>Parts by Weight</b>
SS4195A-D1	13.30
SS4191B	0.16
SS4192c	0.50
SS4259c	0.30
Solvent <sup>(5)</sup>	85.74

(4) Refer to data sheet of SS4195-D1 Primer for Phenyl Based Silicone Pressure Sensitive Adhesives, for more information

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

**Handling and Safety**

Material Safety Data Sheets are available upon request from Momentive Performance Materials. Similar information for solvents and other chemicals used with Momentive Performance Materials products should be obtained from your suppliers. When solvents are used, proper safety precautions must be observed.

**Storage and Warranty Period**

The warranty period is 6 months from date of shipment from Momentive Performance Materials if stored in the original unopened container at 25°C .

**Availability**

PSA518 silicone pressure sensitive adhesive may be ordered from Momentive Performance Materials, Momentive Performance Materials sales office nearest you or an authorized Momentive Performance Materials product distributor.

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