SilGrip® High Performance Silicone PSA
SPUR+® Silylated Polyurethane PSA
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Formulating Success with Momentive PSAs
SilGrip® Silicone Pressure Sensitive Adhesives and SPUR+® Silylated Polyurethane PSAs

Around the globe and for more than 75 years, Momentive pressure sensitive adhesives (PSAs) have been helping tape and label manufacturers outpace their competition. How? Through innovative collaboration designed to produce the ideal combination of performance attributes in each tape or label product.

Our Momentive scientists have worked with industry leading tape and label manufacturers, to expertly determine the properties needed in each of their customers’ applications. Listening carefully to these industry experts, our scientists have created a versatile portfolio of PSAs, each formulated to offer a specific combination of the desired properties, such as: tack, peel adhesion, shear resistance, clean removal, high temperature stability and chemical resistance.

Application-Tailored Formulations, Expertly Produced

The same proven silicone PSA composition that Momentive pioneered in the mid-1950s is the basis for today’s SilGrip® PSA brand. Our long-standing experience, coupled with our culture of innovation, allows us to expertly tailor PSA performance properties. We know just how to manipulate the MQ resin and Polysiloxane molecular weights, their ratios, and the process of manufacture.

Our expert tailoring is equally well applied to our SPUR+® Silylated Polyurethane PSAs.

The resulting product grades within our portfolio offer a range of cure chemistries, temperature performance, coating options, and adhesive properties that can perform on a variety of substrates.

Our finely tuned engineering of PSA chemistries has been mastered by our manufacturing facilities. Not only can our customers count on the careful design of our PSAs; they can also depend on cost-effective, predictable and reproducible adhesive and release performance from our PSAs.

*SilGrip and SPUR+ are trademarks of Momentive Performance Materials Inc.
Versatile Performance Attributes

Customers choose Momentive silicone-based PSAs over organic PSAs because they typically deliver greater flexibility, longer-lasting bonds and better seals even in harsh chemical environments and extreme temperatures. SilGrip* and SPUR+* PSAs may perform effectively in the following ways:

- Well balanced tack and peel adhesion that can promote extended high-temperature lap shear performance
- Effective adhesion to low surface-energy films and fabric substrates
- Solvent resistance to retain key adhesive properties in the presence of solvents, oils and other fluids
- Chemical stability in many harsh environments
- Electrically insulating performance (Dielectric Strength ~400V/mil)
- Clean removal in diverse applications at extreme temperature
- Resistance to moisture, sunlight and weather extremes
- Resistance to biological attack (fungus, mildew)
- Clarity/Optical properties
- Less aggressive adhesion than organic adhesives at room temperature, while retaining their performance at high and low temperatures

Wide Range of Substrates

Momentive’s SilGrip and SPUR+ PSAs are typically applied to substrates via web coating equipment. Our portfolio works effectively with a noteworthy range of substrates, including but not limited to:

- Polyester
- Polyimide
- PTFE
- Glass Cloth

Exceptional Breadth of Application

SilGrip and SPUR+ PSAs are used to manufacture a diverse number of tape and label products:

- Splicing Tapes
- Electrical Insulation Tapes
- Electronic Masking Tapes
- Plasma / Flame Spray Masking Tapes
- Impregnating binder for rigid and flexible Mica
- Heat Shield/Seal Tape
- Vibration Damping Tape
- EMI/RFI Shield Tape
- Industrial Masking Tape

Many healthcare products may also benefit from SilGrip and SPUR+ PSAs. Potential applications in healthcare may include:

- Self-adhesive bandages
- Medical sensor/device adhesives
- Diagnostic microtiter tapes

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Our collaboration with you is aimed to ensure that your products release and adhere as specifically and consistently as required. Our team of pressure sensitive adhesive experts are available to help with your next challenge.
Best Practices: Manufacturing Your High-Performance Tape or Label with SilGrip* Silicone PSAs and SPUR+* Silylated Polyurethane PSAs

*SilGrip and SPUR+ are trademarks of Momentive Performance Materials Inc.
**Primer System:**

If a corona treatment or chemical edging is not sufficient to secure a good anchorage on filmic substrates or on PTFE glass fabric, depending on the substrate or the construction, in some cases a primer may be needed to ensure a proper adhesion of the adhesive layer. Momentive has silicone-based primer coatings that can be applied prior to the PSA.

We have developed two primer coatings (multi-components) for application depending on the chemical structure of the PSA:

- SilForce® SS4191 System: Primer, designed for methyl based PSAs
- SilForce SS4195 System: Primer, designed for phenyl based PSAs

**Curing Process:**

In order to achieve optimal performance of the PSA we add into the bath a peroxide at the level 1-3% and utilize a drying process with two temperature profiles. In the first section of the oven we flash off the solvent usually at a temperature around 83-90°C; then we use a higher temperature, in the range of 165-204°C, to crosslink the adhesive with the free radical generated by the peroxide in-situ.

**Fine Tuning Final Properties:**

Crosslinking of the silicone-based PSA will increase the temperature, chemical and shear resistance of the finished product. Peroxide curing may also partially decrease tack and peel properties. Therefore, curing with peroxide is carefully engineered to achieve the desired final properties.

To increase cohesion and shear strength we may add SilGrip® SR545. Up to 20 percent of the final formulation may consist of this MQ resin.

For PSAs not requiring elevated temperature performance, in some cases only the flash-off step is needed. Such grades exhibit higher tack, but lower shear strength and chemical resistance.

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<table>
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<tr>
<th>Grades</th>
<th>Reaction Type</th>
<th>Solid Content %</th>
<th>Adhesion Strength</th>
<th>Task</th>
<th>Viscosity 25ºC cp</th>
<th>Key Features</th>
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<th>Grades</th>
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<tr>
<td>PSA110</td>
<td>PSA110</td>
<td>40</td>
<td>5 g/inch(1)</td>
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<td>70 g/inch(2,3)</td>
<td>Low peel adhesion, stable peel adhesion, excellent anchorage</td>
<td>Low peel adhesives for protective film</td>
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<td>PSA150</td>
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<td>PSA170</td>
<td>PSA170</td>
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<td>950 g/inch(4)</td>
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<td>380 g/inch(4)</td>
<td>Pre-blended fluorinated addition cure silicone PSA</td>
<td>Polymeric tapes, hypochlorites tapes and electronic tapes</td>
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Notes:
1. All data are measured with a PSR1000 probe tack tester.
2. Polyken probe tack tester.
3. Silicon rubber panel, gap gasket.
4. Polymeric tape, 100 g/inch, 0.3 m wide, 3.78 m length.
5. Excellent long term heat aging properties.
7. Excellent tack and adhesion strength.
8. Excellent tack and adhesion strength with low curing.
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*Anchorsil is a trademark of Momentive Performance Materials Inc.
SilGrip* PSA Selector Guide for Tapes

High Shear/Standard Splicing Tape
PSA590 (LD) and PSA915 Polyester and Polyimide Films

Typical Benefits:
• Good adhesion to a variety of surfaces
• High temperature shear resistance, 180°C long term, >300°C short term

Electrical Insulation Tape
PSA518, PSA610, PSA595, PSA810, PSA915 Polyimide, Glass Cloth, PTFE

Typical Benefits:
• Excellent electrical properties, high dielectric strength
• High temperature insulation (180°C insulation class, 260°C short duration)
• Low out-gassing, non-corrosive

*SilGrip is a trademark of Momentive Performance Materials Inc.
Plasma/Flame Spray Tape

PSA518 and PSA6574 Silicone Rubber, Glass Cloth, PTFE, Foil

Typical Benefits:
• Extreme temperature resistance
• Clean removal
• Retention of properties vs. temperature exposure

Electronic/Industrial Masking Tape

PSA810, PSA595, PSA610 and PSA510 Polyimide, Polyester, PTFE

Typical Benefits:
• Conformable to irregular surfaces
• No “lifting” at elevated temperatures
• Clean removal
• Resistant to solder heat, gold plating, hot air leveling
Additives

**SR545:** MQ resin that can be considered for use for increased peel and cohesion (5-20%)

**SRC18:** catalyst for mica and laminating processes

Mica Tapes & Sheets

**PSA5080:** excellent MQ resin/Gum blend to consider for flexible mica tapes

**PSA590 (LD):** low viscosity material for better impregnation

Laminating

**PSA6573A:** when dried at room temperature and cured, an excellent candidate to consider for thermal sealing without catalyst (w/o catalyst)

**PSA529:** low viscosity and low tack cure with SRC18 at room temperature

PTFE Glass Cloth

**PSA518:** excellent grade to consider for high temperature performance

**PSA595:** general purpose, can be considered for “first quality” PTFE fabrics
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