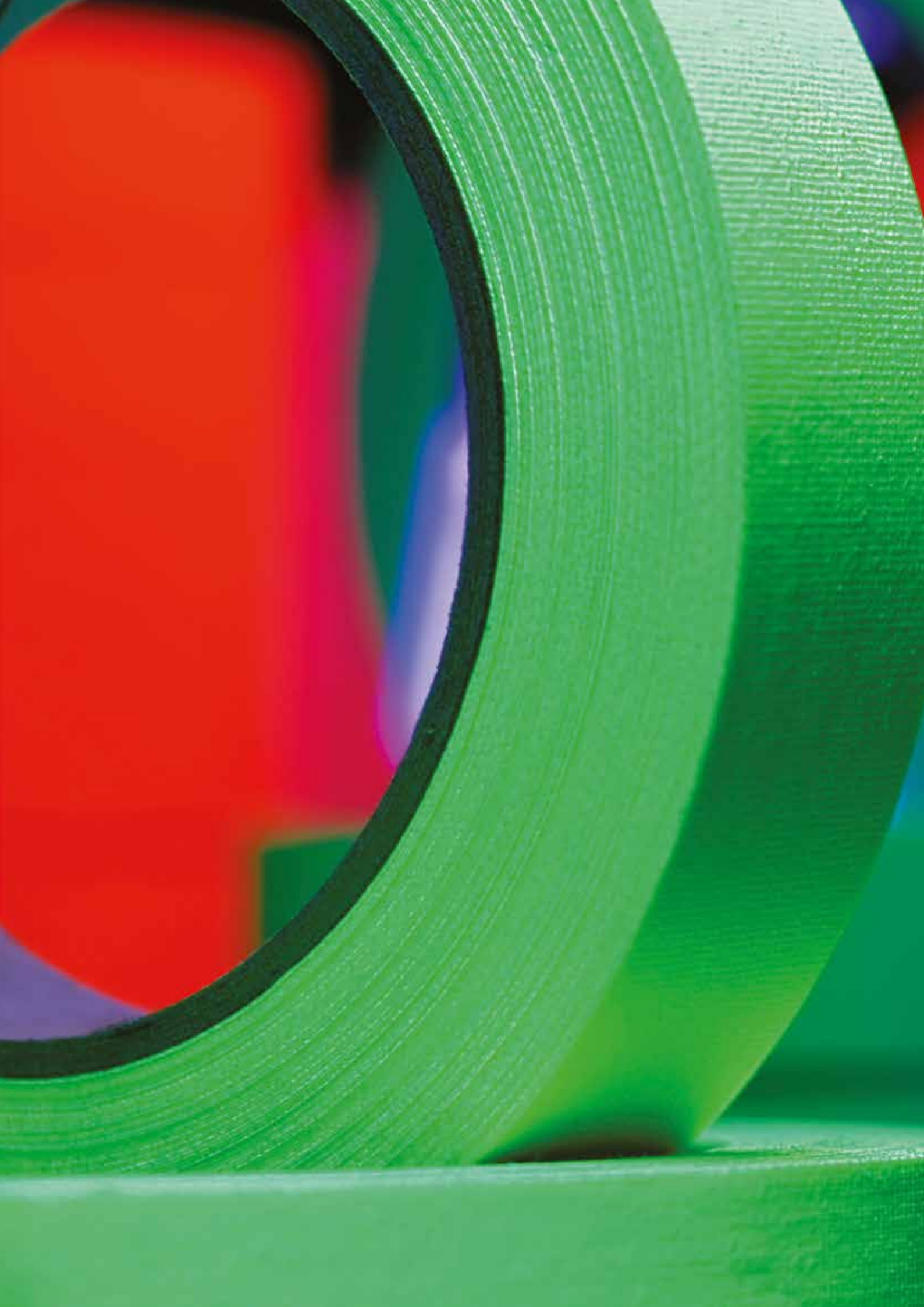
SilGrip* High Performance Silicone PSA

SPUR+* Silylated Polyurethane PSA



MOMENTIVE™

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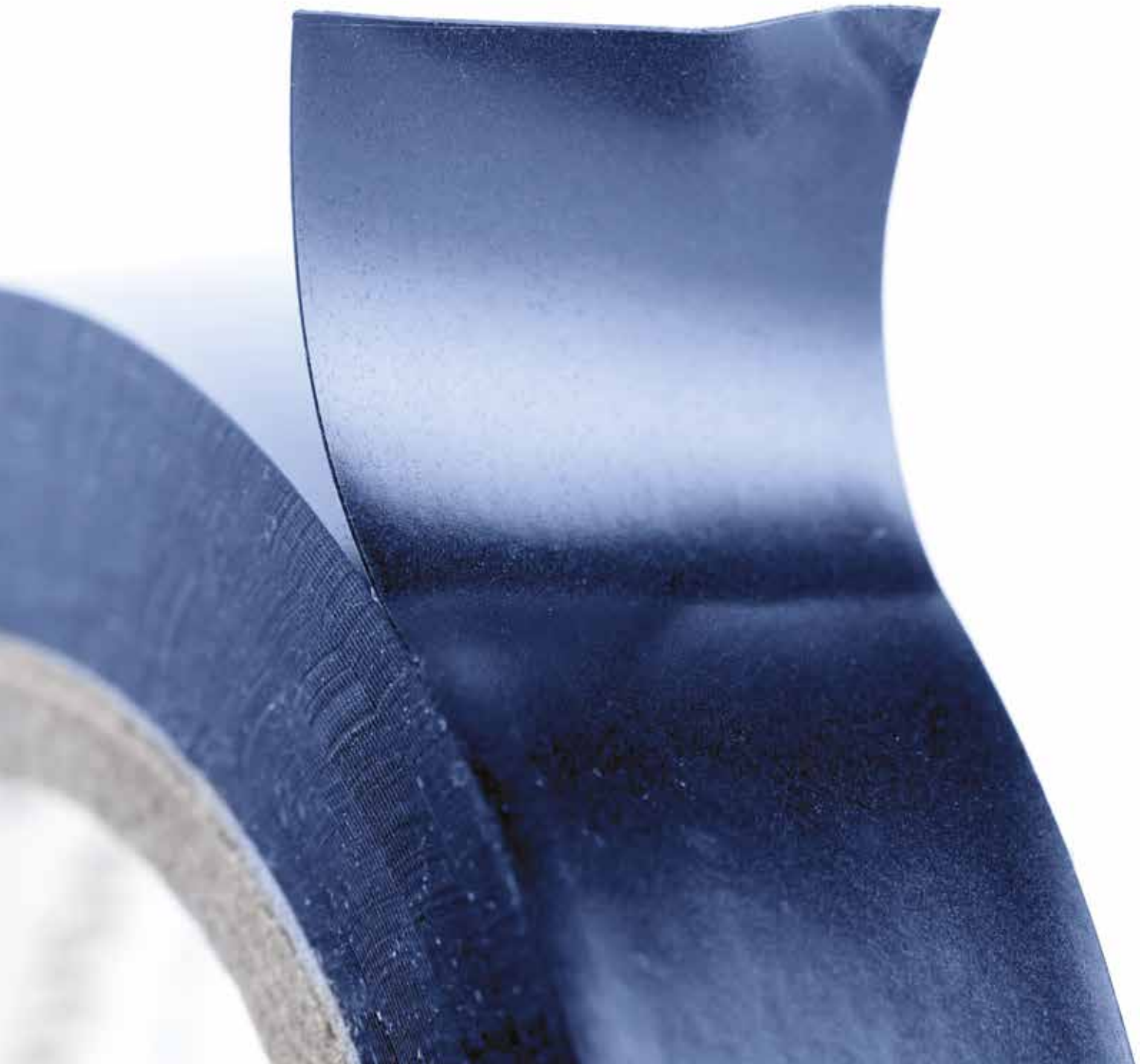
Formulating Success with Momentive PSAs



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.

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

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

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.

*SilForce and SilGrip are trademarks of Momentive Performance Materials Inc.

	Grades	Reaction Type	Solid Content %	Adhesion Strength	Tack	Viscosity (25°C) cp	Key Features	Suggested Application	Grades
Methyl Type Silicones PSA (Addition Cure)	SilGrip* PSA110	Addition Cure	40	5 g/inch (1)	70 g/cm² (2)	13,000	Low peel adhesion, stable peel adhesion, excellent anchorage	Low peel adhesion for protective film	PSA110
	SilGrip PSA150	Addition Cure	40	700 g/inch (1)	270 g/cm² (2)	5,000	Low migration, stable peel adhesion, excellent anchorage	Medium to high peel for protective film	PSA150
	SilGrip TSR1512	Addition Cure	60	900 g/inch (3)	700 g/cm² (4)	40,000	Pre blend Pt catalyst addition cure Silicone PSA; excellent adhesion on fluorocarbon resin, polyimide, silicone	Polyimide tapes, fluorocarbon tapes and electronics tapes	TSR1512
	SilGrip TSR1516	Addition Cure	60	1000 g/inch (3)	300 g/cm² (4)	15,000	Pre blend Pt catalyst addition cure Silicone PSA; excellent adhesion on fluorocarbon resin, polyimide, silicone	Polyimide tapes, fluorocarbon tapes and electronics tapes	TSR1516
Methyl Type Silicones PSA	SilGrip PSA590	Peroxide Cured	60	1134 g/inch (5)	870 g/cm² (6)	18,000	Excellent tack and adhesion strength	Standard adhesion tape; Splicing tape	PSA590
	SilGrip PSA590LD	Peroxide Cured	60	1135 g/inch (5)	870 g/cm² (6)	18,000	Excellent tack and adhesion strength with low dusting	Standard adhesion tape; Splicing tape	PSA590LD
	SilGrip PSA595	Peroxide Cured	55	1106 g/inch (5)	730 g/cm² (6)	57,000	Thermal stability; clear removable; creep resistance	Masking and electrical insulation tape in electronic assembly	PSA595
	SilGrip PSA510	Peroxide Cured	60	992 g/inch (7)	700 g/cm² (8)	72,000	Good shear and tack, wide temp range, cost effective	Tapes for shoes masking, electronic assembly masking tape, insulation tape	PSA510
	SilGrip PSA610	Peroxide Cured	59	1106 g/inch (7)	740 g/cm² (8)	90,000	Excellent balance of tack and peel adhesion assembly masking, flame and plasma spray masking, EMI/RFI shielding ,and splicing operations	Tapes for electrical insulation, electronic	PSA610
	SilGrip PSA810	Peroxide Cured	61	1020 g/inch (7)	600 g/cm² (8)	85,000	High thermal stability; High temp lap shear; Clean removable	Tapes for heat sealing,masking and electrical insulation. Thermal spray masking tape	PSA810
	SilGrip PSA915	Peroxide Cured	60	1701 g/inch (9)	780 g/cm² (10)	22,000	Excellent long term heat aging properties; excellent balance of tack and peel adhesion	Tapes for splicing operations,masking and electrical insulation, thermal spray masking, release tape	PSA915
	SilGrip PSA5080	Peroxide Cured	60	1106 g/inch (9)	1300 g/cm² (10)	60,000	Excellent balance of adhesion and dry/tack free	Mica product	PSA5080
Phenyl Type Silicones PSA	SilGrip PSA518	Peroxide Cured	56	1049 g/inch (11)	910 g/cm² (12)	65,000	Medium phenyl content, excellent low to high temperature performance	Electrical insulation tapes and masking tapes used heat sealing, in electronic and plasma/flame spray application, anti friction tape, heat shield tape	PSA518
	SilGrip PSA6574	Peroxide Cured	55	2693 g/inch (13)	1420 g/cm² (14)	17,000	High phenyl content, excellent low to high temperature performance	Electrical insulation tapes and masking tapes used in electronic and plasma/flame spray application, extremely high and low temperature applications and transfer tapes	PSA6574
	XR37-B6722	Peroxide Cured	55	1505 g/inch (15)	400 g/cm² (16)	10,000	High Phenyl content, excellent low to high temperature performance, possible to use TPR6600 Silicone Release Coating System	Electrical insulation tapes and masking tapes used in electronic and plasma/flame spray application, extremely high and low temperature applications and transfer tapes	XR37-B6722
Silicones Adhesive	SilGrip PSA6573A	Peroxide Cured	60	2183 g/inch (17)	220 MAX g/cm² (18)	19,000	Low tack at room temperature, high shear and creep resistance	Adhesion to a wide variety of surfaces including low energy surfaces (silicones, fluoropolymers, polyolefines)	PSA6573A
	SilGrip PSA529	Peroxide Cured	55	2325 g/inch (19)	440 g/cm² (20)	2,500	Room cure with SCR18 catalyst, wide temperature range performance	Adhesion to a wide variety of surfaces including low energy surfaces (silicones, fluoropolymers, polyolefines)	PSA529
	SPUR+ PSA 3.0	Condensation Cured	41	1130 g/inch (21)	400 g/cm² (22)	7,000	Excellent solvent resistance to chemicals	Laboratory tape; floor marking tape	SPUR+ PSA 3.0
Silicones Additives	SilGrip SRC18	-	-	-	-	-	Catalyst for room temperature cure	Often used with PSA6573A & PSA529	SRC18
	SilGrip SR545	-	60	-	-	11	Increase peel and shear strength	Can be mixed in any ratio with all kinds of silicone PSA	SR545
Silicones Primer	SilGrip SR500	Condensation cured	9-13	-	-	2	Full function primer/combination silicone or silicone PSA tape. Also suit for fluoride (such as Teflon PTFE) as adhesion primer	Suitable for silicone rubber panel, gap gasket	SR500
	SilGrip SS4191	Condensation cured	28-30	-	-	-	Improve anchorage on substrate	Primer for methyl based silicone PSA	SS4191
	SilGrip SS4195	Condensation cured	28-30	-	-	-	Improve anchorage on substrate	Primer for phenyl based silicone PSA	SS4195
Release Agent for Silicones PSA	SilGrip FSR2000	Additional Cured	100	Light	-	230	Fluoro release coating for silicone PSAs	Release coating for silicone PSA like PSA6574, PSA810. Check with MPM representative for the best match	FSR2000

(1) 15-18μm dry adhesive thickness on 75μm polyester film. Glass plate, 20 hrs at 70°C aging, 0.3m/min, 180° peel angle
(2) 15-18μm dry adhesive thickness on 75μm polyester film. Polyken probe tack tester
(3) 40μm dry adhesive thickness on 50μm polyimide film. Stainless steel plate, 0.3m/min, 180° peel angle
(4) 40μm dry adhesive thickness on 50μm polyimide film. Polyken probe tack tester
(5) 2 mil dry adhesive thickness, 1mil polyester film, BPO 1.5%, 10 min air dry, 90 sec at 177°C, stainless steel, 12 inch/min, 180° peel angle
(6) Polyken probe tack tester, 100g weight, 0.5 sec dwell time, 0.5cm/sec draw speed, 2 mil dry adhesive thickness, 1mil polyester film
(7) 40-50μm dry adhesive thickness on PET film, BPO 1.5-2.0%, stainless steel panel, 12 inch/min, 180° peel angle
(8) 40-50μm dry adhesive thickness on PET film, BPO 1.5-2.0%, Polyken probe tack tester
(9) 180° peel angle, stainless steel, 300 mm/min, 20 min dwell , 38μm dry adhesive thickness, BPO 2%, 10 min air dry, 2 min at 177°C
(10) Polyken probe tack tester, 1000g/cm2 °F° weight, 1cm/sec, 1 sec contact time, 38μm dry adhesive thickness
(11) 1.5 mil dry adhesive thickness, 1mil polyester film, BPO 1.5%, 10 min air dry, 90 sec at 177°C
(12) Polyken probe tack tester, 100g weight, 0.5 sec dwell time, 0.5 cm/sec draw speed, 1.5 mil dry adhesive thickness, 1 mil polyester film
(13) 2 mil dry adhesive thickness, 1 mil polyester film, uncatalyzed, curing cycle: 10 min air dry, 90 sec at 177°C
(14) Polyken probe tack tester, 1000g weight, 1sec dwell time, 1 cm/sec draw speed, 2 mil dry adhesive thickness, 1mil polyester film
(15) 30μm dry adhesive thickness on 50μm polyimide film. Bakelite plate, 0.3m/min, 180° peel angle
(16) 30μm dry adhesive thickness on 50μm polyimide film. Polyken probe tack tester
(17) 2 mil polyester film, stainless steel, 2 mil dry adhesive build, 180° peel angle, 12 inch/min at 24°C
(18) Polyken probe tack tester, 200g load
(19) 2 mil dry adhesive thickness, 2 mil polyester film, uncatalyzed, 10 min air dry, 10 min at 150°C, stainless steel, 12 inch/min, 180° peel angle
(20) Polyken probe tack tester, 1000g weight, 1 sec dwell time, 0.5cm/sec draw speed, 2 mil dry adhesive thickness, 2 mil polyester film
(21) 25μm dry adhesive thickness on 50μm polyester film. 180° peel at 305 mm/min off stainless steel after 1 hour dwell
(22) 25μm dry adhesive thickness on 50μm polyester film. Polyken probe tack tester. 100 g/cm2 weight. 1 sec dwell time, 1 cm/sec draw speed

Note:
1. For detail test conditions, please refer to related product data sheet;
2. Typical product data should not be regarded as product standard. If you need assistance for related standard, please contact Momentive Performance Materials.
†Teflon is trademark of The Chemours Company.
*SilGrip, SPUR+ and SilForce are trademarks of Momentive Performance Materials Inc.

	PSA518	PSA529	PSA5080	PSA590	PSA595	PSA610	PSA810	PSA915	PSA950	PSA6573A	PSA6574	PSA110	PSA150
End Use Application													
Release Liner Splicing Tape				●				●					
Chute Liner Tape				●				●	●				
Electronics Masking Tape					●	●	●						
Plasma/Flame Spray Masking Tape	●						●	●	●				
Heat Seal Tape	●						●	●	●				
Electrical	●						●	●	●				
Transfer Tape											●		
Laminateing Adhesive		●								●			
Polymer Film Splicing								●	●				
Mica Tape			●										
Low Adhesion Protective film												●	●
Catalyst													
Benzoyl Peroxide	●			●	●	●	●	●	●		●		
Dichlorobenzoyl Peroxide	●			●	●	●	●	●	●		●		
SRC18		●											
Platinum Catalyst												●	●
Primer													
Methyl Primer SS4191A		●		●	●	●	●	●		●			
Methyl Phynyl Primer SS4195	●								●		●		
Anchorage Promoter													
Anchorsil*1000												●	●

*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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