

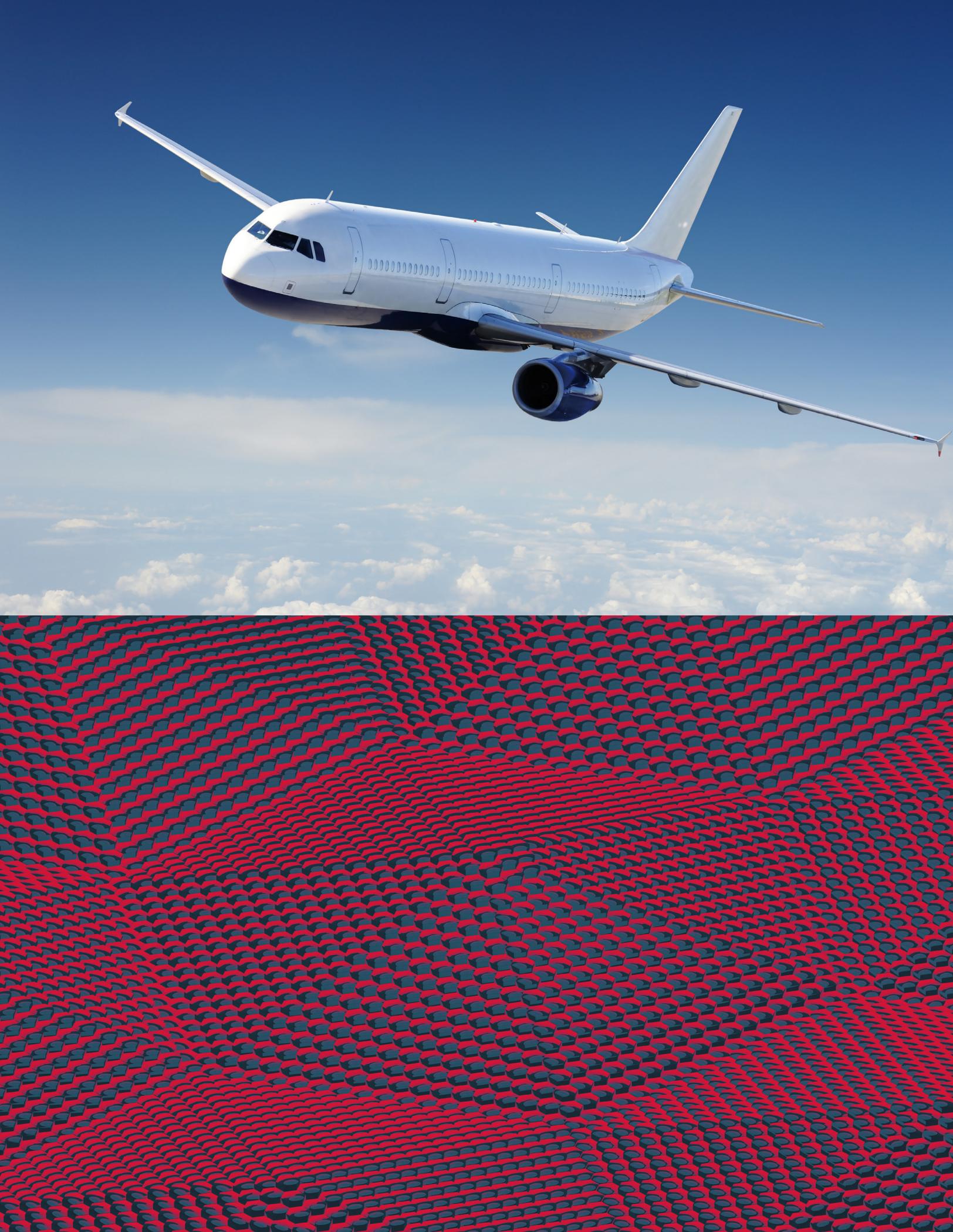
FILMS, TAPES AND RELEASE LINERS

# Choose Dow silicone PSAs for high performance

**DOW**

®





# Comprehensive offerings for high performance

## Dow is a leader in silicone-based solutions for the fast-growing PSA industry

You work to balance demands for tack, adhesive/cohesive strength and electrical properties while also facing various substrate and processing parameters. And through it all, you look for the right balance of cost and performance to be competitive. We work to design products that help you meet these needs and find that balance.

Dow silicone pressure sensitive adhesives (PSAs) offer critical advantages that cannot be matched by organic adhesives such as acrylic, natural rubber and other competing materials. The pressure sensitive adhesives in this guide offer the following high-performance silicone capabilities:

- A wide service-temperature range
- Adhesion to low-energy surfaces
- Conformability
- Clean removability
- Moisture/UV resistance
- Sound dampening/shock dampening
- Electrical insulation properties
- Much more

You will find that our high-performance line of silicone PSAs can help you make specialty tapes, labels and films better and improve your overall system success. You also can use them as independent adhesives for a variety of bonding, fastening and holding applications. They adhere to a wide range of substrates, including:

- Glass
- Silicone rubber
- Teflon film
- PTFE (polytetrafluoroethylene)
- Paper
- Silicone-varnished cloth
- Mylar PET film
- FEP (fluorinated ethylene propylene)
- Fabric
- Silicone/glass laminates
- Kapton polyimide film
- Aluminum foil
- Plastics
- Polyester
- Glass cloth
- Stainless steel

### Silicone-based solutions for customer success

Dow silicone-based solutions for pressure sensitive adhesives provide exceptional adhesive performance for specialty tapes, high-performance films and labels that cannot be matched by organic adhesives such as acrylic, natural rubber and other competitive materials.

No matter what your goals are – to innovate, grow reliably or drive costs down – we have the solutions you need.

Our more than 60 years of industry experience give us a unique understanding of the challenges you face, as well as the expertise to provide you with a total systems solution tailored to meet your needs. Choose from our wide range of pressure sensitive adhesives to find the exact solution you need to grow your business.

### Selecting the best silicone PSA for your application

Selecting the best silicone PSA for your application can be a complex undertaking. Substrate requirements; equipment

limitations; performance demands for tack, adhesion and cohesive strength and the need for release all enter into the picture. This guide will help you simplify the selection process.

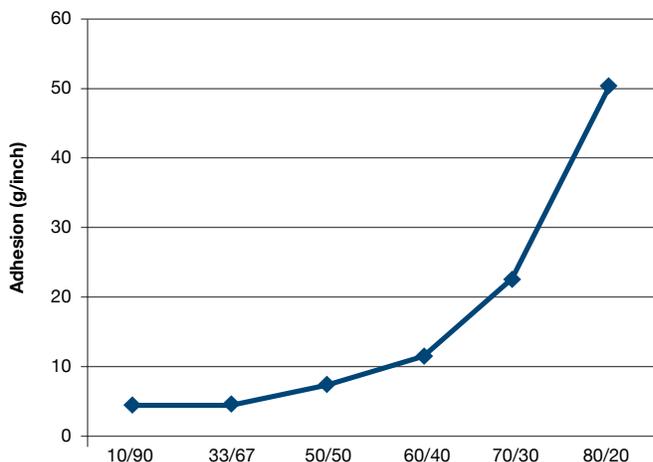
Begin with Table 1, “Application overview.” This will tell you which adhesives in our global silicone PSA line meet your basic application needs for specialty tapes, high-performance films and labels.

Then consult Table 2, “Product specifications and typical performance properties,” for more in-depth information. Table 2 will help you decide whether a peroxide- or platinum-cure silicone PSA is better for your needs; which product best meets your requirements for tack, adhesion and high-temperature hold and other needs.

To meet customers’ diverse application needs, different platinum-cure PSAs can be blended to achieve a variety of adhesion levels. The graph<sup>1</sup> on the below shows examples of blending ratios to achieve varying adhesion levels.

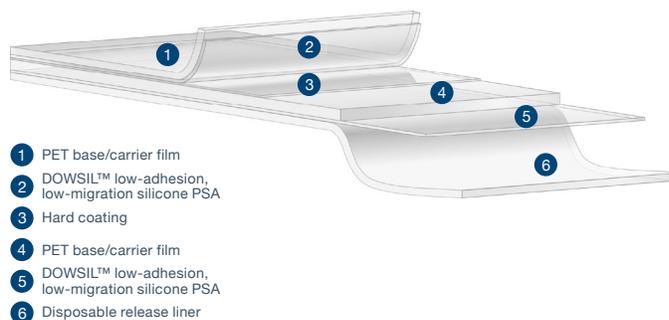
With Dow brand silicone PSAs, there are many ways to achieve the exact balance of performance properties your application requires. If none of the materials in this guide appear to meet your needs, contact your Dow technical representative for additional suggestions.

### High / low adhesion PSA blends ratio vs. adhesion



Graph<sup>1</sup> shows typical blending characteristics under Dow laboratory conditions and is intended for reference purposes only.

### Typical structure of protective film



**Table 1: Application overview – solutions for films and specialty tapes**

Masking and specialty tape solutions (high adhesion)							
typical end-use applications/Film and tape functions and	Masking tapes			Specialty tapes			
	Electrical and electronics masking and carrier tapes for industrial processing	General-purpose masking tapes for low-surface-energy applications	Thermal-spray and powder-coating masking tapes	Electrical and electronics tapes for industrial bonding and bundling applications	Heat-seal tapes for bonding heating surfaces	Electrical, electronic, heat-shielding and terminal cable insulation tapes for electronics, aerospace, aircraft and automotive	Splicing tapes for continuous processing of low-surface-energy substrates
<b>Pressure sensitive adhesives</b>							
DOWSIL™ 280A Adhesive	•	•					•
DOWSIL™ 7268 Adhesive	•	•		•		•	
DOWSIL™ 7278 Adhesive	•	•		•			
DOWSIL™ 7366 Adhesive	•	•					•
DOWSIL™ 7280 Adhesive	•	•		•			
DOWSIL™ Q2-7406 Adhesive	•			•		•	•
DOWSIL™ 7388 Adhesive	•					•	•
DOWSIL™ 7406-VLO Adhesive	•				•	•	•
DOWSIL™ 7355 Adhesive				•	•	•	
DOWSIL™ 7356 Adhesive	•			•		•	
DOWSIL™ 7357 Adhesive				•	•	•	
DOWSIL™ 7358 Adhesive	•			•	•	•	
DOWSIL™ Q2-7566 Adhesive			•		•	•	
DOWSIL™ Q2-7735 Adhesive							•
DOWSIL™ SD 4600 FC Adhesive			•		•	•	
DOWSIL™ 7657 Adhesive				•			
DOWSIL™ 7667 Adhesive							
DOWSIL™ 7636 Adhesive							
DOWSIL™ 7666 Adhesive							
DOWSIL™ 7666N Adhesive							
DOWSIL™ 7687 Adhesive				•			
DOWSIL™ 7669 Adhesive							
DOWSIL™ 7687N Adhesive				•			
DOWSIL™ 7685 Adhesive							
DOWSIL™ 7695 Adhesive							
DOWSIL™ 7645 Adhesive							
DOWSIL™ 7646 Adhesive							
DOWSIL™ 7647 Adhesive							
DOWSIL™ 7660 Adhesive							
DOWSIL™ 7651T Adhesive							
DOWSIL™ 7652T Adhesive							
DOWSIL™ 7651 Adhesive							
DOWSIL™ 7652 Adhesive							
DOWSIL™ 288 Mica Binder							•
DOWSIL™ 290 Mica Binder							
DOWSIL™ 298 Mica Binder							
<b>Solventless pressure sensitive adhesives</b>							
DOWSIL™ 2102 Adhesive							
DOWSIL™ 2110 Adhesive							
DOWSIL™ 2013 Adhesive							
DOWSIL™ 2014 Adhesive							
DOWSIL™ 2015 Adhesive							
<b>Fluorosilicone release coatings</b>							
SYL-OFF™ Q2-7785 Release Coating							
SYL-OFF™ 7786 Coating							
SYL-OFF™ 7555 Coating							
SYL-OFF™ 7792 Fluorosilicone Release Coating							
SYL-OFF™ 7795 Fluorosilicone Release Coating							
SYL-OFF™ 7798 Fluorosilicone Release Coating							

• Suggested



**Table 2: Product specifications and typical performance properties<sup>1</sup>**

Product	Cure system	Viscosity <sup>2,3</sup> , cps	Non-Volatile content <sup>2</sup> , %	Adhesion <sup>2,4,5</sup> , g/in	Probe tack <sup>2,5</sup> , g	High-temperature hold/shear, °C (°F)
<b>Pressure sensitive adhesives</b>						
DOWSIL™ 280A Adhesive	Peroxide	38,900	57	850	470	260 (500)
DOWSIL™ 7268 Adhesive	Peroxide	53,000	60	1,240	600	240 (464)
DOWSIL™ 7278 Adhesive	Peroxide	52,900	74	1,260	560	220 (428)
DOWSIL™ 7366 Adhesive	Peroxide	58,100	57	900	400	220 (428)
DOWSIL™ 7280 Adhesive	Peroxide	17,000	56	1439	217	220 (428)
DOWSIL™ Q2-7406 Adhesive	Peroxide	31,700	57	940	400	260 (500)
DOWSIL™ 7388 Adhesive	Peroxide	30,500	57	930	380	260 (500)
DOWSIL™ 7406-VLO Adhesive	Peroxide	31,300	56	940	280	260 (500)
DOWSIL™ 7355 Adhesive	Peroxide	20,700	57	1,200	430	260 (500)
DOWSIL™ 7356 Adhesive	Peroxide	23,100	56	960	470	260 (500)
DOWSIL™ 7357 Adhesive	Peroxide	28,000	57	1030	450	260 (500)
DOWSIL™ 7358 Adhesive	Peroxide	20,900	57	1,050	490	260 (500)
DOWSIL™ Q2-7566 Adhesive	Peroxide	33,000	57	910	390	288 (550)
DOWSIL™ Q2-7735 Adhesive	Peroxide	32,800	57	1,200	530	232 (450)
DOWSIL™ SD 4600 FC Adhesive	Platinum	40,000	60	810	320	300 (572)
DOWSIL™ 7657 Adhesive	Platinum	22,500	56	1,280	1,160	260 (500)
DOWSIL™ 7667 Adhesive	Platinum	55,000	70	400	N/A	N/A
DOWSIL™ 7636 Adhesive	Platinum	48,000	> 99	< 3	N/A	N/A
DOWSIL™ 7666 Adhesive	Platinum	22,500	> 97	< 3	N/A	N/A
DOWSIL™ 7666N Adhesive	Platinum	22,500	> 97	< 3	N/A	N/A
DOWSIL™ 7687 Adhesive	Platinum	45,000	70	1,800	N/A	200 (392)
DOWSIL™ 7669 Adhesive	Platinum	48,000	> 99	< 3	N/A	N/A
DOWSIL™ 7687N Adhesive	Platinum	45,000	70	1,800	N/A	200 (392)
DOWSIL™ 7685 Adhesive	Platinum	4,200	63	200-400	100-200	N/A
DOWSIL™ 7695 Adhesive	Platinum	14,600	63	1400-1800	600-800	N/A
DOWSIL™ 7645 Adhesive	Platinum	57,000	40	5	N/A	N/A
DOWSIL™ 7646 Adhesive	Platinum	56,600	99	< 3	N/A	N/A
DOWSIL™ 7647 Adhesive	Platinum	7,500	98	< 3	N/A	N/A
DOWSIL™ 7680 Adhesive	Platinum	46,900	97	< 3	N/A	N/A
DOWSIL™ 7651T Adhesive	Platinum	27,000	40	10	N/A	260 (500)
DOWSIL™ 7652T Adhesive	Platinum	10,000	40	200	30	260 (500)
DOWSIL™ 7651 Adhesive	Platinum	27,000	40	10	N/A	260 (500)
DOWSIL™ 7652 Adhesive	Platinum	10,000	40	200	30	260 (500)
DOWSIL™ 288 Mica Binder	Peroxide	51,600	61	860	N/A	N/A
DOWSIL™ 290 Mica Binder	Peroxide, silane	38,900	56.5	860	N/A	N/A
DOWSIL™ 298 Mica Binder	Peroxide, silane	38,000	60	860	N/A	N/A
<b>Solventless pressure sensitive adhesives</b>						
DOWSIL™ 2102 Adhesive	Platinum	1950	100	3	N/A	N/A
DOWSIL™ 2110 Adhesive	Platinum	2000	100	50	N/A	N/A
DOWSIL™ 2013 Adhesive	Platinum	13,100	100	1,410	620	260 (500)
DOWSIL™ 2014 Adhesive	Platinum	10,000	100	1,000	12	220 (428)
DOWSIL™ 2015 Adhesive	Platinum	17,000	99	1,300	321	260 (500)

Features/benefits	Typical applications
Good tack	Masking, plating and splicing tapes
High tack; high adhesion	Masking and plating tapes; shoe sole tape
High solid content; high adhesion	Masking and plating tapes
Good tack	Masking, plating, and splicing tapes
Ultra-high adhesion, suitable tack	Masking and plating tapes; flexibility to use with other peroxide cure PSA to adjust their adhesion
Excellent high-temperature properties; meets FDA requirements for certain food-contact applications	Splicing and plating tapes; electrical and heat-shielding specialty tapes
Very good high-temperature performance	Splicing and plating tapes
Low-silicone-volatile version of DOWSIL™ Q2-7406 Adhesive	Splicing and plating tapes; electrical and heat-shielding specialty tapes
High adhesion; good high-temperature performance; low silicone volatiles	Masking, plating, splicing and thermal-spray masking tapes
Balanced tack and adhesion; good high-temperature performance; low silicone volatiles	Plating, thermal-spray masking and high-temperature masking tapes; electrical-insulation wraps
Benzene, Toluene and Xylene (BTX) free; good high-temperature performance; low silicone volatiles	High temperature masking tapes; splicing tapes; release tapes; application requiring a balance of properties emphasizing adhesion
High tack; good high-temperature performance; low silicone volatiles	High-temperature masking and thermal-spray masking tapes, heat-seal tapes, electrical-insulation wraps
General-purpose adhesive with excellent high-temperature properties; low silicone volatiles	Electrical tapes and other very high-temperature tapes
Combines high tack and good adhesion	Transfer films and labels; masking, plating, splicing and electrical tapes. Suggested for use with release liner coated with SYL-OFF™ Q2-7785 Release Coating
Excellent high-temperature resistance	Electrical tapes and other very-high-temperature tapes
Low-temperature cure as low as 80°C (176°F); high tack and adhesion; meets FDA requirements for certain food-contact applications; low silicone volatiles	Temperature-sensitive substrates; transfer tapes and labels; suggested for use with release liner coated with SYL-OFF™ Q2-7785 Release Coating
Stable, medium-adhesion PSA for protective film application	Protective film application PSA
Low adhesion, excellent wetting performance	Applications requiring low adhesion and good wet-out performance for protective tape/film
Stable & low adhesion; fast cure	Applications requiring low adhesion and good wet-out performance for protective film; flexibility to use with other addition cure PSA to control peeling adhesion
No inhibitor; fast curing; stable & low adhesion	Applications requiring low adhesion and good wet-out performance for protective film; flexibility to use with other addition cure PSA to control peeling adhesion
High solid content and very high adhesion, low to medium tackiness	Manufacture of adhesive tapes, labels and transfer/protective films; assembly or permanent bonding applications;
No inhibitor; fast curing, low adhesion, excellent wetting performance	Applications requiring low adhesion and good wet-out performance for protective tape / film;
No inhibitor, fast curing, high solid content and very high adhesion, low tackiness	Manufacture of adhesive tapes, labels and transfer/protective films; assembly or permanent bonding applications;
Stable middle adhesion, very high tackiness	Protective film for anti-finger screen, flexibility to use with other addition cure PSA to control peeling adhesion
Ultra-high adhesion and tackiness, high adhesion on anti-finger screen	Protective film for anti-finger screen, flexibility to use with other addition cure PSA to control peeling adhesion, bonding low-energy substrates, assembly or permanent bonding applications;
Excellent wet-out ability	Aftermarket screen protection
Low adhesion and good wet-out	Protective film for both industrial process and aftermarket (3-layer)
Stable at low adhesion	Protective film for industrial process (2-layer)
Very stable at low adhesion	Protective film for industrial process (2-layer)
Low Si-migration, stable adhesion	Low Si-migration applications
Low Si-migration, stable adhesion	Low Si-migration applications
Low Si-migration, stable adhesion	Low Si-migration applications
Low Si-migration, stable adhesion	Low Si-migration applications
Good penetration and adhesion to a variety of substrates	Binder for flame-retardant mica tapes
Good penetration and adhesion to a variety of substrates, good flexibility	Binder for flame-retardant mica tapes
Good penetration and adhesion to variety of substrates, good flexibility	Binder for flame-retardant mica tapes
Solventless, fast curing, stable adhesion	Solventless protective film
Solventless, fast curing, stable adhesion	Solventless protective film
Solventless; allows for thicker coat weights	Adhesive tapes, labels and transfer films; bonding low-energy substrates; high- and low-temperature labeling applications; suggested for use with release liner coated with SYL-OFF™ Q2-7785 Release Coating
Solventless; allows for thicker coat weights	Adhesive tapes, labels and transfer films; bonding low-energy substrates; high- and low-temperature labeling applications
Solventless; allows for thicker coat weights	Adhesive tapes, labels and transfer films; bonding low-energy substrates; high- and low-temperature labeling applications

Product	Cure system	Viscosity <sup>2,3</sup> , cps	Non-Volatile content <sup>2</sup> , %	Adhesion <sup>2,4,5</sup> , g/in	Probe tack <sup>2,5</sup> , g	High-temperature hold/shear, °C (°F)	Features/benefits	Typical applications
<b>Primer</b>								
DOWSIL™ 7499 PSA Primer	Platinum and Tin	1,800	23	N/A	N/A	N/A	Suitable for various substrates and PSAs with good anchorage	Primer for silicone PSA
<b>Crosslinkers</b>								
SYL-OFF™ SL 7028 Crosslinker		22	> 97	—	—	—	Good anchorage	Crosslinker for low-adhesion protective films or carrier tapes
SYL-OFF™ 7678 Crosslinker		30	> 95	—	—	—	Fast cure	Crosslinker for low-adhesion protective films or carrier tapes
<b>Anchorage addition</b>								
SYL-OFF™ SL 9250 Anchorage Additive		6	100 (active ingredient)	—	—	—	Good anchorage; minimal impact on cure performance and adhesion	To improve the anchorage of low-adhesion PSA on substrates
SYL-OFF™ 297 Anchorage Additive		4		—	—	—	Very good performance to improve adherence of PSA to substrates	To improve the anchorage of low-adhesion PSA on substrates
SYL-OFF™ 397 Anchorage Additive		9		—	—	—	Good anchorage; minimal impact on optical, cure and adhesion stability of PSA	To improve the anchorage of low-adhesion PSA on filmic substrates
<b>Fluorosilicone release coatings and crosslinkers</b>								
SYL-OFF™ Q2-7785 Release Coating	Platinum	3,060	80	—	—	—	Solventless; allows for thicker coat weights	Adhesive tapes, labels and transfer films; bonding low-energy substrates; high- and low-temperature labeling applications
SYL-OFF™ 7786 Coating	Platinum	330	> 95	—	—	—	Higher fluorosilicone content for differential release values	Release of industrial-grade silicone pressure sensitive adhesives
SYL-OFF™ 7792 Fluorosilicone Release Coating	Platinum	3,120	80	—	—	—	Low and stable release force; Suitable for laminate various silicone pressure sensitive adhesive films on the release liner	Production of release substrates coated from solvent. Release of industrial grade silicone pressure sensitive adhesives; major uses with silicone PSA tape forms include: adhesive transfer tapes; industrial single coated or double coated tapes; labels; Silicone foam or rubber tapes; in process liner for converting
SYL-OFF™ 7795 Fluorosilicone Release Coating	Platinum	3,010	80	—	—	—	Low and stable release force; suitable for laminate various silicone pressure sensitive adhesive film on the release liner; suitable for more silicone PSA wet coating on the release liner	Production of release substrates coated from solvent. Release of industrial grade silicone pressure sensitive adhesives; major uses with silicone PSA tape forms include: adhesive transfer tapes; industrial single coated or double coated tapes; labels; silicone foam or rubber tapes; in process liner for converting
SYL-OFF™ 7798 Fluorosilicone Release Coating	Platinum	4,000	85	—	—	—	Low and stable release force. High SAS. Suitable for dry laminate and wet casting using a wide range of silicone PSAs	Release of industrial grade silicone pressure sensitive adhesives. Main uses with silicone PSA tape forms include adhesive transfer tapes, industrial single coated or double coated tapes, labels, silicone foams or rubber tapes, in process liner for converting, and silicone PSA assembly tapes
SYL-OFF™ 7555 Coating	Platinum	429	100 (active ingredient)	—	—	—	Solventless; stable release	Release coating for pressure sensitive laminate/labelstock
SYL-OFF™ Q2-7560 Crosslinker		35	100	—	—	—	Crosslinker for SYL-OFF™ Q2-7785 Release Coating, SYL-OFF™ 7786 Coating, SYL-OFF™ 7792 Coating and SYL-OFF™ 7795 Coating and SYL-OFF™ 7798 Fluorosilicone Release Coating	
SYL-OFF™ SL 7561 Crosslinker		210	100	—	—	—	Crosslinker for SYL-OFF™ 7555 Coating	

<sup>1</sup> Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow sales office or your Global Dow Connection before writing specifications on these products.

<sup>2</sup> Average quality data for comparison purposes only.

<sup>3</sup> Measurements are within +/- 100 cps.

<sup>4</sup> Measurements are within +/- 10 g/in.

<sup>5</sup> Adhesion and tack are dependent on substrate backing, film thickness, formulation, etc. These values represent only one test condition under Dow-established quality assurance procedures at time of initial manufacture and are intended for comparison purposes only. Please contact Dow for specification limits.

### Release of silicone pressure sensitive adhesives

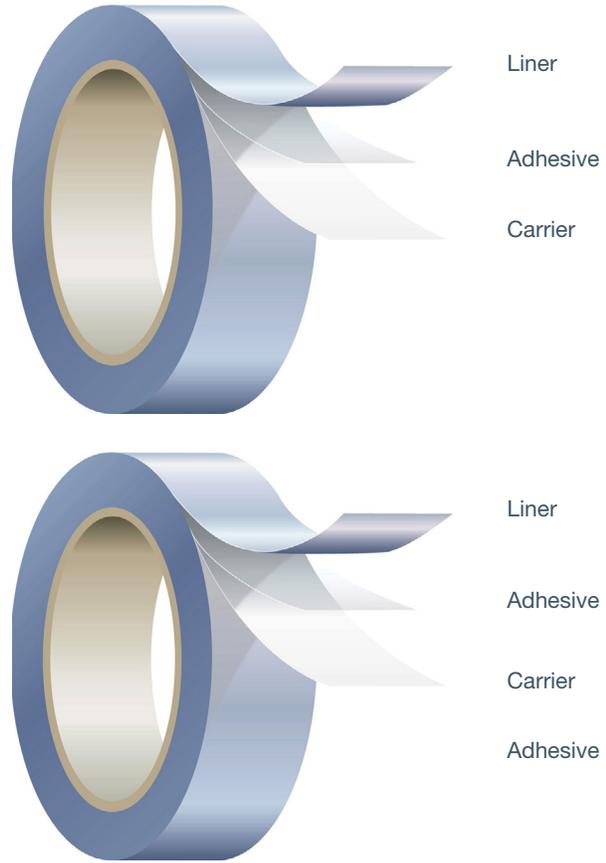
SYL-OFF™ fluorosilicone release coatings are designed to provide consistent, stable release from Dow silicone pressure sensitive adhesives, which allows you to develop and produce transfer films, labels, two-sided tapes and other release-liner constructions.

Dow offers a range of fluorosilicone release coatings and complementary silicone PSAs. This provides an array of choices that can help with extending the adhesive performance of silicone PSAs to new applications, developing more innovative products, meeting changing customer needs, entering new markets, and achieving the best balance of economy and performance.

Use Table 3 to explore combinations of Dow silicone PSAs and SYL-OFF™ fluorosilicone release coatings for specific release-liner coating applications.

### Explore the potential

Double-sided tapes, unsupported or transfer tapes often may require a differential in release to avoid confusion during application. One option to create a differential release force is to utilize the difference between direct-cast and nipped liner to achieve a differential of 1.2-2.5 ratio, depending on the application's needs. SYL-OFF™ Release Coatings offer alternative options to process transfer-coated PSA and still obtain a differential release force.



**Table 3. DOWSIL™ silicone pressure sensitive adhesives for transfer coating/direct cast applications**

Pressure sensitive adhesives	Transfer coated onto fluorosilicone liner					Dry lamination onto fluorosilicone liner				
	SYL-OFF™ 7555 Coating	SYL-OFF™ Q2-7785 Release Coating	SYL-OFF™ Q2-7786 Coating	SYL-OFF™ 7792 Fluorosilicone Release Coating	SYL-OFF™ 7795 Fluorosilicone Release Coating	SYL-OFF™ 7555 Coating	Typical applications	Typical applications	Features/benefits	Typical applications
DOWSIL™ 2013 Adhesive	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊
DOWSIL™ 7657 Adhesive		•	•	◊	◊	◊	◊	◊	◊	◊
DOWSIL™ Q2-7735 Adhesive	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊
DOWSIL™ Q2-7406 Adhesive	•	◊	◊	◊	◊	•	◊	◊	◊	◊
DOWSIL™ Q2-7566 Adhesive	•	◊	◊	◊	◊	◊	◊	◊	◊	◊
DOWSIL™ 7355 Adhesive	•	◊	◊	◊	◊	◊	◊	◊	◊	◊
DOWSIL™ 7358 Adhesive		◊	◊	◊	◊	•	◊	◊	◊	◊
DOWSIL™ 280A Adhesive		•	•	◊	◊	•	◊	◊	◊	◊
DOWSIL™ 282 Adhesive	•	◊	◊	◊	◊	◊	◊	◊	◊	◊

◊ Recommended      • Recommended under specific conditions

## Processing and curing considerations

Dow silicone PSAs can be applied to backing materials as supplied, using conventional tape-coating equipment. However, they are most often diluted with toluene, xylene or other nonpolar solvents to achieve a coatable viscosity\*. Coat-weight control is critical for consistent performance. In addition, Dow silicone PSAs may be blended to modify the performance of the cured coating. Contact your Dow representative for information on blending PSAs.

### Effects of substrate variation and adhesive thickness

The backing material to which a silicone PSA is applied affects its tack and adhesion values. Adhesive thickness also affects adhesive performance: The thicker the cured adhesive coating, the higher the adhesion and tack.

### Platinum cure

Platinum-cure adhesives from Dow require the addition of a platinum catalyst (SYL-OFF™ 4000 Catalyst) to develop PSA properties. The coating bath should be used within six hours of catalyst addition. These adhesives can be cured in vented, continuous coating ovens at temperatures as low as 80°C (176°F). When coated onto flexible substrates such as polyester or polyolefin films, typical oven dwell times range from 2 minutes at 100°C (212°F) to 1 minute at 125°C (257°F). If the cure rate needs to be increased to accommodate a shorter oven dwell time (to increase line speed, for example) or the process oven temperatures lowered, the catalyst level can be increased.

Changing the catalyst level has little impact on the tack, adhesion or cohesive strength of the cured adhesive. Note: Because the catalyst is subject to contamination by peroxide and other materials, mixing and coating equipment must be thoroughly cleaned, and dedicated new containers should be used for mixing.

### Peroxide cure

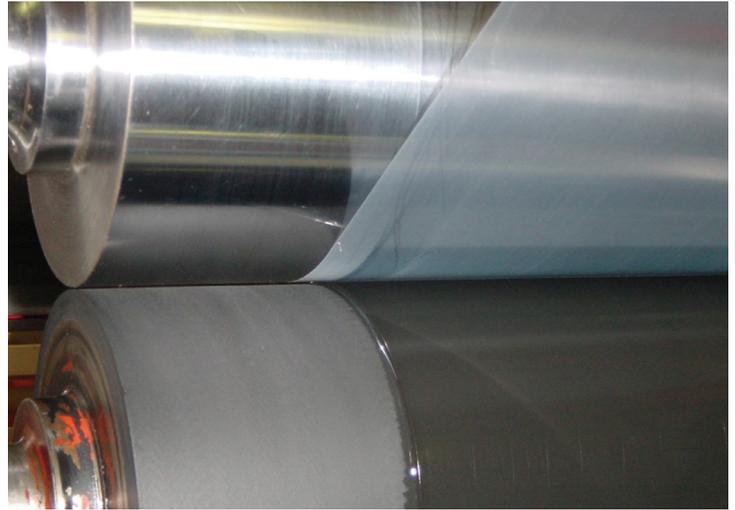
To achieve a good balance of tack, adhesive strength and cohesive strength over a wide range of operating temperatures, proper cure is essential. The catalyst typically used with silicone PSAs is benzoyl peroxide.

Peroxide concentration can be varied from 0.5 to 3.0 percent by weight (based on adhesive solids). Increasing peroxide concentration will decrease the tack and adhesive strength of the cured coating but increase its cohesive strength.

The most consistent results are achieved by using powdered 98 percent benzoyl peroxide. Complete blending of peroxide and adhesive is best obtained by making a 10 percent w/v solution of the peroxide in toluene.

If a catalyst is added, the coating bath should be used within a day after mixing, as the peroxide loses its activity quite rapidly in solvent. Thorough dispersion of the adhesive and peroxide during mixing is necessary to achieve uniform results in the finished product.

Curing the adhesive is a two-step process that requires the use of graded temperatures.



### Solvent Removal

The first step in curing the adhesive, following its application to the backing material, is solvent removal. Recommended temperatures for solvent removal range from 65°C to 93°C (150 to 200°F). Higher removal temperatures can cause the peroxide to decompose prematurely and crosslink the solvent into the adhesive, potentially reducing the properties of the finished tape. The length of time for solvent removal should be sufficient to ensure that no solvent is present in the adhesive when it enters the curing zone.

### Heat Cure

After the solvent is removed, a tacky, uniform film of adhesive is left on the backing. This film's adhesive and cohesive strengths, as well as the tack, can be further developed by a heat cure. The amount of cure depends on a number of factors, including the type of catalyst or equipment and backing material.

A cure of 1 minute at 66°C (150°F) for solvent removal, followed by 2 minutes at 177 to 204°C (350 to 400°F) is typically used for adhesives that contain benzoyl peroxide. If equipment and type of backing material permit the use of higher curing temperatures, the cure time may be shortened. Higher cure temperatures develop the cohesive strength of the adhesive in less time than at lower temperatures. The ultimate adhesive strength of the fully cured material is essentially the same whether cured at higher or lower temperatures; the only difference is the time required to reach complete cure.

\*When diluting with any solvent, refer to the solvent vendor's safety data sheet for information on physical and health hazards associated with the solvent and use of ventilation, PPE, bonding and grounding or other measures that can minimize or eliminate these hazards.

## Oven Dusting

The evaporation of volatile silicone in the curing oven can cause the formation of oven dust. The problem is typical in solvent incineration or air-recirculating direct-fired ovens and is especially prevalent in ovens that deliver too much heat too early in the cure process.

Two ways to reduce the problem are to:

1. Select silicone PSAs with lower volatile silicone content, such as DOWSIL™ 7406-VLO Adhesive, DOWSIL™ 7355 Adhesive or DOWSIL™ 7358 Adhesive.
2. Use ramped oven zones (oven zones with temperatures that get progressively hotter).

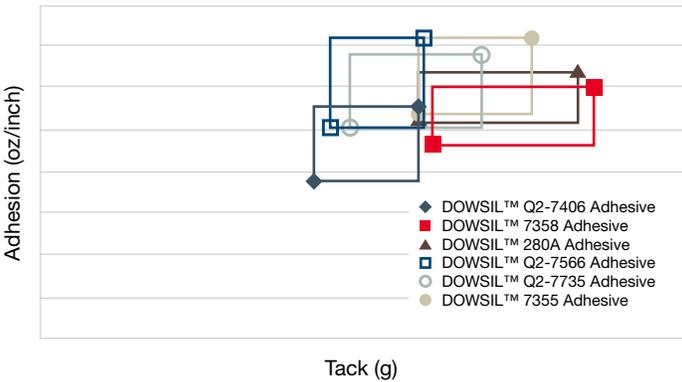
## Anchorage

When silicone PSAs are used in the manufacture of self-wound tapes or laminate constructions with backings such as polyester, Kapton, Teflon and other plastic films, the use of a primer may be required to improve anchorage of the cured adhesive to the backing. Good anchorage reduces the possibility of adhesive transfer during unwind and ensures clean slitting operations and clean removability following masking. For suggested primers and sample formulations, contact your Dow representative.

## Adhesion vs. tack for silicone PSAs as a function of peroxide level, cure time and cure temperature

Cure Parameter Range:

- 1.5-3.0% Benzoyl Peroxide
- 184-204°C Cure Temperature  
(70°C/2 min Standard Devolatilization Temperature)
- 1.5-3 min Cure Time



# More options for your business

Our product line also includes auxiliary materials like crosslinkers, anchorage additives and compatible silicone primers that help increase adhesives' curing and offer good anchorage to difficult substrates. To help you make better products—and get them to market faster—our development team formulates adhesives according to your specific needs, and our application experts help with recommendations and problem resolution. And in sensitive applications, our engineering experts are able to provide specific quality testing and data as well as test development and alignment to ensure success. Give us your challenge, and we'll find a solution!

## Global. Local. Ready to help.

Dow has sales offices, manufacturing sites and science and technology laboratories around the globe.

## For more information

For product data sheets, selection guides and an overview of Dow's comprehensive line of products and services for the pressure sensitive industry, visit our website at [www.dow.com](http://www.dow.com).



Images: Cover — dow\_85377022893; page 2 — dow\_40716980580; page 9 — dow\_40435220895, dow\_40435220887; page 10 — dow\_40355843743; page 11 — dow\_40145815448; page 12 — dow\_40176293217

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