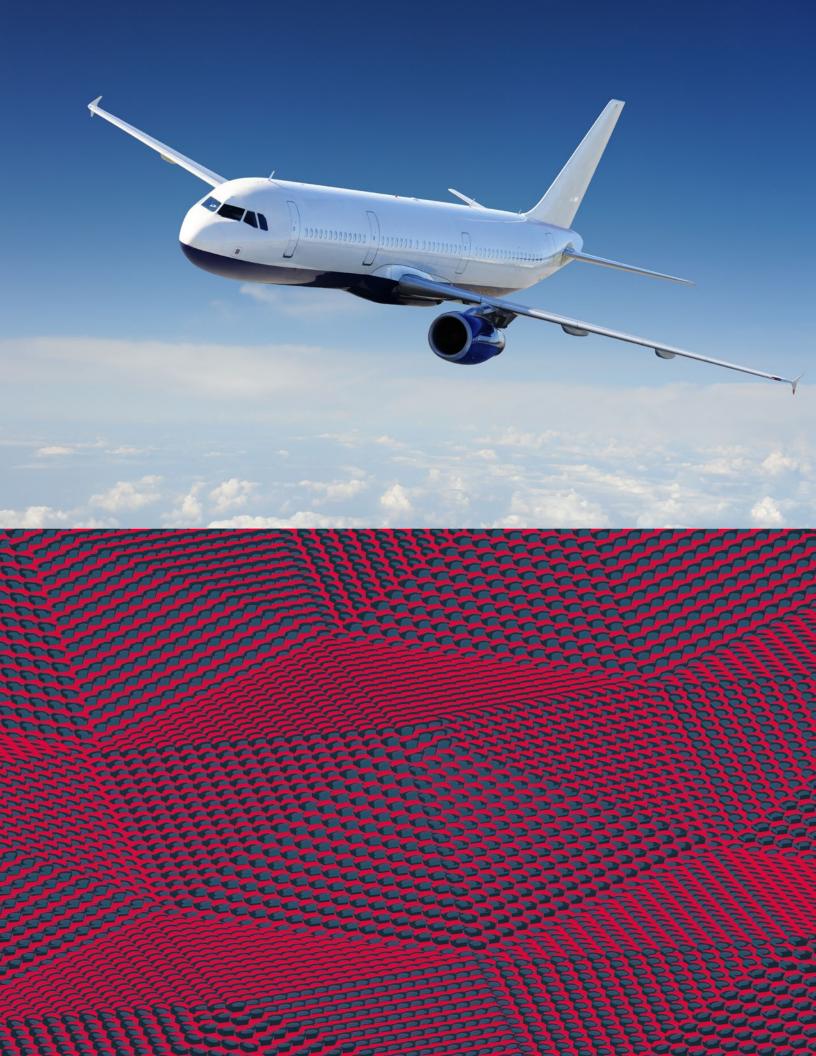
# Choose Dow silicone PSAs for high performance





## 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 highperformance silicone capabilities:

- A wide service-temperature range
- Adhesion to low-energy surfaces
- Conformability
- Clean removability
- Moisture/UV resistance
- Sound 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 50 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.

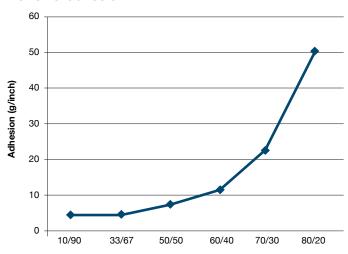
Begin with Table 1, "Application overview." This will tell you which adhesives in our global silicone PSA line meet your basic application needs for specialty tapes, high-performance films and labels.

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 platinumcure PSAs can be blended to achieve a variety of adhesion levels. The graph1 on the right 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-adhesion blending with very low adhesion Ratio vs. adhesion



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

#### Typical structure of protective film

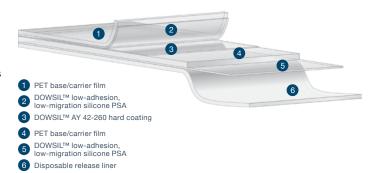


Table 1: Application overview – solutions for films and specialty tapes

|  | Masking and specialty tape solutions (high adhesion)                                    |  |  |  |  |  |   |  |  |  |
|--|---|--|--|--|--|--|---|--|--|--|
|  |   | Masking tappa  | IVIC   | asking and specially   | y tape solu  | Specialty ta   | 200   |  |  |  |
| Film and tape functions and typical end-use applications | Electrical and<br>electronics masking<br>and carrier tapes for<br>industrial processing | Masking tapes  General-purpose masking tapes for low-surface-energy applications | Thermal-spray and powder-coating masking tapes | Electrical and<br>electronics tapes for<br>industrial bonding and<br>bundling applications | Heat-seal<br>tapes for<br>bonding<br>heating<br>surfaces | Electrical, electronic,<br>heat-shielding and terminal<br>cable insulation tapes for<br>electronics, aerospace,<br>aircraft and automotive | Splicing tapes for continuous processing of low-surface-energy substrates |  |  |  |
| Pressure sensitive adhesives                             | S   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 280A Adhesive                                    | •   | •  |  |  |  |  | •   |  |  |  |
| DOWSIL™ 282 Adhesive                                     | •   |  |  | •  |  |  | •   |  |  |  |
| DOWSIL™ 7268 Adhesive                                    | •   | •  |  | •  |  | •  |   |  |  |  |
| DOWSIL™ 7278 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™ 7568 Adhesive                                    |   |  | •  |  | •  | •  |   |  |  |  |
| DOWSIL™ Q2-7735 Adhesive                                 |   |  |  |  |  |  | •   |  |  |  |
| DOWSIL™ 7428 Adhesive                                    | •   | •  |  |  | •  |  |   |  |  |  |
| DOWSIL™ SD 4600 FC Adhesive                              |   |  | •  |  | •  | •  |   |  |  |  |
| DOWSIL™ 2013 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7657 Adhesive                                    |   |  |  | •  |  |  |   |  |  |  |
| DOWSIL™ 7667 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7636 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7666 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7687 Adhesive                                    |   |  |  | •  |  |  |   |  |  |  |
| DOWSIL™ 7655 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7656 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7663 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7645 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7646 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7647 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 7660 Adhesive                                    |   |  |  |  |  |  |   |  |  |  |
| DOWSIL™ 288 Mica Binder                                  |   |  |  |  |  |  | •   |  |  |  |
| Functional coating                                       |   |  | 1  |  |  |  |   |  |  |  |
| DOWSIL™ AY 42-260 Coating                                |   |  |  |  |  |  |   |  |  |  |
| Fluorosilicone release coatir                            | ngs   |  | 1  |  |  |  |   |  |  |  |
| SYL-OFF™ Q2-7785<br>Release Coating                      |   |  |  |  |  |  |   |  |  |  |
| SYL-OFF™ 7786 Coating                                    |   |  |  |  |  |  |   |  |  |  |
| SYL-OFF™ 7555 Coating                                    |   |  |  |  |  |  |   |  |  |  |
| SYL-OFF™ 7792 Fluorosilicone<br>Release Coating          |   |  |  |  |  |  |   |  |  |  |
| SYL-OFF™ 7795 Fluorosilicone<br>Release Coating          |   |  |  |  |  |  |   |  |  |  |

Suggested

|   | Protective f   | ilm and tape solutions   | (low adhesion)   | Assembly tape and label solutions   |   |   |  |  |  |
|---|--|--|--|---|---|---|--|--|--|
|   |  | Protective films and tap   |  | Double-sided tapes  | Specialty labels  | Specialty liners  |  |  |  |
| Binding material<br>for mica tape<br>applications | Electronics and industrial component surface-protection films, mainly for shipment | Window glass films in aftermarket electronics, auto, buildings, etc. | Spot protection films<br>in processing of<br>die-cutting/carrier/supporting<br>components, including<br>glass, SUS, foams, PET,<br>PI, Al foil, etc. | Double-sided tapes,<br>unsupported transfer<br>tapes for lamination and<br>mounting in electronics and<br>automotive applications | Marking labels<br>in automotive,<br>aerospace and other<br>outdoor graphics | Release liners for silicone<br>PSA tapes, spot protection<br>films in die-cut processing<br>of single- or double-sided<br>silicone rubber |  |  |  |
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- Please Note:
   Suggestions in the table are typical applications, subject to customer process conditions.
- Use of products is not necessarily limited to these applications.
   Emerging applications could be added after consulting with Dow.

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

| Product                      | Cure<br>system | Viscosity <sup>2,3</sup> , cps | Non-Volatile<br>content <sup>2</sup> , % | Adhesion <sup>2,4,5</sup> ,<br>g/in | Probe tack <sup>2,5</sup> , g |  |
|------------------------------|----------------|--------------------------------|--|-------------------------------------|-------------------------------|--|
| Pressure sensitive adhesives |                |                                |  |                                     |                               |  |
| DOWSIL™ 280A Adhesive        | Peroxide       | 38,900                         | 57                                       | 850                                 | 470                           |  |
| DOWSIL™ 282 Adhesive         | Peroxide       | 38,800                         | 56                                       | 1,020                               | 510                           |  |
| DOWSIL™ 7268 Adhesive        | Peroxide       | 53,000                         | 60                                       | 1,240                               | 600                           |  |
| DOWSIL™ 7278 Adhesive        | Peroxide       | 52,900                         | 74                                       | 1,260                               | 560                           |  |
| DOWSIL™ Q2-7406 Adhesive     | Peroxide       | 31,700                         | 57                                       | 940                                 | 400                           |  |
| DOWSIL™ 7388 Adhesive        | Peroxide       | 30,500                         | 57                                       | 930                                 | 380                           |  |
| DOWSIL™ 7406-VLO Adhesive    | Peroxide       | 31,300                         | 56                                       | 940                                 | 280                           |  |
| DOWSIL™ 7355 Adhesive        | Peroxide       | 20,700                         | 57                                       | 1,200                               | 430                           |  |
| DOWSIL™ 7356 Adhesive        | Peroxide       | 23,100                         | 56                                       | 960                                 | 470                           |  |
| DOWSIL™ 7357 Adhesive        | Peroxide       | 28,000                         | 57                                       | 1030                                | 450                           |  |
| DOWSIL™ 7358 Adhesive        | Peroxide       | 20,900                         | 57                                       | 1,050                               | 490                           |  |
| DOWSIL™ Q2-7566 Adhesive     | Peroxide       | 33,000                         | 57                                       | 910                                 | 390                           |  |
| DOWSIL™ 7568 Adhesive        | Peroxide       | 38,400                         | 56                                       | 1,000                               | 380                           |  |
| DOWSIL™ Q2-7735 Adhesive     | Peroxide       | 32,800                         | 57                                       | 1,200                               | 530                           |  |
| DOWSIL™ 7428 Adhesive        | Peroxide       | 114,000                        | 60                                       | 860                                 | 400                           |  |
| DOWSIL™ SD 4600 FC Adhesive  | Platinum       | 40,000                         | 60                                       | 810                                 | 320                           |  |
| DOWSIL™ 2013 Adhesive        | Platinum       | 13,100                         | 100                                      | 1,410                               | 620                           |  |
| DOWSIL™ 7657 Adhesive        | Platinum       | 22,500                         | 56                                       | 1,280                               | 1,160                         |  |
| DOWSIL™ 7667 Adhesive        | Platinum       | 55,000                         | 70                                       | 400                                 | N/A                           |  |
| DOWSIL™ 7636 Adhesive        | Platinum       | 48,000                         | > 99                                     | < 3                                 | N/A                           |  |
| DOWSIL™ 7666 Adhesive        | Platinum       | 22,500                         | > 97                                     | < 3                                 | N/A                           |  |
| DOWSIL™ 7687 Adhesive        | Platinum       | 45,000                         | 70                                       | 1,800                               | N/A                           |  |
| DOWSIL™ 7655 Adhesive        | Platinum       | 10,500                         | 60                                       | 1-5                                 | 1-2                           |  |
| DOWSIL™ 7656 Adhesive        | Platinum       | 1,500                          | 60                                       | 100-200                             | 70-80                         |  |
| DOWSIL™ 7663 Adhesive        | Platinum       | 3,700                          | 49                                       | 1,500-1,700                         | 950                           |  |
| DOWSIL™ 7645 Adhesive        | Platinum       | 57,000                         | 40                                       | 5                                   | N/A                           |  |
| DOWSIL™ 7646 Adhesive        | Platinum       | 56,600                         | 99                                       | < 3                                 | N/A                           |  |
| DOWSIL™ 7647 Adhesive        | Platinum       | 7,500                          | 98                                       | < 3                                 | N/A                           |  |
| DOWSIL™ 7660 Adhesive        | Platinum       | 46,900                         | 97                                       | < 3                                 | N/A                           |  |
| DOWSIL™ 288 Mica Binder      | Peroxide       | 51,600                         | 61                                       | 860                                 | N/A                           |  |

| High-temperature<br>hold/shear, °C (°F) | Features/benefits   | Typical applications   |  |  |  |
|---|---|--|--|--|--|
|   |   |  |  |  |  |
| 260 (500)                               | Good tack   | Masking, plating and splicing tapes  |  |  |  |
| 260 (500)                               | Good adhesion   | Masking, plating and splicing tapes  |  |  |  |
| 240 (464)                               | High tack; high adhesion  | Masking and plating tapes; shoe sole tape  |  |  |  |
| 220 (428)                               | High solid content; high adhesion   | Masking and plating tapes  |  |  |  |
| 260 (500)                               | Excellent high-temperature properties; meets FDA requirements for certain food-contact applications   | Splicing and plating tapes; electrical and heat-shielding specialty tapes  |  |  |  |
| 260 (500)                               | Very good high-temperature performance  | Splicing and plating tapes   |  |  |  |
| 260 (500)                               | Low-silicone-volatile version of DOWSIL™ Q2-7406 Adhesive   | Splicing and plating tapes; electrical and heat-shielding specialty tapes  |  |  |  |
| 260 (500)                               | High adhesion; good high-temperature performance; low silicone volatiles  | Masking, plating, splicing and thermal-spray masking tapes   |  |  |  |
| 260 (500)                               | Balanced tack and adhesion; good high-temperature performance; low silicone volatiles   | Plating, thermal-spray masking and high-temperature masking tapes; electrical-insulation wraps   |  |  |  |
| 260 (500)                               | 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  |  |  |  |
| 260 (500)                               | High tack; good high-temperature performance; low silicone volatiles  | High-temperature masking and thermal-spray masking tapes, heat-seal tapes, electrical-insulation wraps   |  |  |  |
| 288 (550)                               | General-purpose adhesive with excellent high-temperature properties; low silicone volatiles   | Electrical tapes and other very high-temperature tapes   |  |  |  |
| 270 (518)                               | Excellent high-temperature properties; more suitable adhesion for masking-type application  | Heat-seal tapes, electrical tapes and other very-high-temperature tapes  |  |  |  |
| 232 (450)                               | 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  |  |  |  |
| 260 (500)                               | Compatibility to adhesion on most low energy surfaces   | Heat seal tape, splicing tape, plating tape and insulation tape  |  |  |  |
| 300 (572)                               | Excellent high-temperature resistance   | Electrical tapes and other very-high-temperature tapes   |  |  |  |
| 260 (500)                               | 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 |  |  |  |
| 260 (500)                               | 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   |  |  |  |
| N/A                                     | Stable, medium-adhesion PSA for protective film application   | Protective film application PSA  |  |  |  |
| N/A                                     | Low adhesion, excellent wetting performance   | Applications requiring low adhesion and good wet-out performance for protective tape/film  |  |  |  |
| N/A                                     | 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  |  |  |  |
| 200 (392)                               | High solid content and very high adhesion, low to medium tackiness  | Manufacture of adhesive tapes, labels and transfer/protective films; assembly or permernant bonding applications;  |  |  |  |
| N/A                                     | Low curing temperature; fast cure by Pt catalyst; availability to use various backings including HDPE/PP films; compatibility to adhesion on most low energy surfaces | Applications requiring low adhesion and good wet-out performance for protective tape/ film; flexibility to blend with DOWSIL™ 7655 Adhesive and DOWSIL™ 7656 Adhesive to control peeling adhesion            |  |  |  |
| N/A                                     | Low curing temperature; fast cure by Pt catalyst; availability to use various backings including HDPE/PP films; compatibility to adhesion on most low energy surfaces | Applications requiring low adhesion and good wet-out performance for protective tape/film; flexibility to blend with DOWSIL™ 7655 Adhesive and DOWSIL™ 7656 Adhesive to control peeling adhesion             |  |  |  |
| N/A                                     | Very high adhesion and very high tack   | Applications requiring high adhesion with high tack performance for assembly/protective films; flexibility to use with other addition cure PSA to control peeling adhesion                                   |  |  |  |
| N/A                                     | Excellent wet-out ability   | Aftermarket screen protection  |  |  |  |
| N/A                                     | Low adhesion and good wet-out   | Protective film for both industrial process and aftermarket (3-layer)  |  |  |  |
| N/A                                     | Stable at low adhesion  | Protective film for industrial process (2-layer)   |  |  |  |
| N/A                                     | Very stable at low adhesion   | Protective film for industrial process (2-layer)   |  |  |  |
| N/A                                     | Good penetration and adhesion to a variety of substrates  | Binder for flame-retardant mica tapes  |  |  |  |

|   | Cure                | Viscosity <sup>2,3</sup> , | Non-<br>volatile        | Adhesion <sup>2,4,5</sup> , | Probe                 | High-                                 |   |  |  |  |
|---|---------------------|----------------------------|-------------------------|-----------------------------|-----------------------|---------------------------------------|---|--|--|--|
| Product   | system              | cps                        | content <sup>2</sup> ,  | g/in                        | tack <sup>2,5</sup> , | temperature<br>hold/shear,<br>°C (°F) | Features/benefits   | Typical applications   |  |  |
| Primer  |                     |                            |                         |                             |                       |                                       |   |  |  |  |
| DOWSIL™ 7499 PSA Primer                         | Platinum<br>and Tin | 1,800                      | 23                      | N/A                         | N/A                   | N/A                                   | Suitable for various<br>substrates and PSAs<br>with good anchorage  | Primer for silicone PSA  |  |  |
| Crosslinkers                                    |                     | ı                          | ı                       |                             |                       |                                       |   |  |  |  |
| 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   |  |  |
| Anchorage addition                              |                     |                            |                         |                             |                       |                                       |   |  |  |  |
| SYL-OFF™ SL 9250<br>Anchorage Additive          |                     | 6                          |                         | _                           | _                     | -                                     | Good anchorage; minimal impact on cure performance and adhesion   | To improve the anchorage of low-adhesion PSA on substrates   |  |  |
| SYL-OFF™ 297<br>Anchorage Additive              |                     | 4                          | 100 (active ingredient) | _                           | _                     | -                                     | Very good performance to<br>improve adherence of PSA<br>to substrates   | To improve the anchorage of low-adhesion PSA on substrates   |  |  |
| SYL-OFF™ 397<br>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  |  |  |
| Functional coating                              |                     |                            |                         |                             |                       |                                       |   |  |  |  |
| DOWSIL™ AY 42-260 Coating                       | UV                  | 5                          | 40                      | _                           | _                     | -                                     | Easy to clean;<br>good hardness   | Protective coatings on plastic films   |  |  |
| Fluorosilicone release coa                      | tings and c         | rosslinkers                |                         |                             |                       |                                       |   |  |  |  |
| SYL-OFF™ Q2-7785<br>Release Coating             | Platinum            | 3,200                      | 81                      | _                           | _                     | -                                     | Consistent, stable release  | Release of industrial-grade silicone pressure sensitive adhesives  |  |  |
| SYL-OFF™ 7786 Coating                           | Platinum            | 270                        | > 95                    | _                           | _                     | _                                     | Higher fluorosilicone content for differential release values   | Release of industrial-grade silicone pressure sensitive adhesives  |  |  |
| SYL-OFF™ 7792<br>Fluorosilicone Release Coating | Platinum            | 5,000                      | 81                      | -                           | _                     | -                                     | Low and stable release force;<br>Suitable for laminate various<br>silicone pressure sensitive<br>adhesive films on the<br>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<br>Fluorosilicone Release Coating | Platinum            | 5,000                      | 81                      | -                           | _                     | -                                     | 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™ 7555 Coating                           | Platinum            | 429                        | 100 (active ingredient) | _                           | _                     | _                                     | Solventless; stable release   | Release coating for pressure sensitive laminate labelstock   |  |  |
| SYL-OFF™ Q2-7560 Crosslinker                    |                     | 35                         | > 85                    | _                           | _                     | _                                     | Crosslinker for SYL-OFF™ Q2-7785 Releas<br>Coating, SYL-OFF™ 7786 Coating, SYL-OF<br>7792 Coating and SYL-OFF™ 7795 Coatin  |  |  |  |
| SYL-OFF™ SL 7561 Crosslinker                    |                     | 210                        | 96                      | _                           | _                     | _                                     | Crosslinker for SYL-OFF™ 7555 Coating   |  |  |  |

<sup>&</sup>lt;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>&</sup>lt;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.

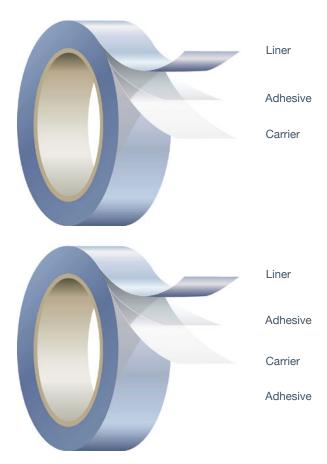


Table 3. DOWSIL™ silicone pressure sensitive adhesives for transfer coating/direct cast applications

|                                    |                          | Transfer coat                             | ed onto fluoro                              | osilicone liner   |   | Dry lamination onto fluorosilicone liner |   |                                |   |   |
|------------------------------------|--------------------------|---|---|---|---|--|---|--------------------------------|---|---|
| Pressure<br>sensitive<br>adhesives | SYL-OFF™<br>7555 Coating | SYL-OFF™<br>Q2-7785<br>Release<br>Coating | SYL-OFF <sup>TM</sup><br>Q2-7786<br>Coating | SYL-OFF™<br>7792<br>Flurosilicone<br>Release<br>Coating | SYL-OFF™<br>7795<br>Flurosilicone<br>Release<br>Coating | SYL-OFF™<br>7555 Coating                 | SYL-OFF™<br>Q2-7785<br>Release<br>Coating | SYL-OFF™<br>Q2-7786<br>Coating | SYL-OFF™<br>7792<br>Flurosilicone<br>Release<br>Coating | SYL-OFF™<br>7795<br>Flurosilicone<br>Release<br>Coating |
| DOWSIL™<br>2013 Adhesive           | <b>◊</b>                 | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | <b>◊</b>  | <b>◊</b>                                 | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | <b>◊</b>  |
| DOWSIL™<br>7657 Adhesive           |                          | •   | •   | <b>◊</b>  | <b>◊</b>  | <b>◊</b>                                 | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | <b>◊</b>  |
| DOWSIL™<br>Q2-7735 Adhesive        | <b>◊</b>                 | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | <b>◊</b>  | <b>◊</b>                                 | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | ٥   |
| DOWSIL™<br>Q2-7406 Adhesive        | •                        | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | ٥   | •  | <b>◊</b>                                  | <b>◊</b>                       | <b>o</b>  | <b>◊</b>  |
| DOWSIL™<br>Q2-7566 Adhesive        | •                        | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | <b>◊</b>  | <b>◊</b>                                 | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | <b>◊</b>  |
| DOWSIL™<br>7355 Adhesive           | •                        | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | ٥   | <b>◊</b>                                 | <b>◊</b>                                  | <b>◊</b>                       | <b>o</b>  | <b>◊</b>  |
| DOWSIL™<br>7358 Adhesive           |                          | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | <b>◊</b>  | •  | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | <b>o</b>  |
| DOWSIL™<br>280A Adhesive           |                          | •   | •   | <b>◊</b>  | <b>◊</b>  | •  | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | ٥   |
| DOWSIL™<br>282 Adhesive            | •                        | <b>◊</b>                                  | <b>◊</b>                                    | <b>◊</b>  | <b>◊</b>  | <b>◊</b>                                 | <b>◊</b>                                  | <b>◊</b>                       | <b>◊</b>  | <b>◊</b>  |

<sup>♦</sup> Recommended

<sup>•</sup> 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 cure speeds range from 2 minutes at 100°C (212°F) to 1 minute at 125°C (257°F). If the cure speed needs to be increased 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

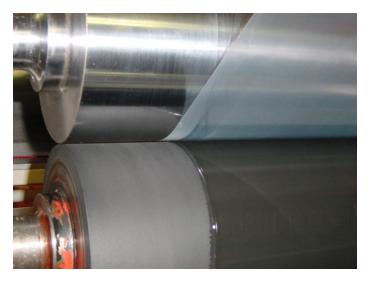
To achieve a good balance of tack, adhesive strength and cohesive strength over a wide range of operating temperatures, proper cure is essential. The catalyst typically used with silicone PSAs is benzoyl peroxide.

Peroxide concentration can be varied from 0.5 to 3.0 percent (based on adhesive solids). Increasing peroxide oncentration will decrease the tackand 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 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

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 measure: that can minimize or eliminate these hazards.



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.

#### **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 directfired 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:

- 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).

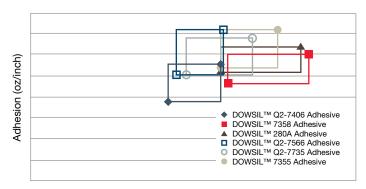
#### **Anchorage**

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



Tack (g)



## 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.



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