SilGrip™ PSA7008 Pressure Sensitive Adhesive

Product Description

SilGrip PSA7008 silicone pressure sensitive adhesive is a xylene solution of phenyl-based polysiloxane gum and resin. It is supplied at 55 percent silicone solids and may be further diluted with aromatic, aliphatic or chlorinated solvents. SilGrip PSA7008 may be blended with SR545 resin dispersion to obtain specific performance properties. SilGrip PSA7008 adhesive has been found useful in coating of film and fabric substrates for manufacturing industrial pressure sensitive tapes. May be an excellent choice for electrical insulation tapes and masking tapes used in electronic and plasma spray applications due to its superior thermal stability.

Key Features and Typical Benefits

- Wide temperature range performance, maintaining good shear and tack properties at intermittent temperatures up to 288 °C (550 °F).
- Adhesion to a wide variety of surfaces, including low energy surfaces like silicone, polyolefins, and primed fluoropolymers.
- Resistance to moisture, weathering (ozone, sunlight), chemical (acids, alkalis, oils) and biological (fungus) attack.
- Excellent balance of tack, peel adhesion, lap shear and creep resistance.
- Excellent electrical properties.
- Excellent clean removability for high temperature electronic and plasma spray masking tape applications.

Typical Physical Properties

Property	Value†
Silicone Solid, %	55
Specific Gravity	0.99
Color	Light straw, Translucent
Viscosity at 25 °C (77 °F), cps (Brookfield RVF, #6, Spindle @ 6 rpm)	57,000
Solvent	Xylene

†Typical properties are average data and are not to be used as or to develop specifications.

Typical Cured Adhesive Properties

Property	Value†
Peel Adhesion [(1)], gms/inch (oz/inch)	>700 (> 25)
Tack [(2)], g/cm^2	>1,500
Thermal Residue Test [(3)]	No adhesive residue
Lap Shear at 300 °C	> 1 hour

†Typical properties are average data and are not to be used as or to develop specifications.

[(1)] 2 mil dry adhesive thickness, 1 mil polyester film, 2.0% benzoyl peroxide, dry 3 minutes at 85°C, cure 3 minutes at 177°, stainless steel, 12 inches/minute, 180° angle

[(2)] Cheminstruments PT-2000 Probe Tack Tester, 100g weight, 0.5 sec dwell time, 0.5 cm/sec draw speed, 2 mil dry adhesive thickness, 1 mil polyester film, 2.0% benzoyl peroxide, dry 3 minutes at 85°C, cure 3 minutes at 177°C

[(3)] Samples held at 260°C (500°F) for 30 minutes. Peel tape away while still hot and observe steel substrate for adhesive residue.

NOTE: The properties of a cured silicone adhesive are affected by several factors such as type and amount of catalyst, cure cycle, adhesive thickness and backing type and thickness. Higher catalyst concentration will increase cohesive strength of the adhesive and improve shear strength, but it will reduce its adhesive strength resulting in lower tack and peel values.

Processing Recommendations

Application

SilGrip PSA7008 silicone pressure sensitive adhesive is supplied at a viscosity that can accommodate most conventional tape coating equipment. If necessary, it may be thinned with toluene, xylene, or other compatible solvents. After the adhesive is applied to the substrate, it is exposed to a two-step process: solvent removal and curing.

Solvent Removal

To achieve optimum adhesive properties, it is essential to optimize the drying step of the process in order to ensure that the solvent is removed from the adhesive film before the curing step of the process starts. Improper drying will result in residual solvent entrapment within the adhesive. If the adhesive is then exposed to temperatures higher than 93.5 °C (200 °F), decomposing peroxide catalyst can cause cross-linking reaction between solvent and adhesive through methyl groups on siloxane chains and on solvent molecules and adversely affect the properties of the adhesive.

Typical temperature range for the drying step of the process is 83 °C (180 °F) to 90 °C (194 °F). A typical drying cycle is 2 minutes at 90 °C (194 °F).

Curing Process

Once the solvent is removed from the adhesive film, the peroxide cure should be initiated by exposure to heat.

A typical curing cycle is 2 minutes at 165 °C (329 °F). Longer exposure time and higher temperature, up to 204 °C (400 °F), can generally be used without adverse effects. The exact conditions required to achieve a complete cure will primarily depend on oven length and efficiency, peroxide type, and type of substrate used, and should be established during experimental trials on the machine.

Catalysts

Benzoyl peroxide (BPO) in the quantity of 1.5 to 2.5% BPO solids to silicone solids has been found to provide consistent results in curing of silicone pressure sensitive adhesives. In applications requiring low temperature cure, 2,4-dichlorobenzoyl peroxide, which is activated at 132 °C (270 °F), can be used. It should be noted that 2,4-dichlorobenzoyl peroxide may generate polychlorinated biphenyls during the curing process. Please refer to Code of Federal Regulations, title 40, part 761 regarding incidental PCB byproducts if 2,4-dichlorobenzoyl peroxide is used.

The peroxide should be dispersed in solvent before it is mixed with the adhesive. Thorough mixing of the peroxide and adhesive to achieve homogeneous dispersion is essential for consistency of finished product.

Priming

In certain applications, the anchorage of the adhesive to the backing may be insufficient and the coating of a primer prior to the adhesive coating may be required.

A typical formulation for a primer may be found in Table 1 below. The formulation may need to be adjusted depending on required bath life, coating equipment and backing material. The primer may be coated by direct gravure, wire wound rod or other coating technique suitable for solvent-based coatings and must be cured prior to adhesive application. The curing conditions will depend on equipment capabilities, substrate type and formulation used and should be established during experimental trials on the machine.

Table 1. Typical Primer [(1)] Formulation

Component	Parts by Weight
SS4195A-D1	13.30
SS4191B	0.16
SS4192c	0.50
SS4259c	0.30
Solvent [(2)]	85.74

[(1)] Refer to the SilForce™ SS4195A Release Coating technical data sheet, for more information

[(2)] Typical solvents include: toluene, heptane, and toluene/heptane mixtures.

Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers should review the latest Safety Data Sheet (SDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. SDS are available at www.momentive.com or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular application(s).

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