Technical Data Sheet

SilGrip™ PSA820 pressure sensitive adhesive

Description

SilGrip PSA820 silicone pressure sensitive adhesive is a toluene solution of polysiloxane gum and resin that is supplied at ~62 percent silicone solids, and which can be further diluted with aromatic, aliphatic or a solvent at customer's discretion. SilGrip PSA820 adhesive can be blended with SR545 resin dispersion or with other methyl based silicone pressure sensitive adhesives to obtain specific performance properties. SilGrip PSA820 adhesive is used as a coating of film and fabric substrates in the manufacture of industrial pressure sensitive tapes. SilGrip PSA820 adhesive can deliver excellent balance of peel strength, tack, cohesion strength and flexibility, and thus versatility for use in a wide variety of applications.

Key Features and Typical Benefits

- Maintenance of good shear and tack properties at temperatures up to 550 °F
- Adhesion to a wide variety of surfaces including low energy surfaces (silicones, fluoropolymers, polyolefines)
- Resistance to moisture, weathering (ozone, sunlight), chemical (acids, alkalis, oils)
- Excellent balance of tack and peel adhesion properties
- Viscosity suitable for a range of applications
- Excellent clean removability performance in masking tape applications (1)

Typical Physical Properties

Property	Value
Haze	Clear to slightly hazy
Color	Light straw
Silicone Solid, %	62.0

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Viscosity at 25 °C (77 °F), cps (Brookfield RVF,#4 Spindle)	90,000
Flash Point (ASTM D93) (PMCC), °C (°F)	5 (41)
Solvent	Toluene

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

Typical Cured Adhesive Properties

Peel Adhesion, (1) oz/in	33
Tack, (2) g/cm^2	650

1. 2 mil dry adhesive thickness, 1 mil polyester film, 2.0% benzoyl peroxide(3), curing cycle: 10 minutes air dry, 120 seconds at 165°, stainless steel, 12 inches/minute, 180° angle
2. Polyken 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(3), curing cycle: 10 minutes air dry, 120 seconds at 165°
3. Sinopharm Group Chemical Reagent Co., Ltd.

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 benzoyl peroxide catalyst concentration will generally increase cohesive and shear strength of the adhesive but will also reduce its adhesive strength and thus its tack and peel values.

Potential Applications

- Film and fabric substrates for manufacturing industrial pressure sensitive tapes

(1) Based on test findings of no residue after repeated heating cycles to 500 °F for 30 minutes.

General Considerations for Use

Application

SilGrip PSA820 silicone 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

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the process in order to assure 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 be used without adverse effects. The exact conditions required to achieve a complete cure will depend on oven length and efficiency, peroxide type and type of substrate used, and should be established during experimental trials on the machine.

Catalysts

High purity, 98% benzoyl peroxide in the quantity of 1 to 3% based on silicone solids, has been found to give the most 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 utilized.
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 sample formulation(1) for a primer is provided 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

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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.

(1) Product formulations are included as illustrative examples only. Momentive makes no representation or warranty of any kind with regard to any such formulations, including, without limitation, concerning the efficacy or safety of any product manufactured using such formulations.

Table 1. Sample Primer(4) Formulation

Component	Parts by Weight
Momentive SS4191A silicone base polymer	13.3
Momentive SS4191B methyl hydrogen crosslinker	0.16
Momentive SS4192C tin catalyst	0.5
Momentive SS4259C cure accelerator	0.3
Solvent(5)	85.74

1. Refer to document #CDS4994, SS4191 Silicone Release Coating System, for more information
2. Typical solvents: toluene, heptane, toluene/heptane mixtures

Storage Stability

Product stability is warranted for a period 6 months from the date of shipment from Momentive when stored in the original unopened container at 25 ºC (77 ºF).

Current Packaging

Currently available in 18kg pail and 180kg drum

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

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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 applications.

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For literature and technical assistance, visit our website at: www.momentive.com

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